NATIONAL SENIOR CERTIFICATE EXAMINATION
MAY 2023

GEOGRAPHY: PAPER II

MARKING GUIDELINES

Time: 1½ hours 100 marks

These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.

The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there may be different interpretations of the application of the marking guidelines.

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QUESTION 1 ATLAS USE AND MAP ORIENTATION

Figure 1: Location map



- The name Modimolle means 'The Spirits have eaten.'
- The Afrikaans name was Nylstroom, so named by the Voortrekkers who came across the north-flowing river and mistook the river for a tributary to the Nile River in Egypt.
- Modimolle, in the Waterberg district of Limpopo, is a charming town with an expanding business sector that serves as the commercial centre of the Waterberg.
- Modimolle is famous for their export grapes and other fruits like peaches and watermelons.

[Source: <http://www.limpopohappenings.co.za/modimolle>]

1. Refer to the location map above to answer the questions that follow. Mark the correct box with an **X**.

1.1.1 Identify the neighbouring country at **A**.

Mozambique	**X**
Botswana	
Zimbabwe	
eSwatini	

1.1.2 Name the capital city of country **B**.

Windhoek	**X**
Maputo	
Maseru	
Harare	

1.1.3 Choose which country, **A** or **B**, receives more rain?

Country A	**X**
Country B	

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1.1.4 Name the southernmost landlocked province in South Africa.

Limpopo	
Gauteng	
Free State	**X**
Mpumalanga	

1.1.5 Identify the ocean current labelled **C**.

Benguela	
Mozambique	**X**
Agulhas	
Indian	

1.2 Use both the topographic map extract 2428 CB Modimolle and the orthophotomap extract to answer the following questions.

The orthophotomap shows Donkerpoort Dam, a reservoir located fewer than 10 kilometres north-west of Modimolle.

1.2.1 The four alphanumeric blocks on the topographic map extract covered by the orthophotomap extract are …

A1, A2, B1, B2	
B1, B2, C1, C2	**X**
C1, C2, D1, D2	

1.2.2 The land-use activity occurring at **A** on the orthophotomap is ...

primary	**X**
secondary	
tertiary	

1.2.3 State why the feature at **B** on the orthophotomap has higher reflectivity than its surroundings.

Bare ground, exposed soil.

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1.2.4 Identify the man-made feature indicated by **C**.

