

Phase 1 Heritage Impact Assessment for proposed  
prospecting right over the Remaining Extent of Farm  
Waihoek 392 near Douglas, Hay District, Northern Cape  
Province.

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## Summary

A Phase 1 Heritage Impact Assessment was carried out for a proposed prospecting right application by Electri City Mining (Pty) Ltd, over the Remaining Extent of the farm Waaihoek 392, near Douglas in the Northern Cape Province. The study area is located within a historically as well as prehistorically significant landscape. The field assessment indicates that the proposed prospecting application will primarily affect localities, which is underlain by wind-blown sand and gravel deposits, calcretes and Dwyka Group tillites. As far as the palaeontological heritage is concerned, the proposed development may proceed with pinpoint prospecting activities. If, in the *unlikely* event of localized fossil discoveries within the sandy and calcrete overburden during the operational phase of the project, it is recommended that a professional palaeontologist is called in to record and rescue the fossils where necessary. The terrain is not considered archaeologically vulnerable where localized prospecting is concerned. The project can proceed, provided that planned activities are restricted to prospecting and not mining.

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## Introduction

A Phase 1 Heritage Impact Assessment was carried out for a proposed prospecting right application by Electri City Mining (Pty) Ltd, over the Remaining Extent of the farm Waaihoek 392, near Douglas in the Northern Cape Province (**Fig. 1**). The extent of the proposed development (over 5000 m<sup>2</sup>) falls within the requirements for a Heritage Impact Assessment (HIA) as required by Section 38 (Heritage Resources Management) of the South African National Heritage Resources Act (Act No. 25 of 1999). The site visit and subsequent assessment took place in November 2013. The task involved identification of possible archaeological and paleontological sites or occurrences in the proposed zone, an assessment of their significance, possible impact by the proposed development and recommendations for mitigation where relevant.

### Methodology

The heritage significance of the affected area was based on existing field data, database information, published literature and maps. This was followed up with a field assessment by means of a pedestrian survey within the footprint. A Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a digital camera were used for recording purposes.

Site significance classification standards prescribed by SAHRA (2005) were used to indicate overall significance and mitigation procedures where relevant (**Table 1**).

## Locality Data

Maps: 1:50 000 topographical map 2923 AB Witberg

1:250 geological map 2922 Prieska

General Site Coordinates (see **Fig. 2**):

A) 29° 5'33.35"S 23°15'46.13"E

B) 29° 6'42.44"S 23°19'6.71"E

C) 29° 7'10.71"S 23°19'5.82"E

D) 29° 7'29.28"S 23°16'46.90"E

E) 29° 7'28.86"S 23°16'32.04"E

The study area is located on slightly undulating to low topography, and relatively undisturbed terrain, covered by dense vegetation, especially near stream channels and hillslopes (**Fig. 3**).

## Background

### Palaeontology

The geology of the study area is shown on the 1: 250 000 geology map 2922 Prieska (**Fig. 4**). Oldest rocks in the region are represented by Precambrian, Ventersdorp Supergroup lavas, composed of resistant-weathering, dark green lavas and associated pyroclastic rocks. The Ventersdorp lavas are unconformably overlain by Carboniferous Dwyka Group tillites of the Mbizane Formation, (*C-Pd*, **Fig. 4**) which represents valley and inlet fill deposits left behind on Ventersdorp basement rocks by retreating glaciers about 300 million years ago (Visser *et al.* 1977-78, 1990; Johnson *et al.* 2006). While the lavas are not palaeontologically sensitive, glacial pavements that record the movement of the Dwyka ice sheets across the Ventersdorp basement rocks needs to be preserved as geological sites. Weathered Dwyka sediments contain bluish-grey unbedded tillite with sparse to concentrated boulder-sized and smaller erratics which are occasionally capped by well-developed and crudely bedded calcrete hardpan. Locally laminated lenses of bedded tillites are ascribed to glaciolacustrine and fluvioglacial origin (Visser *et al.* 1977 – 78). The glacial tillites of the Dwyka Group are not considered to be palaeontologically sensitive (**Fig. 5**). The Precambrian basement lavas and overlying Karoo Supergroup rocks are mantled by polymict surface gravels made up of Plio-Pleistocene or older terrace gravels, calcretized terraces (*T-Qc*), red brown aeolian sands (*Qs*) and alluvium. A variety of fossil fauna have been retrieved from alluvial gravel terraces along the lower Vaal River basin between Kimberley and Bloemhof (Cooke 1949; Maglio and Cooke 1978; Partridge and Maud 2000). Here, gravel terraces between 21m and 30m above present river level, contain frequent sandy lenses and have yielded a range of vertebrate fauna. Geologically recent to modern alluvial sediments along the banks of the Orange River are made up well-developed sandy deposits with gravel to boulder size lenses (cf. reworked Dwyka Group and Allanridge Formation) of varying thicknesses. It is noted that while the overall palaeontological sensitivity of the Quaternary aeolian sand cover component is considered to be low, Quaternary overbank deposits along major river courses in the central interior can be highly fossiliferous in places (Broom 1909 a, b; Cooke 1955; Maglio and Cooke 1978; Churchill *et al.* 2000; Rossouw 2006).

