

## Assignment 03 Portfolio

The portfolio will be the examination opportunity for Module GGH2603.

Plagiarism will not be tolerated. If it is found that you copied from another source, website, article, textbook, ANOTHER STUDENT and so forth without referencing the source correctly, you will receive zero for your portfolio and will FAIL GGH2603. If you are unclear about what constitutes plagiarism, please consult Unisa's policy on plagiarism (see further details under "Instructions"). This portfolio requires you to use the Harvard referencing style. If you are unsure about what it entails, please consult the Harvard referencing guide. Please fill out the declaration on the following page – Note: If you are found to have colluded/plagiarised with other students, you will be given a mark of zero for this portfolio, which will result in you failing the subject.

The portfolio needs to be submitted on or before 10 pm on 24 October 2018. THERE WILL BE ZERO TOLERANCE REGARDING THE SUBMISSION OF LATE PORTFOLIO'S –YOU ARE URGED TO SUBMIT BEFORE THE DUE DATE – NO LATE SUBMISSIONS WILL BE TOLLERATED, REGARDLESS OF MYUNISA INSTABILITY. THEREFORE, MAKE SURE YOU SUBMIT LONG BEOFRE THE DUE DATE TO AVOID DISAPPOINTMENT.

Remember that the portfolio is an examination opportunity. This portfolio is the replacement for a 3-hour sit-down examination. Therefore, the time given to you to complete the portfolio should be more than sufficient.

The only file type which will be eligible for submission will be files submitted in PDF file format (see more on it under "Instructions"). Unisa's online marking tools only operate on documents in a pdf file format. The assignment router has been set to only accept files in pdf file format. If the file you submit is not in pdf file format, your portfolio will not be marked. If you are unclear about how to convert your Word file to a pdf file format, please consult the convert word to pdf guide.

You may contact me via email [schimpmu@unisa.ac.za](mailto:schimpmu@unisa.ac.za) or telephonically 011 471-2262 if you have any questions regarding the portfolio.

Good luck

Prof Peter Schmitz

### Instructions:

- The due date for Assignment 03 portfolio is 2018/10/24. If you submit your assignment after the submission date it will not be marked.
- Assignment 03 Portfolio contributes 55% to your final mark and its unique number is **897329**
- Assignment 03 Portfolio needs to be submitted online via the assignments tool on myUnisa — no blog or discussion forum submissions will be marked.
- Submit your documents in **PDF file format**. Please note, NO hardcopy assignment submission will be accepted, if you submit in hard copy via the postal system, you will be given a mark of **ZERO**. **PLEASE do not** submit your assignment as a PDF/A, PDF/X, PDF/E or as a secure PDF document.
- Please make sure when you scan your pages that ALL pages are included before you submit the portfolio.
- You need to sign the declaration of originality and include into your portfolio.
- All maps and aerial photos are as appendices to the portfolio. The extra PDF file **Toposheet 1 in 50k 3220AA.pdf**, which is the same as the map in Appendix 1, you can use to print the map as required. No need to use the study pack or DVD!
- Any assignment containing plagiarism or copied from fellow students will automatically be given a mark of zero, if you are unsure what constitutes plagiarism please refer to [Unisa's plagiarism policy](#).

**Declaration of originality**

I, \_\_\_\_\_ hereby declare that this GGH 2603 portfolio, which I hereby submit at the University of South Africa, is of my own work.

I further declare that the portfolio does not contain any work presented by other persons whether written, pictures, graphs or data or any other information without acknowledging the source.

Student signature: \_\_\_\_\_ Date: \_\_\_\_\_

## **Question 1**

### **Question 1.1.**

Discuss the basic properties of map symbols and illustrate each with an example (12 marks).

### **Question 1.2.**

Read through the scenario in the paragraph below and answer questions 1.2.1 to 1.2.4.