Reservoir	
Dam	
Weir	**X**

1.2.5 State the general direction of flow of the non-perennial stream at **D**.

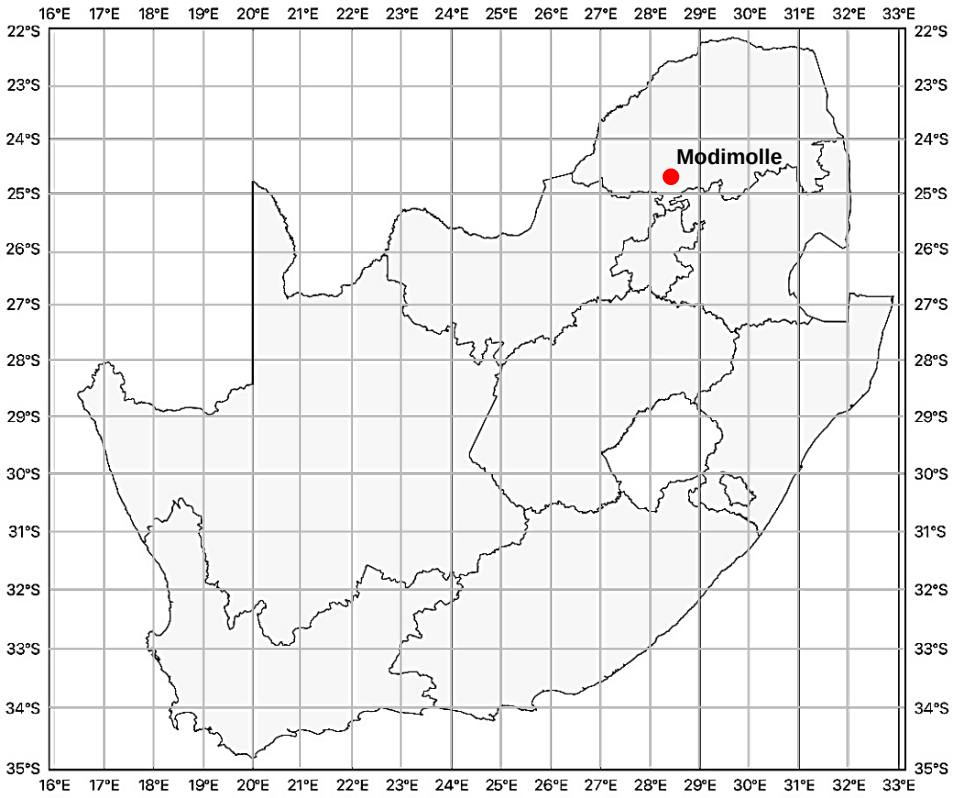
NE	
NW	
SE	**X**
SW	

1.2.6 Identify the approximate height of the dam wall seen at **E**.

15 m

1.2.7 On the map below, mark with an X the area covered by the topographic map extract 2428 CB.

Figure 2: Latitude and longitude



1.3 The following remotely piloted aerial system (RPAS) (drone) picture of Donkerpoort Dam Wall (E on the orthophotomap) was taken by a YouTube content creator, Averix Deus in 2019.

Figure 3: Drone image of Donkerpoort Dam Wall



[Source: <https://www.youtube.com/watch?v=fLzb9Ag15PA&ab_channel=AverixDeus>]

1.3.1 In which direction was the RPAS camera facing when this picture was taken? (Use the arrow to guide you).

South/SE

1.3.2 Suggest which season this photograph was taken?

Winter

1.3.3 Provide ONE piece of photographic evidence to support your answer.

Dry, scrub vegetation, brown

1.3.4 Fill in the table below, in which you list TWO advantages of using drone images for Geography fieldwork, and TWO disadvantages.

Advantage	Disadvantage
Aerial view	**Ethics of taking pictures**
Instant access	**Cost**

1.4 1.4.1 Provide a physical factor for the railway route as shown on the map.

Topography, it avoids hills but still close to town for access.

1.4.2 The school in block E7 is built on the site of a Boer concentration camp from the South African War. Calculate an accurate grid reference for this school.

24°42'30"S 28°24'41"E

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QUESTION 2 SETTLEMENT AND MAP SKILLS

Use the topographic map extract and Figure 10 on page 19 to answer the following question.

2.1 Complete the sentences below by choosing a word / phrase from the block.

low-order service centre minor country town central place stellar circular planned irregular gridiron apartheid planning multiple nuclei model