### Archaeology

The Stone Age archaeological footprint in the region is represented by Early, Middle and Later Stone Age sites associated with pans and alluvial contexts, while away from rivers, the landscape in general is characterized by low density surface scatters (Beaumont 1995; Kiberd 2006). The base and lower levels of Kalahari Group sands which cover vast areas in the region, have produced localized densities of Middle Stone Age artefacts, especially around the lower Vaal basin (Beaumont and Morris 1990). The incidence of Early as well as Later Stone Age surface scatters are also common along the lower Vaal and middle Orange River basins, which highlights the antiquity and continuity of human occupation on the landscape (**Fig. 6**). Rock engravings in the region are consistently found on Ventersdorp andesites. Engraving sites are known from Wonderdraai and Omdraaisvlei near Prieska and De Kalk, Kentani, Mazelsdontein and Readsdrift near Douglas as well as Driekopseiland on the Riet River near Plooyburg. Engraving sites have also been recorded on a number of farms in the Hopetown district, including Beeshoek, Brandfontein Disselfontein, Doornbult Karee Kloof Lemietkop and Rooikop. Multiple rock engraving sites are found on the dolerite hills flanking the Riet River west of Plooyburg. Archaeological records and historical eyewitness accounts show evidence of Bushman hunter-gatherer and Khoi herder occupation in the region prior to European settlement (Sampson 1972; Elphick 1977) while early travelers frequently encountered Koranna, Griqua and Bushmen groups in the region (Burchell 1824; Skead 2009) (**Fig. 7**). Iron Age occupation is absent from the region as the most southerly distribution of Iron Age settlement in the northern Cape was limited to north of the Orange River by the end of 18<sup>th</sup> century (Maggs 1974; Humphreys 1976). The Orange River area between Douglas and Hopetown also lies within the confines of the historical Albania Settlement of Griqualand West that lasted from 1866 to its demise in 1878 (Kurtz 1988) (**Fig. 8**). Further away, stone pipes and LSA artefacts have been recorded on the farm Doornkuil near Britstown, while graves and clay pottery have been recorded along the Orange River at St. Clair in the vicinity of Douglas (Humphreys 1982).

## **Field Assessment**

The terrain as a whole is capped by an aeolian sand and sorted gravel matrix (the latter derived from older bedrock), and localized calcretes that are underlain by Dwyka Group tillites of the Mbizane Formation and primarily exposed along stream channels (**Fig. 9**). Although sparse fossil remains have been recorded in the Mbizane Formation,

the glacial tillites are not considered to be fossiliferous. Aeolian Kalahari sands and calcretes / surface limestones (surface deposits) can be locally fossiliferous, especially those that are directly related to fluvial environments along major river courses, spring areas or pans. No fossil remains or localities were observed within the surface deposits during the survey. Except for a small cemetery and existing modern farm structures, there are no indications of *in situ* Stone Age sites, prehistoric structures or rock engravings exposed within exposed channel deposits or low relief terrain (**Fig. 10**). There is also no above ground evidence of historically significant structures older than 60 years within the confines of the footprint.

### **Impact Statement and Recommendation**

The study area is located within a historically as well as prehistorically significant landscape. However, the field assessment indicates that the proposed prospecting application will primarily affect small, localized sites, underlain by wind-blown sand and gravel deposits, calcretes and Dwyka Group tillites. As far as the palaeontological heritage is concerned, the proposed development may proceed with pinpoint prospecting activities. If, in the *unlikely* event that localized fossil material is discovered within the sandy overburden during the operational phase of the project, it is recommended that a professional palaeontologist be called to record and rescue the fossils where necessary. The terrain is not considered archaeologically vulnerable and is assigned a site rating of Generally Protected C (**Table 1**), where localized prospecting is concerned. The project can proceed provided that planned activities are restricted to prospecting and not mining.