A wine farmer has noticed that certain vineyards on his farm produce grapes of a higher quality than those from other vineyards on the farm – and he would like to know why. By investigating the matter, he hopes to increase the quality of all the vineyards on the farm. He has each vineyard's boundary drawn and mapped. The results of this exercise show that the vineyards producing high-quality grapes are distributed randomly. The farmer visits all the vineyards on the farm, takes measurements and makes comparisons between the vineyards producing high-quality grapes and those producing low-quality grapes. By doing this, he identified certain factors that influence the quality of the grapes that a vineyard produces. These factors are the following:

- The amount of rainfall each vineyard receives. Vineyards receiving on average between 60 and 90 mm of rain per month during the months of May, June, July and August produce high quality grapes.
- The slope of the landscape. A landscape with a slope of between 6° and 10° is best suited for the production of high-quality grapes.
- The number of hours each vineyard receives sunlight. Vineyards that receive between 10 and 12 hours of sunlight per day are best suited for the production of high-quality grapes.
- Temperature: Vineyards with an average temperature between 17°C and 18.5°C produce the best grapes.
- Soil that are nutrient poor, well drained and capable of storing the amount of water the plant needs to grow produce high quality grapes. Known as soil characteristics.

Questions:

1.2.1. What makes the above scenario a geographic problem? Substantiate your answer by referring to the scenario (3 marks).

1.2.2. Identify four spatial features/variables that are influencing the geographic problem in the scenario (4 marks).

1.2.3. State each spatial feature/variable from the scenario and specify the measurement scale used to record the data for each spatial feature/variable. Provide an explanation why that measurement scale is applicable to data captured for each spatial feature (8 marks).

1.2.4. Explain – by referring to any two spatial features/variables mentioned in the scenario – what the difference between a spatial phenomenon and a spatial variable is (5 marks).

*Total marks for question 1.2: 20 marks*

### **Question 1.3.**

*The choice of a map's scale determines how much of and how reality can be shown on a map.*

Discuss the above statement by referring to how the scale of a map influences a map reader's attention (2 marks), as well as to how the scale influences both the level of detail displayed on a map (3) and the dimensionality of features on a map (3).

Total marks for question 1.3: 8 marks

**Total marks for Question 1 = 40 marks**

## Question 2

You have to develop a section of an orienteering trail in the Tankwa Karoo National Park. – see the 1:50 000 topographical map sheet in Appendix 1 at the end of this portfolio. The route is from Langkloof, a homestead which is located within the steep valley, to Klip Dam and from Klip Dam to trig beacon number 2. For the profile your vertical interval is 1cm = 100m. The horizontal distances need to be determined from the map in Appendix 1 and 2 at the end of this portfolio.

You need to do four things:

### Question 2.1.

Map the route, straight lines, from Langkloof (elevation of 610m ASL\*) via Klip Dam (elevation of 1250m ASL) to the trig beacon (1 mark)

### Question 2.2.

Work out the compass (magnetic) bearings (A) from Langkloof to Klip Dam and (B) from Klip Dam to the trig beacon (7 marks).

### Question 2.3.

Develop a profile (cross section) of the trail and indicate important features along the trail (12 marks).

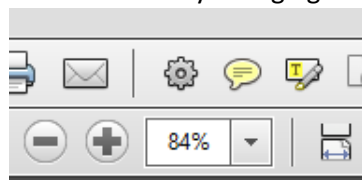
### Question 2.4.

Work out the slope in degrees, minutes and seconds between Langkloof and Klip Dam (5 marks).

**Total marks for Question 2 = 25 marks.**

\*ASL – Above Sea Level.

HINT: If you cannot print the separate **Toposheet 1 in 50k 3220AA.pdf** set your view to 84% and use a ruler against the screen to check the scale. The distance between 0 and 1 on the scale bar must be 2cm. If not play a bit with the zoom by changing the percentage with one percent a time. You can type