2.1.1 Modimolle would be classified as a **low-order service centre** on R.J. Davies' urban hierarchy.

2.1.2 The function of Modimolle is a **central place**.

2.1.3 The shape of Modimolle can best be described as **circular**.

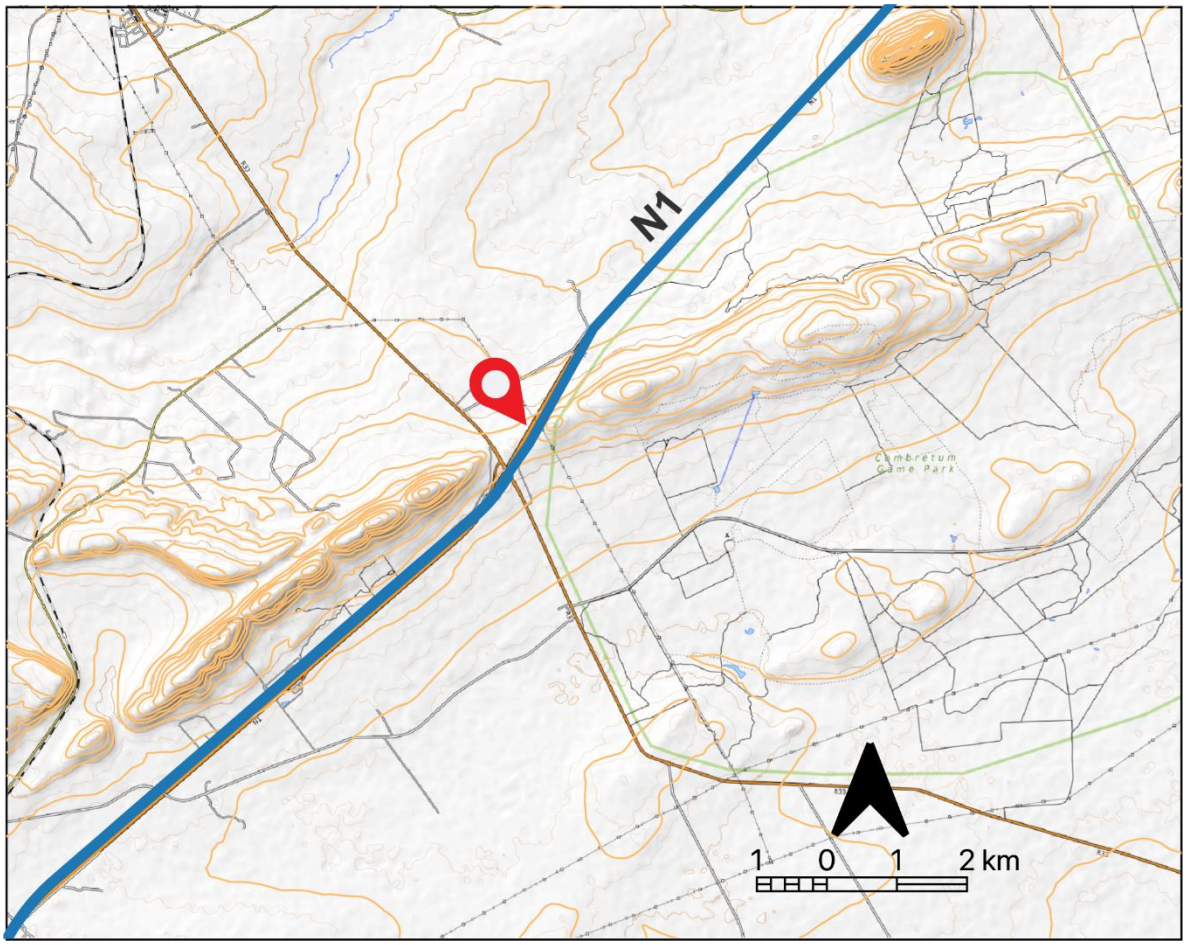
2.1.4 The street pattern in Modimolle central is **gridiron**.

2.1.5 Freedom Park and Phagameng are examples of **apartheid planning**.

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NATIONAL NEWS – Limpopo traffic police have arrested the driver of a Mercedes-Benz who allegedly clocked 240 km/h on the N1.

2.2 Figure 4: The N1 outside Modimolle



[Source: IEB-generated map]

2.2.1 Use map evidence to explain why the driver was able to attain such a speed.

The road is flat and straight, not built up, no obstructions, can see what is coming.

2.2.2 Should the driver have travelled at 242 km/h through Modimolle, how long would it take him to get from the intersection of the R101 and R33 (E7 on the topographic map) to the Sanrock Resort (C9)?

Answer: **1 min 30 sec**

Calculations

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2.3 Figure 5: Google street view



[Source: <google.com>]

2.3.1 This image shows a south-facing view. Was it taken from block E6 or D8? Justify your answer.

Answer: **D8**

Reason: **Less built-up area, silos in background in E8.**

2.3.2 There is map evidence of grain elevators (silos). These have been circled on the street view (Figure 5). Provide a purpose for these.

Storage especially of grain / GM seed / feed / sawdust for commercial farmers.

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The following was taken from the Modimolle Local Municipality Integrated Development Plan of 2009 / 2010.