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#### DECLARATION OF INDEPENDENCE

I, Lloyd Rossouw, declare that I act as an independent specialist consultant. I do not have or will not have any financial interest in the undertaking of the activity other than remuneration for work as stipulated in the terms of reference. I have no interest in secondary or downstream developments as a result of the authorization of this project.

A handwritten signature in black ink, appearing to read 'L. Rossouw', written in a cursive style.

17 / 03 / 2021

## Tables & Figures

**Table 1.** Field rating categories as prescribed by SAHRA.

| <b>Field Rating</b>          | <b>Grade</b> | <b>Significance</b>      | <b>Mitigation</b>                            |
|------------------------------|--------------|--------------------------|--|
| National Significance (NS)   | Grade 1      | -                        | Conservation; national site nomination       |
| Provincial Significance (PS) | Grade 2      | -                        | Conservation; provincial site nomination     |
| Local Significance (LS)      | Grade 3A     | High significance        | Conservation; mitigation not advised         |
| Local Significance (LS)      | Grade 3B     | High significance        | Mitigation (part of site should be retained) |
| Generally Protected A (GP.A) | -            | High/medium significance | Mitigation before destruction                |
| Generally Protected B (GP.B) | -            | Medium significance      | Recording before destruction                 |
| Generally Protected C (GP.C) | -            | Low significance         | Destruction                                  |