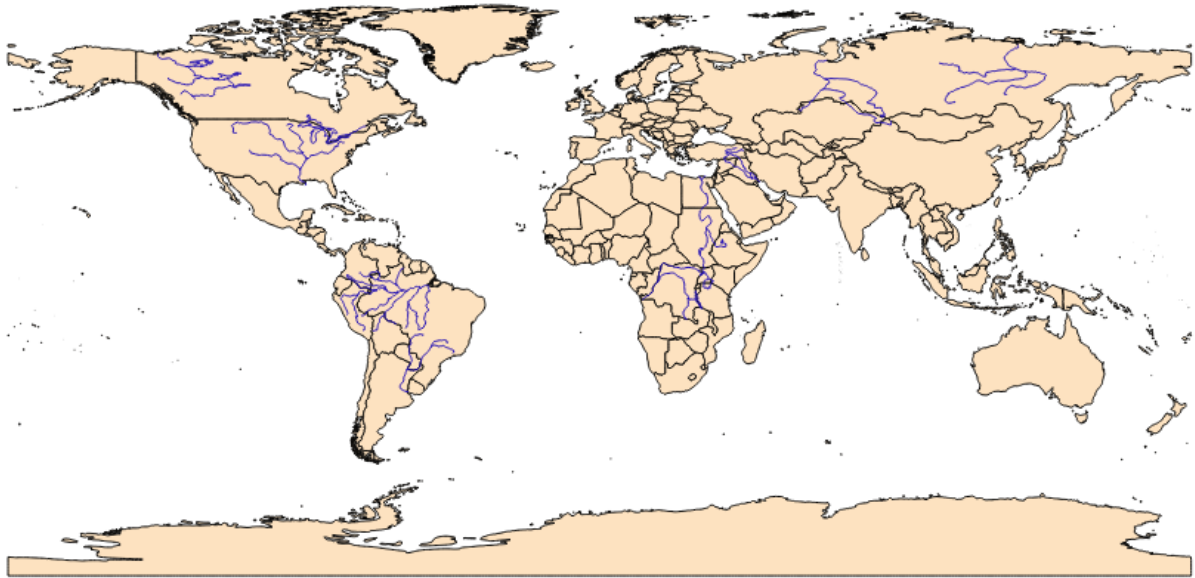
it in and press **Enter**.

HINT:  $\tan^{-1}$  is also known as "arctan".