Table 1: Dwellings in Modimolle

House or brick structure on a separate stand or yard	29 231
Traditional dwelling / hut / structure made of traditional materials	936
Flat in block of flats	136
Town / cluster / semi-detached house (simplex, duplex, triplex)	219
Informal dwelling / shack in back yard	2 533
Informal dwelling / shack NOT in back yard, e.g., in an informal / squatter settlement	13 070
Room / flatlet not in back yard but on a shared property	2 674
Workers' hostel (bed / room)	551

[Source: Modimolle Integrated Development Plan 2009/2010]

2.3.3 Identify one economic and one social issue arising from having such high numbers of informal dwellers.

Economic: **Unemployment / not taxpayers**

Social: **House fires / street beggars**

2.3.4 Some informal structures can be seen in the foreground in Figure 5. Outline a strategy that will help alleviate the problem of the large number of informal dwellers in Modimolle. Include a reason why this problem exists and a possible solution.

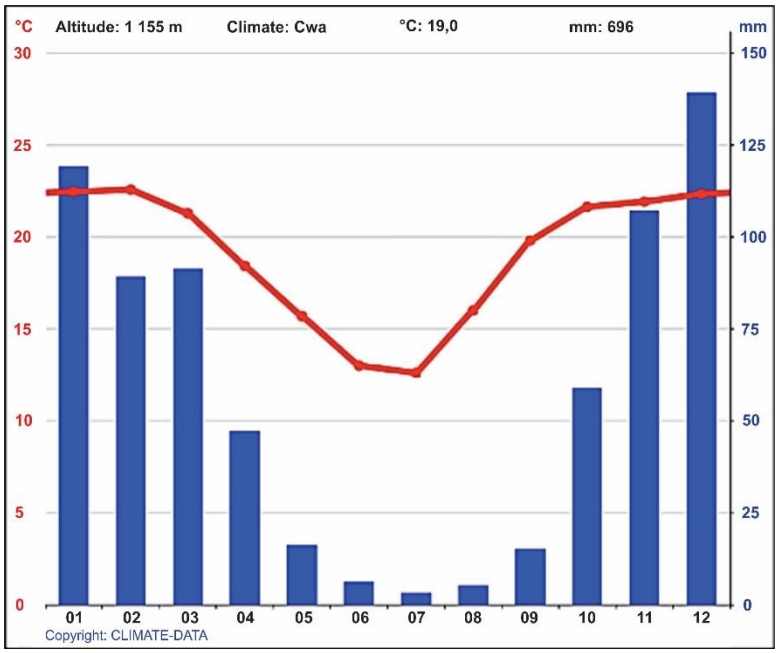
Reason: rural–urban migration

Solutions: counter urbanism / uplift rural areas / follow LEDs / stop corruption

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QUESTION 3 CLIMATE, WEATHER, MAP SKILLS

Figure 6: Climograph for Modimolle



[Source: <https://en.climate-data.org/africa/south-africa/limpopo/modimolle-27251#temperature-graph>]

3.1 3.1.1 What topographic map evidence supports the statement that Modimolle receives high rainfall for part of the year and is dry for the rest?

Non-perennial streams / numerous small farm dams to store water for dry seasons.

3.1.2 Complete the paragraph below:

Precipitation is the lowest in **July** (month), with an average of **3** mm. With an average of **139** mm the most precipitation falls in **December** (month).

3.1.3 Explain why Modimolle receives summer rain.

Continental, too far N to be affected by MLCs, Kalahari High stronger in winter, inversion does not allow moist air to advect in.

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Tropical Cyclone Eloise Impacts South Africa, 25 January 2021

More rain expected in Mpumalanga, Limpopo

After widespread flooding reports from Mpumalanga and Limpopo, the South African Weather Service has warned that more rain is expected in those provinces.

The Weather Service says disruptive rain is expected over the escarpment and lowveld areas of Limpopo and Mpumalanga, and the eastern highveld from Sunday until Monday.

'A warning has been issued for parts of Limpopo and Mpumalanga for [Sunday] into [Monday] due to persistent heavy rain, and more heavy rain is expected [on Monday night] into [Tuesday]. This will cause serious strain on emergency services.'

'Take extreme caution in these areas,' the Weather Service warned.