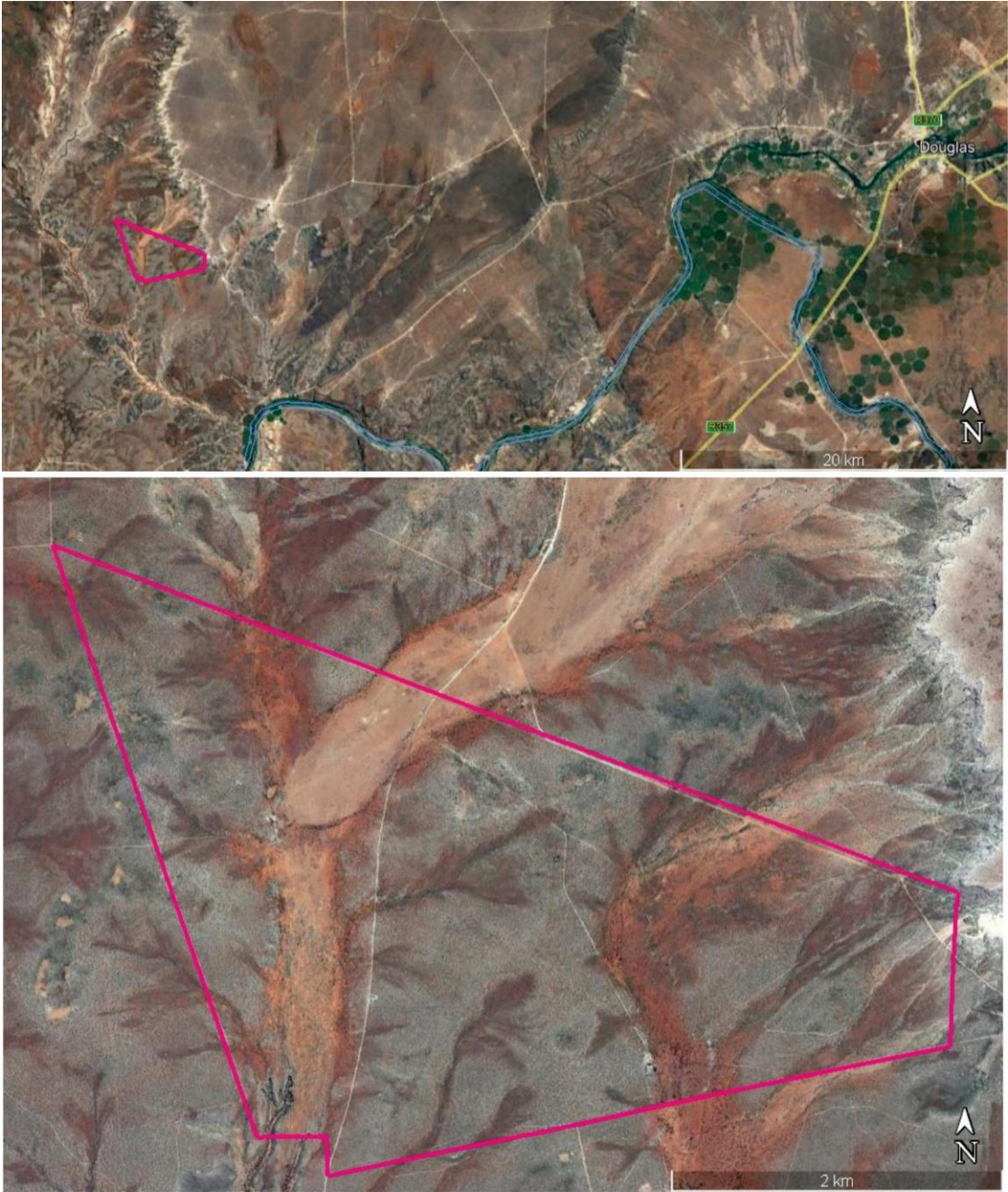


Figure 2. Aerial view of the study area.



Figure 3. General view of the terrain, looking west.

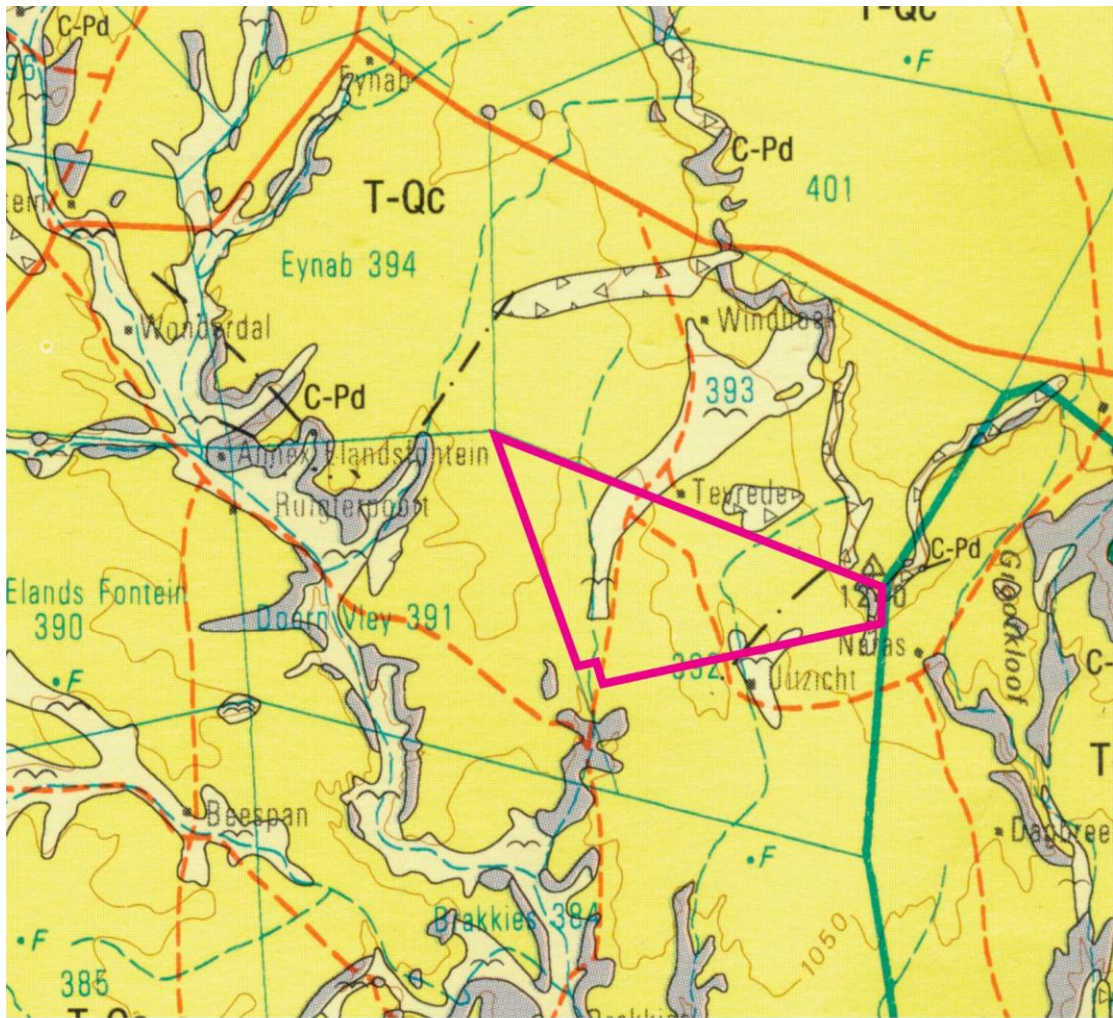
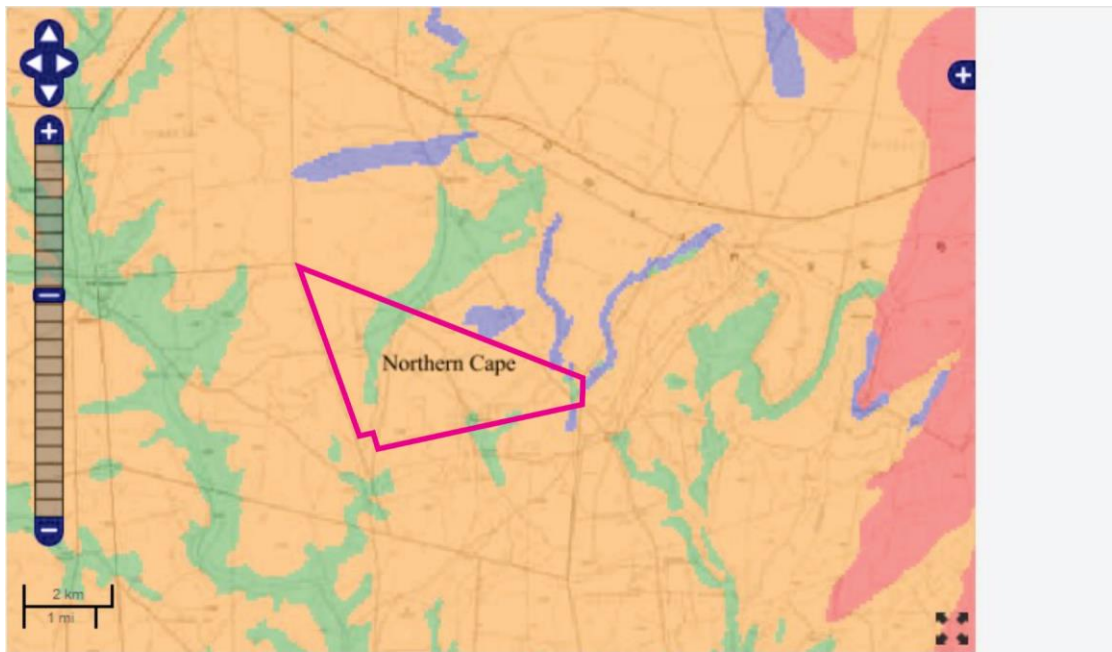