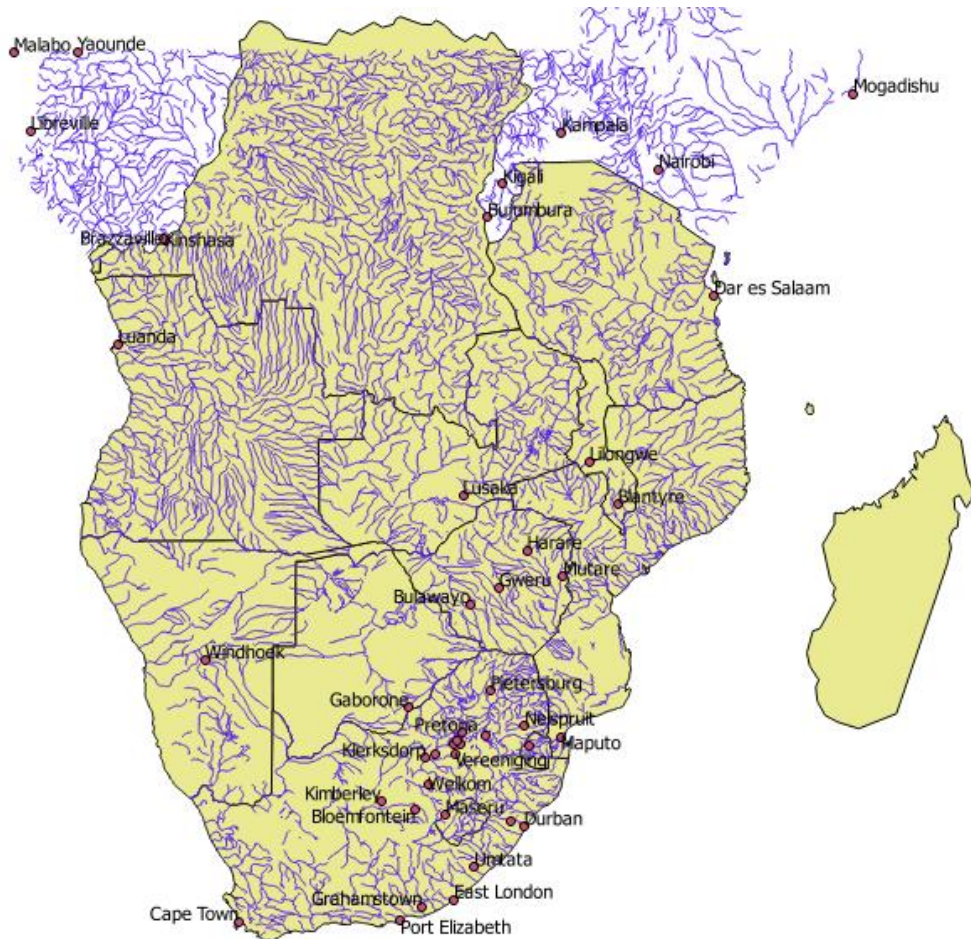
## Question 3

### Question 3.1.

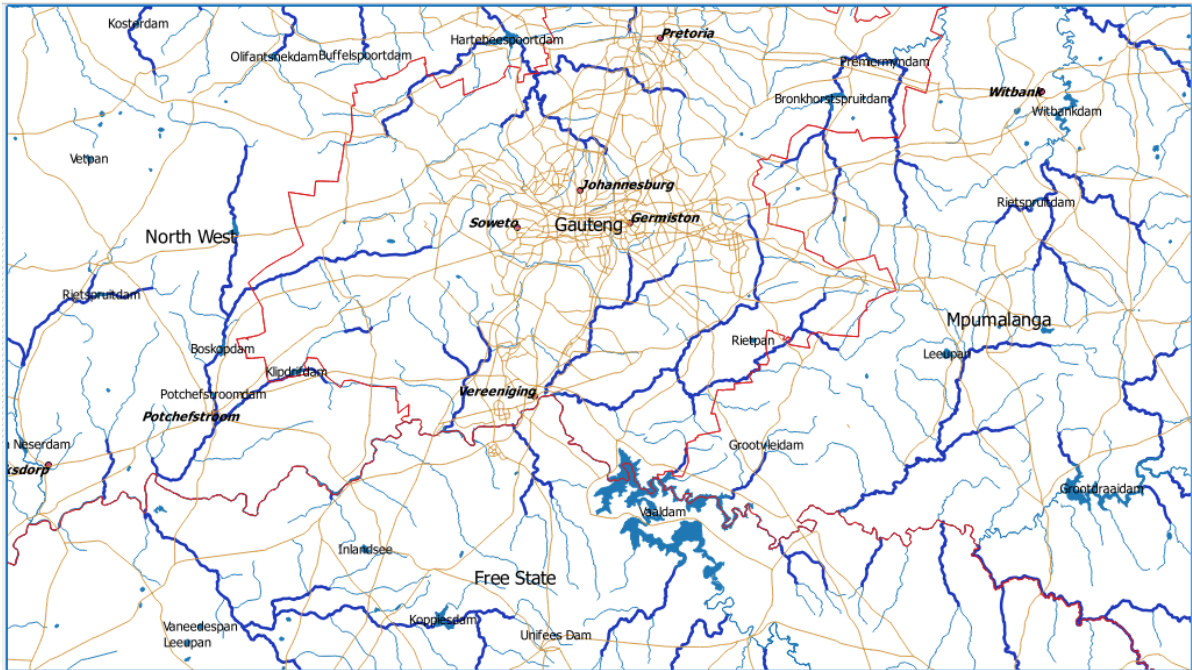
By referring to the three maps below, explain the relationship between resolution and scale (6 marks)



Map 1: World rivers



Map 2: SADC rivers and towns.



Map 3: Rivers and dams (blue), towns and roads (brown)

### Question 3.2

Using the aerial photo of Mowbray in Cape Town in Appendix 5 at the end of the portfolio as an example, explain the three orders of elements (4 marks)

**Total marks for Question 3 – 10 marks**

### Question 4

#### Question 4.1.

Calculate the map straight line distance, in kilometre, between the Trig beacon nr 16 in Block D4 (**R**) and Morgenster in Block C3 (**S**) on a map with a scale of 1:50 000 in Appendix 3 3418BB Somerset West at the end of this portfolio (2 marks).

#### Question 4.2.

On a map with a scale of 1:50 000 in Appendix 3 3418BB Somerset West at the end of this portfolio, calculate the area the real-world area, in square kilometres ( $\text{km}^2$ ) of the Helderberg Nature Reserve in Blocks C1 and C2 (5 marks).

#### Question 4.3

Calculate the absolute location in degrees, minutes and seconds of the recreational area (“Rec”) in Block A4 of Appendix C 3418BB Somerset West (5 marks).

**Total marks for Question 4 = 12 marks**

## Question 5

### Question 5.1.

You have a vertical aerial photograph of Johannesburg and you need to calculate the height of the Carlton Hotel, the building just left of the big Transnet building (see Figure 1 below). Use the vertical aerial photo in Appendix 4 at the end of this portfolio: the “eye alt” as the camera height and “elev” for the average elevation. The focal length of the digital camera used was 120 mm. The Carlton Hotel is indicated by the red arrow in Appendix 4 (9 marks). Photo credits: Google Earth.