[Source: <https://reliefweb.int/report/south-africa/plans-place-tropical-cyclone-eloise-impact>]

3.2 3.2.1 Identify the weather conditions associated with tropical cyclone Eloise that could have affected the settlement at Freedom Park (D7 / 8).

Gale force winds, torrential rain.

3.2.2 How could Modimolle's local municipality prepare for the impending tropical cyclone? Use map evidence where possible; refer to blocks D / E 6–10 in particular.

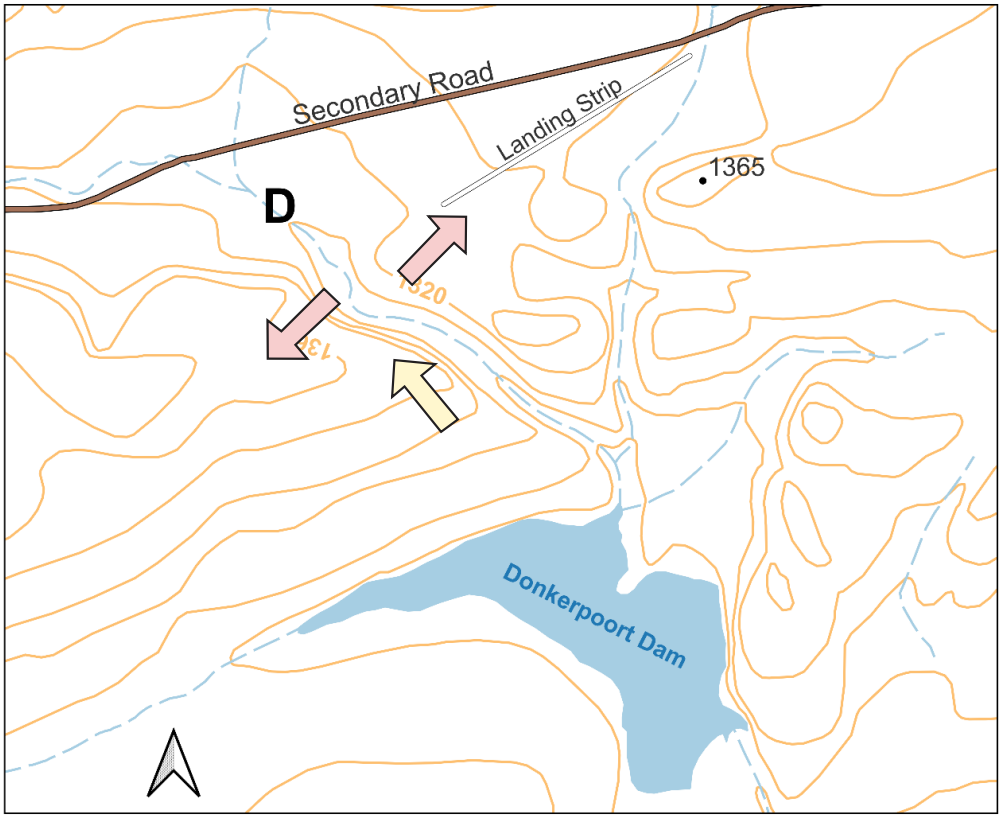
Drain water from dams, open sluice gates before rain hits. Evacuate people in low-lying areas. Put early-warning systems in place. Set up WhatsApp groups. Identify areas for rescue sites, e.g., church halls.

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3.3 The sketch map below shows the non-perennial tributaries feeding Donkerpoort Dam. The same area can be seen on the orthophotomap extract and north-west of Modimolle on the topographic map extract.

It is unusual for non-perennial tributaries to have carved such deeply incised valleys. It is believed that these valleys were created by fast-flowing rivers on a previous landscape that have since dried up.

Figure 7: Sketch map



Key:

	Anabatic flow
	Valley winds

3.3 3.3.1 On the sketch map above, draw arrows to indicate the direction of:

- Anabatic flow
- Valley winds

Use different-coloured arrows and fill them in on the key.

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3.3.2 How many confluences are visible on the sketch map (Figure 7)?