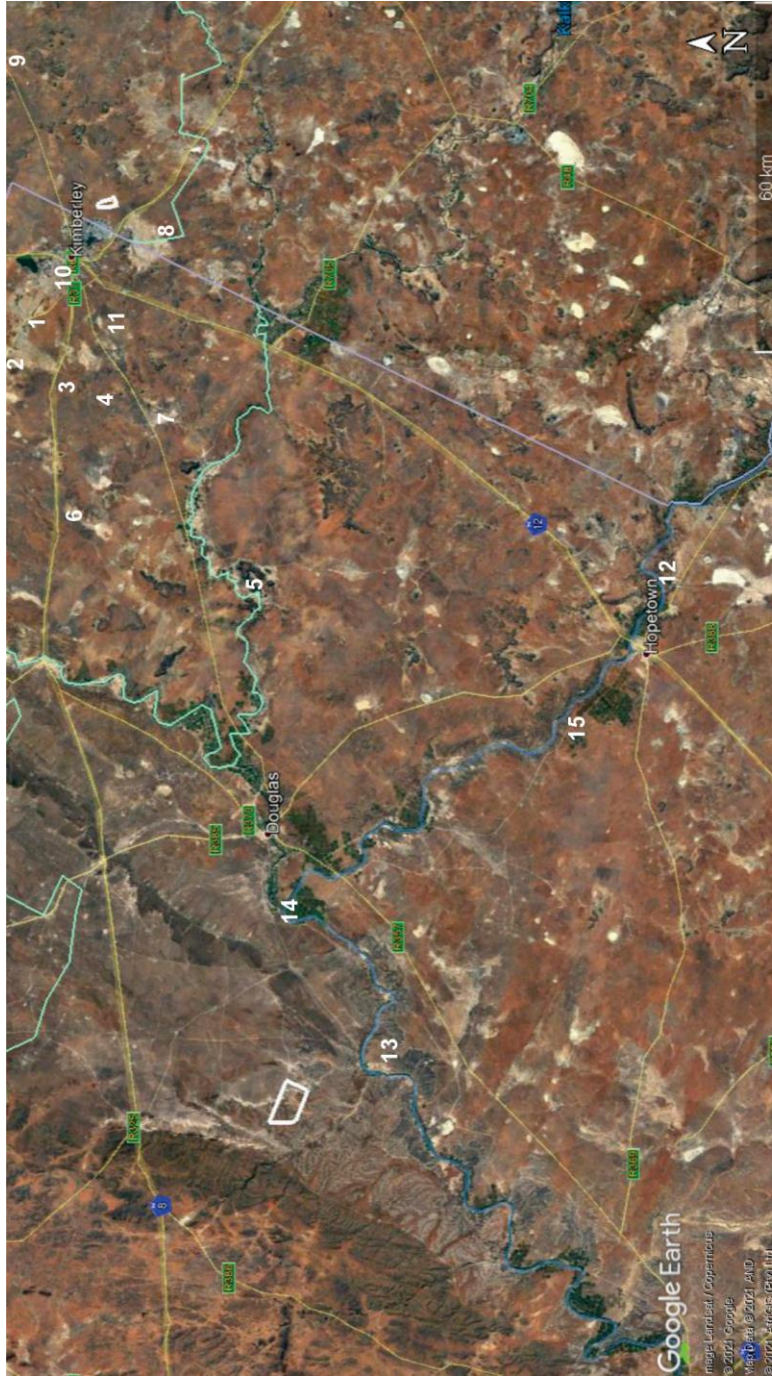
Figure 4. According to the 1:250 000 scale geological map 2922 Prieska, the farm is primarily covered by red brown aeolian sands (*Qs*) and alluvium along stream channels and Tertiary calcretes (*T-Qc*). Surface deposits are underlain by Dwyka Group tillites of the Mbizane Formation (*C-pd*); the latter largely exposed along geologically recent stream channels.