Figure 1: Carlton Hotel and Transnet (Carlton) building.

### Question 5.2.

What is the type of aerial photo in Figure 1 called? (1 mark)

HINT: Use the corners of the aerial photo in Appendix 4 at the end of this portfolio as the fiducial marks to determine the principal point.

**Total marks for Question 5 = 10 marks**

## Question 6

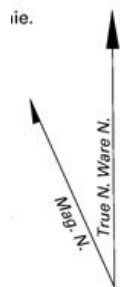
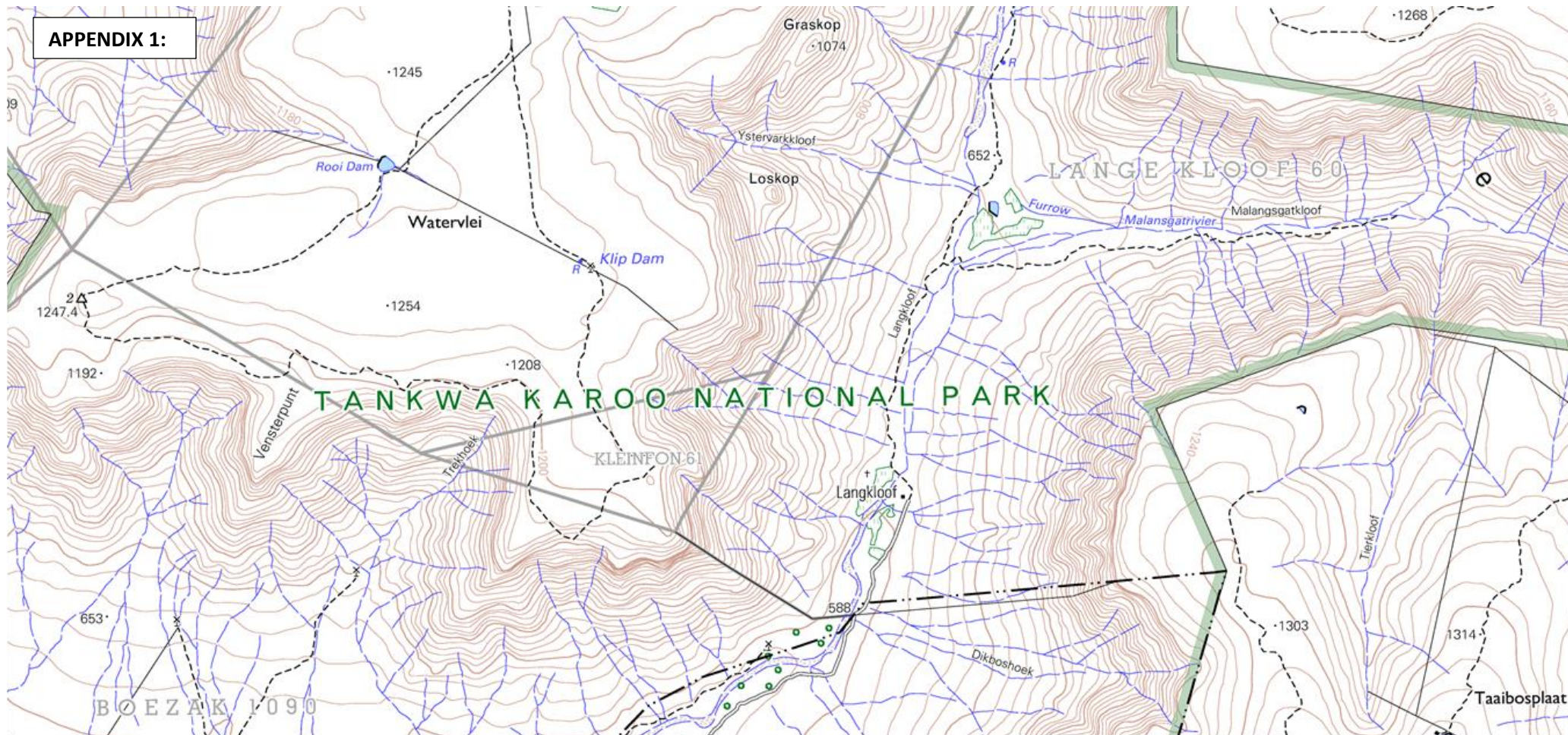
Distinguish between pre-processing and image enhancement as two functional steps to be applied on raw satellite images before conducting any analysis (3 marks).