2

3.3.3 Are these streams examples of antecedent or superimposed drainage?

Answer: **Superimposed**

Reason: **Stable area with no evidence of uplift, created on overlying landscape.**

3.3.4 Using the topographic map extract, calculate the gradient from spot height 1365 in Figure 7 to the point where the tributaries join the dam.

Difference in height: **105 m**

Distance: **1 100 m**

Gradient: **1 : 10,4**

Calculations

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QUESTION 4 ECONOMIC GEOGRAPHY AND MAP SKILLS

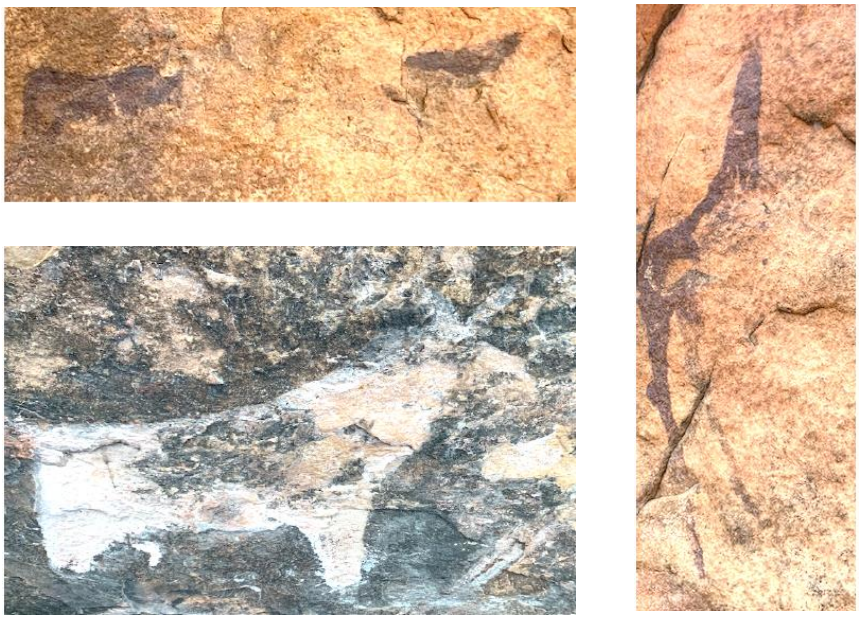
Study the fact file and Figure 8 and answer the questions that follow.

Fact file

- Evidence of human activity in the Waterberg district stretches back as far as the Middle Stone Age.
- Rock paintings in the area show various ethnic groups lived here for centuries.
- Our earliest ancestors could have been frequent visitors many thousands of years before that.
- Settlements were sparsely distributed. While the area came to be dominated by the Pedi in the 18th century, it appears to have been largely a sanctuary to which people fled periodically whilst under threat.
- The area was also settled late by people of European origin, of which there were fewer than 200 residents even as late as the early 20th century.
- Parts of the area, with its fevers (particularly malaria) and tsetse flies, were some of the last areas in South Africa to be settled by whites.
- The Waterberg plateau is devoid of any major mineral deposits. This, together with its unsuitability for forestry, has meant that it has avoided any large-scale development or habitation that could have otherwise detracted from its natural beauty or wilderness quality.
- During the South African War, a concentration camp was set up by the British in Modimolle in 1901.
- Despite the area's rich history across numerous ethnic groups, it still remains sparsely populated.

[Source: <http://www.olievenfontein.com/index.php/about-waterberg-meander>]

Figure 8: Rock paintings around Modimolle along the river in blocks A8 and A9



[Source: Examiner's photographs]

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4.1

4.1.1 Provide map and fact file evidence showing why humans were eventually drawn to this area.	**Availability of game (eland, giraffe in rock paintings), seasonal water, some arable land.**
4.1.2 Give THREE pieces of map evidence that farming in the area is commercial.	**Farm names, farm boundaries, infrastructure, i.e., roads to transport goods, dams for irrigation, landing strip and aerodrome for crop spraying.**
4.1.3 List TWO physical factors that favour farming in this region.	**Water available seasonally, flat land allows for mechanisation on arable areas.**
4.1.4 List THREE hardships faced by people currently living in the area.	**Lack of services and service delivery, unemployment, work on farms is seasonal, few schools / hospitals, poverty.**

4.1.5 The ratio of male to female in Modimolle is almost equal; there are marginally more males than females. The neighbouring district of Molemole to the east, however, has a ratio of 1 male to 36 females, as males leave in search of work. Explain the impact of young, economically active male migration on:

(a) The area that they leave: **rural decline, break in family structure, children have no father figure, women left to do manual labour**.