1 in 250 000 geological formation layers are courtesy of the Council for GeoScience  
 For more information, go to [How to Use the Palaeontological \(fossil\) Sensitivity Map](#)

| Colour        | Sensitivity        | Required Action   |
|---------------|--------------------|---|
| RED           | VERY HIGH          | field assessment and protocol for finds is required   |
| ORANGE/YELLOW | HIGH               | desktop study is required and based on the outcome of the desktop study, a field assessment is likely                               |
| GREEN         | MODERATE           | desktop study is required   |
| BLUE          | LOW                | no palaeontological studies are required however a protocol for finds is required   |
| GREY          | INSIGNIFICANT/ZERO | no palaeontological studies are required  |
| WHITE/CLEAR   | UNKNOWN            | these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map. |

Figure 5. SAHRIS palaeosensitivity map of the area.



1. Priel, Nootgedacht & Powers Site - ESA, MSA and LSA
2. Canteen Kopple - ESA
3. Rooidam - ESA
4. Biesiesput - MSA
5. Driekopseliland - Glacial straitlions, Rock engravings
6. Doorniaagte - ESA
7. Kareevloer - ESA, MSA
8. Alexanderfontein - 'palaeo-lake'
9. Liebensraum - ESA
10. Wildebeestkui - Rock engravings
11. Witpan - Rock engravings
12. Orange River Station, Blockhouse & Concentration Camp
13. Readsdrift - Rock engravings
14. Orange-Vaal confluence - Engravings on andesite
15. Slypsteen - Rock engravings

Figure 6. The Stone Age archaeological footprint is well-represented north of Hopetown and around Kimberley by Early and Middle Stone Age localities from lacustrine and alluvial contexts as well as rock engravings on andesite and dolerite outcrop.