**Total marks for Question 6 = 3 marks**

**Total marks for portfolio = 100 marks.**



**APPENDIX 1:**



Heights are in metres above mean sea level  
 Hoogtes is in meter bo gemiddelde seespieël

Mean magnetic declination 23°05' West of True North ( March 2007 ).  
 Mean annual change 8' Westwards ( March 2007 – Feb 2008 ).  
 Supplied by Hermanus Magnetic Observatory.

Gemiddelde magnetiese deklinasie 23°05' Wes van Ware Noord ( Maart 2007 ).  
 Gemiddelde jaarlikse verandering 8' Weswaarts ( Maart 2007 – Feb 2008 ).  
 Voorsien deur die Hermanus Magnetiese Observatorium.

CONTOUR INTERVAL 20 METRES KONTOERTUSSENRUIMTE 20 METER

Gauss Conform Projection. Central Meridian 21° East.  
 Hartebeesthoek 94 Datum (WGS84 Ellipsoid).

INDEX TO SHEETS INDEKS VAN VELLE

The grid lines of the South African Co-ordinate System are indicated in the margin by short black ticks at 10 000 metre intervals, with co-ordinate values in units of 10 000 metres in blue.

Die ruitlyne van die Suid-Afrikaanse Koördinaatstelsel word in die kantruimte aangetoon deur kort swart strepies 10 000 meter van mekaar, met koördinaatwaardes in eenhede van 10 000 meter in blou.

REFERENCE		VERKLARING
National Freeway; National Route.....		Nasionale Deurpad; Nasionale Roete
Arterial Route.....		Hoofverkeersroete
Main Road.....		Hoofpad
Secondary Road; Bench Mark.....		Sekondêre Pad; Hoogtemerk
Other Road; Bridge.....		Ander Pad; Brug
Track and Hiking Trail.....		Dowwe Pad en Voetslaanpad
Railway; Station or Siding.....		Spoorweg; Stasie of Sylyn
Other Railway; Tunnel.....		Ander Spoorweg; Tonnel
Embankment; Cutting.....		Opvulling; Deurgrawing
Power Line.....		Kraglyn
Built-up Area (High, Low Density).....		Beboude Gebied (Hoë, Lae Digtheid)
Buildings; Ruin.....		Geboue; Murasie
Post Office; Police Station; Store.....		Poskantoor; Polisieostasie; Winkel
Place of Worship; School; Hotel.....		Plek van Aanbidding; Skool; Hotel
Fence; Wall.....		Draadheining; Muur
Windpump; Monument.....		Windpomp; Monument
Communication Tower.....		Kommunikasietoring
Mine Dump; Excavation.....		Mynhoop; Uitgraving
Trigonometrical Station; Marine Beacon.....		Peilbaken; Seevaartbaken
Lighthouse and Marine Light.....		Vuurtoring en Seevaartlig
Cemetery; Grave.....		Begraafplaas; Graf

True N. Ware N.  
 Met. N.

Cadastral information supplied by the Surveyor-General  
 Original Farms .....