(b) The areas to which they migrate: **strain on resources, housing shortages, informal settlements, street beggars**.

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4.2 **Figure 9: Stall located at Phagameng (D9)**



[Google street view]

4.2.1 Which sector of the economy is depicted here?

Informal economy

4.2.2 Explain why stalls, such as this one, are located where they are?

Goods are cheaper, easily attract customers away from formal sector, no tax goes back to local municipality, can be unsightly / hamper traffic.

4.2.3 Describe the following regarding the stall shown in Figure 9:

(a) Threshold population: **small number of regular customers visit daily**.

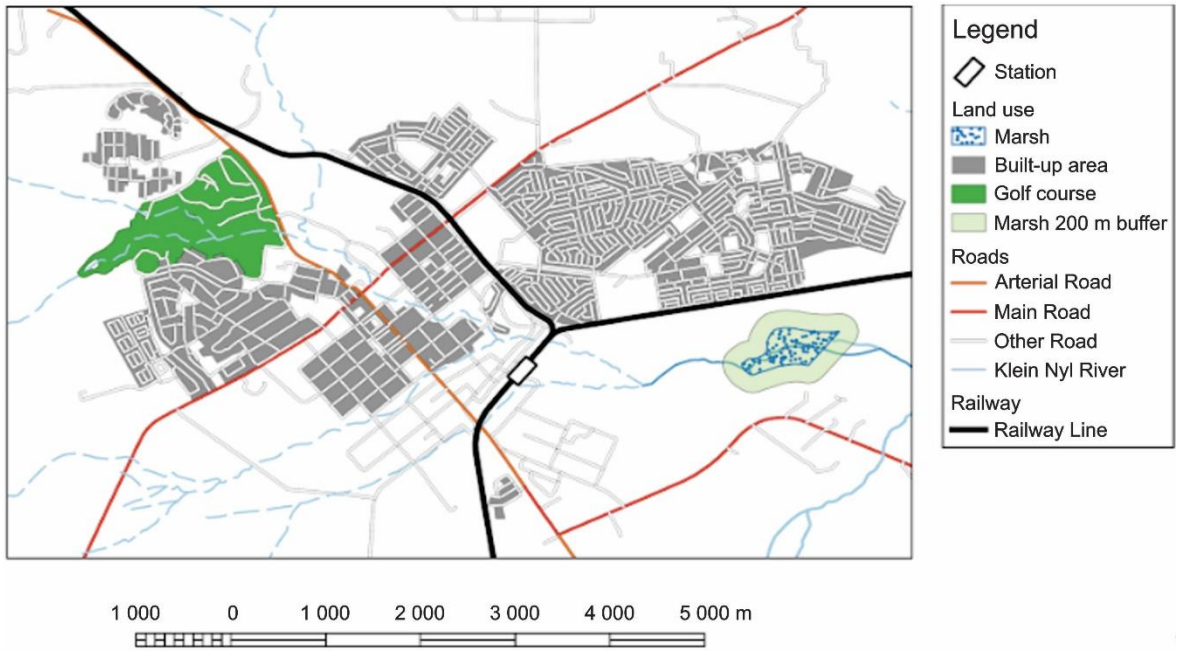
(b) Sphere of influence: **small**

(c) Range: **small**

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4.3 The map below is a copy of the land-use map.

Figure 10: Land-use map generated by GIS



4.3.1 Is raster or vector data shown on this map?

Answer: **Vector**

4.3.2 Use the map above as a 'paper GIS' and add the following layers:

(a) The railway line and the railway station.

(b) The Klein Nyl Rivier and marsh.

(c) A buffer of 200 m around the marsh.

Total: 100 marks

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