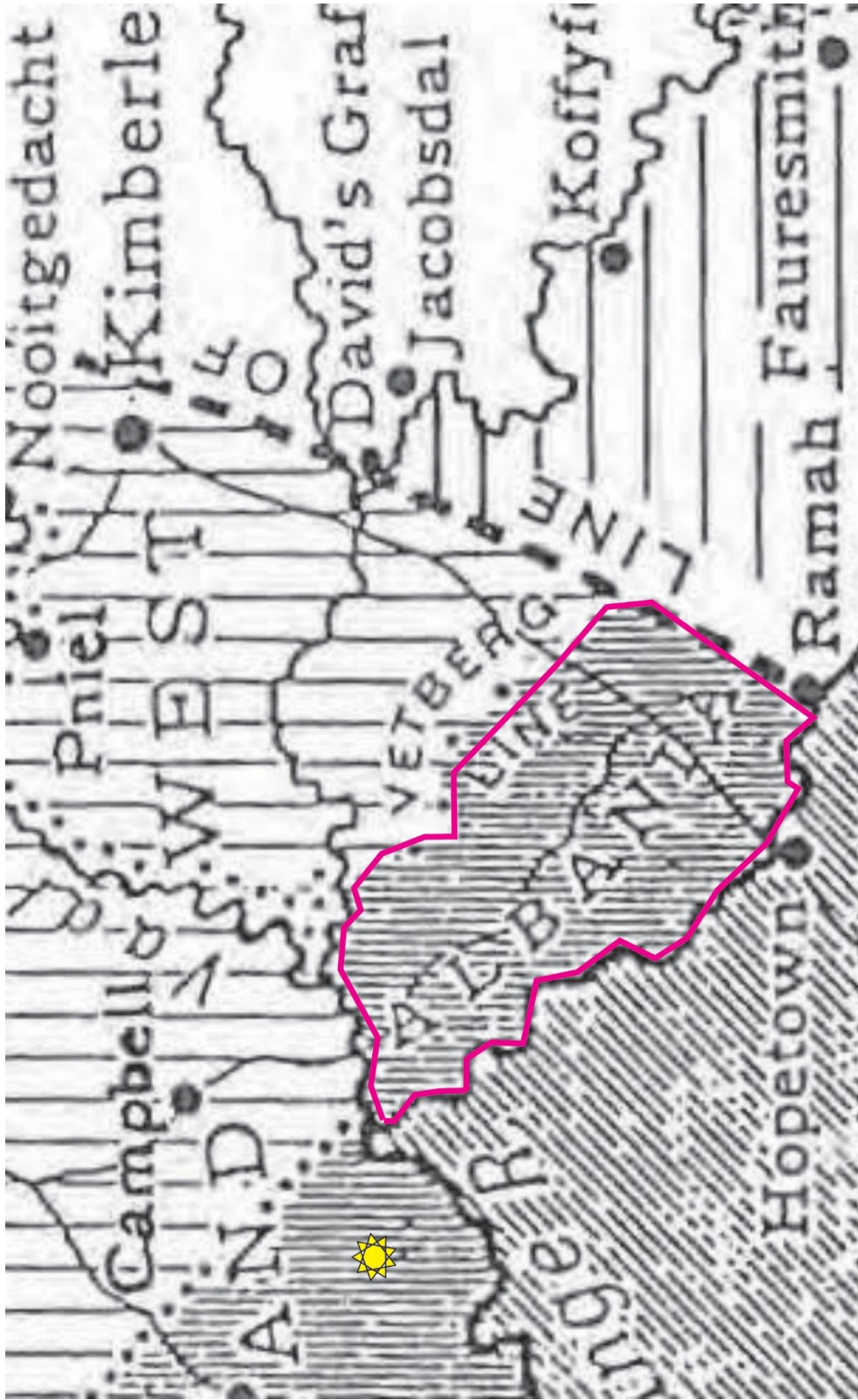


Figure 8. The historical Albania Settlement of Griqualand West occupied the area east of the Orange River between Douglas and Hopetown. It lasted from 1866 to 1878. Study area indicated by yellow star.



Figure 9. Variably sorted gravels in a sandy matrix represented by scree and lag deposits that also include isolated or low density surface scatters of mostly individual and weathered stone tool artifacts (left). Surface limestone/ calcrete exposed along stream channels (center) and Mbizane Formation tillites (right).  
Scale 1 = 10 cm.



Figure 10. Small, fenced-off farm cemetery