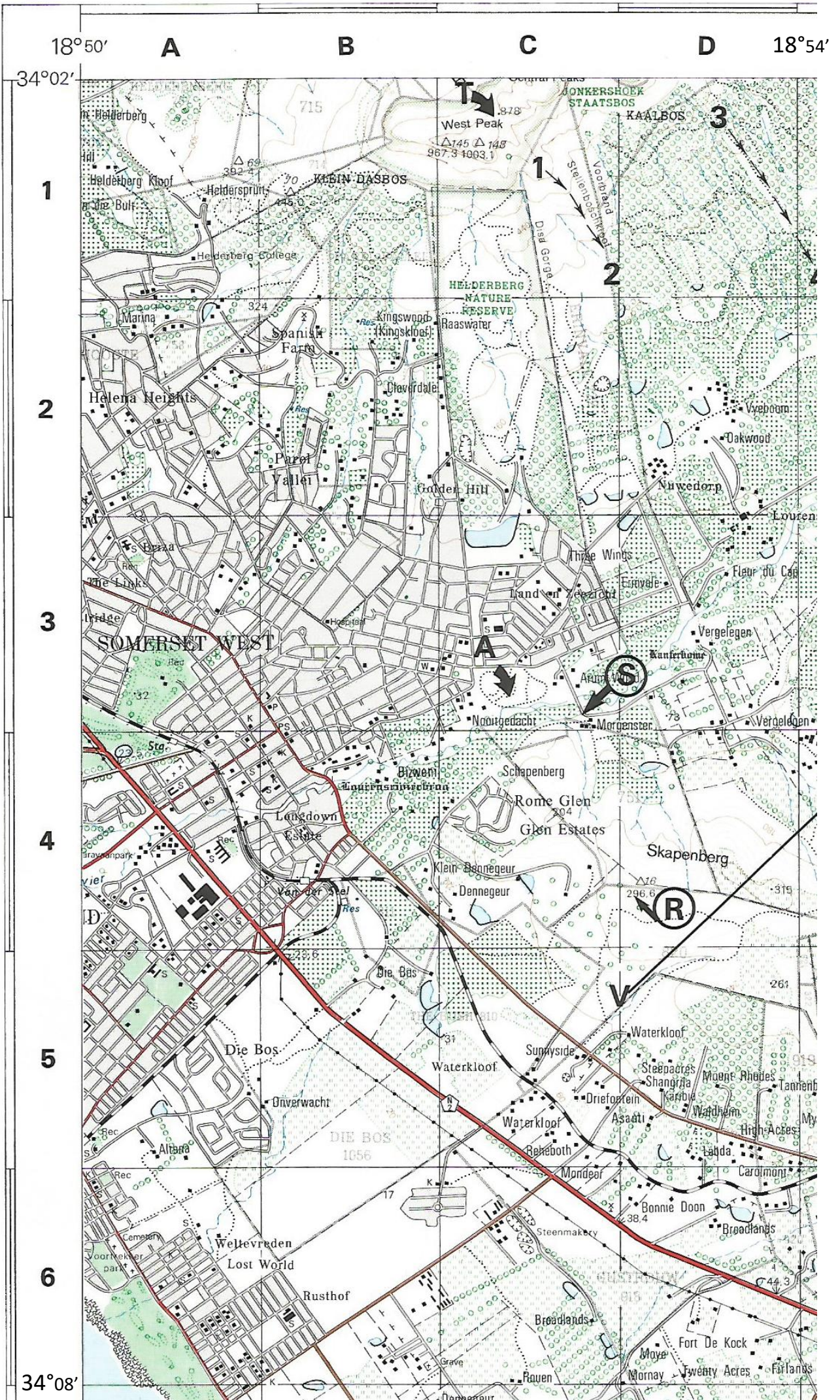
REFERENCE		VERKLARING
International Boundary and Beacon.....		Internasionale Grens en Baken
Provincial Boundary.....		Provinsiale Grens
Protected Area.....		Bewarings Gebied
Perennial River.....		Standhoudende Rivier
Perennial Water.....		Standhoudende Water
Non-perennial River.....		Nie-standhoudende Rivier
Non-Perennial Water.....		Nie-standhoudende Water
Dry Water Course.....		Droë Loop
Dry Pan.....		Droë Pan
Marsh and Vlei.....		Moeras en Vlei
Pipeline (above ground).....		Pylyn (bo die grond)
Water Tower; Reservoir; Water Point.....		Watertoring; Reservoir; Waterpunt
Coastal Rocks.....		Kuslynrotse
Prominent Rock Outcrop.....		Prominente Klipbank
Erosion; Sand.....		Erosie; Sand
Woodland.....		Beboste Gebied
Cultivated Land.....		Bewerkte Land
Orchard or Vineyard.....		Boord of Wingerd
Recreation Ground.....		Ontspanningsterrein
Row of Trees.....		Rye Bome

Kadastrale inligting verstrekk deur die Landmeter-generaal  
 Oorspronklike Plase .....

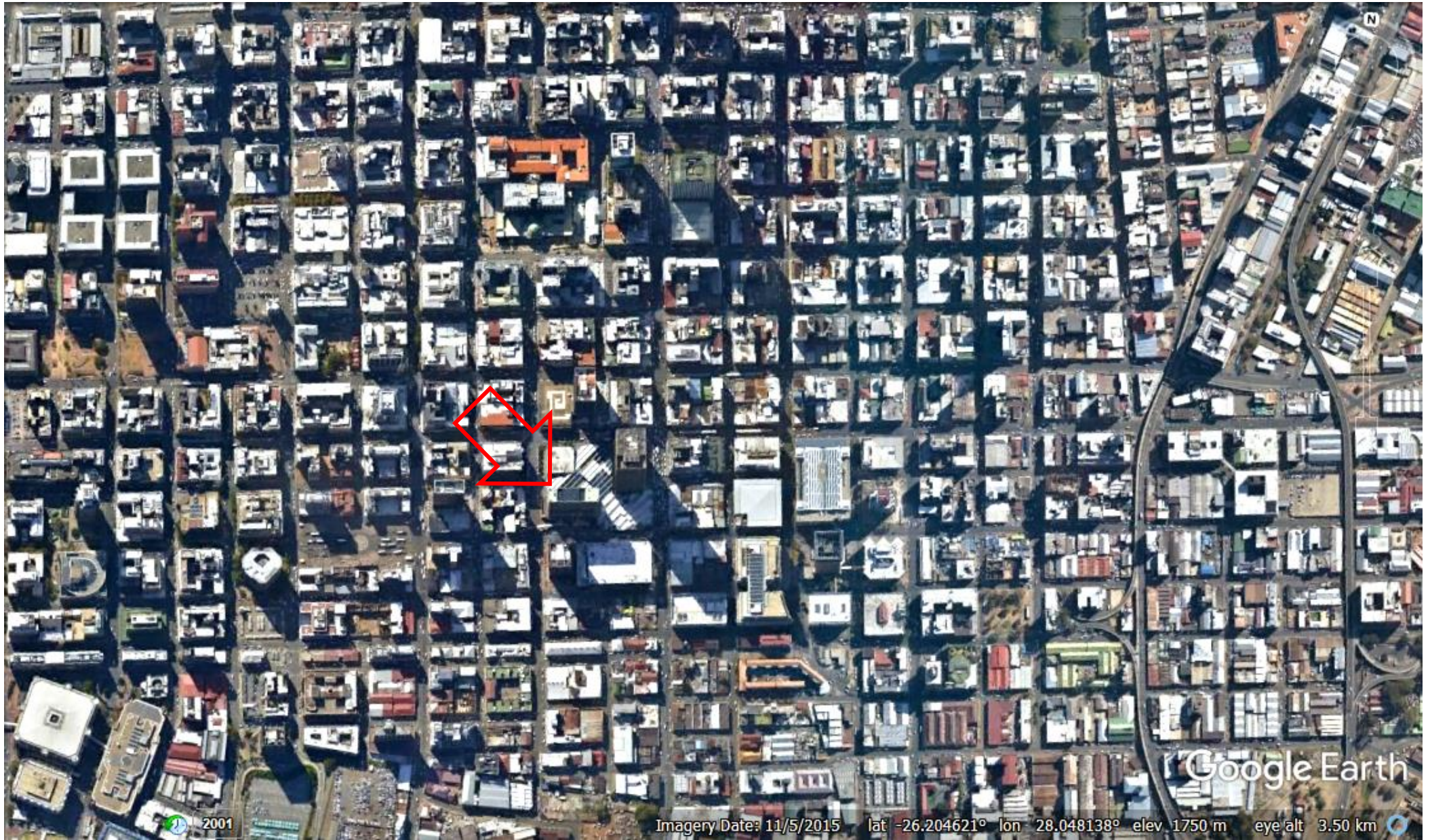
Provincial boundaries on this map are shown according to data from the Municipal Demarcation Board of South Africa, May 2006.  
 Provinsiale grense op hierdie kaart is aangedui volgens inligting van die "Municipal Demarcation Board" van Suid-Afrika, Mei 2006

**3220AA AGTERKOP**      **THIRD EDITION**      **2005**  
**DERDE UITGAWE**

APPENDIX 3: 3418BB Somerset West



APPENDIX 4: Downtown Johannesburg



APPENDIX 5: Mowbray, Cape Town



Image © 2018 DigitalGlobe

Google Earth

Mowbray

Imagery Date: 1/18/2018 lat -33.941500° lon 18.484919° elev 4 m eye alt 3.09 km

2000