

# **Phase 1 Heritage Impact Assessment of the farm Rooidam 101 near Windsorton, Northern Cape Province.**



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## Executive Summary

A Phase 1 Heritage Impact Assessment was carried out on the farm Rooidam 101 near Windsorton in the Northern Cape Province. The assessment pertains to the application for prospecting rights in two different areas on the farm, designated **Area 1 and Area 2**. **Area 1** is underlain by Ventersdorp andesites that is largely capped by a dark red sandy overburden laced with a veneer of polymict gravels. One isolated LSA core was mapped during the pedestrian survey of the terrain. A foot survey of Area 1 revealed no evidence of Quaternary fossil remains or *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of settlement structures, graves, rock art or historical buildings older than 60 years within the Area 1 footprint. The site is assigned an overall site rating of Generally Protected A (GP.A). As far as the archaeological and palaeontological heritage is concerned, development in Area 1 may proceed with no further assessments required. It is also advised that the graves and structural remains of the Koranna mission station previously identified by Morris (2012) is fenced off and avoided. **Area 2** is underlain by a cobble grade conglomerate with granular to pebbly clasts made up of quartz, quartzite, agate, chert or banded ironstone and set within a matrix of dark red, fine to medium sand. The terrain has been severely degraded following decades of prospecting activities in the region. A large rectangular stone – walled structure is located on the riverbank while the remains of a circular stone-walled structure are situated higher up and about 650 m west of the river bank. A foot survey of Area 2 revealed no evidence of *in situ* fossil exposures or Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of graves, rock art or historical buildings older than 60 years within the Area 2 footprint. Area 2 is assigned an overall site rating of Generally Protected A (GP.A). As far as the archaeological and palaeontological heritage is concerned, development in Area 2 may proceed provided that the two stone – walled structures identified during the survey are protected by a 10 m-wide buffer zone.

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## **Introduction**

A Phase 1 Heritage Impact Assessment was carried out on the farm Rooidam 101 near Windsorton in the Northern Cape Province (**Fig. 1**). The assessment pertains to the application for prospecting rights in two different areas on the farm. The heritage impact assessments is a pre-requisite for any development which will change the character of a site exceeding 5 000 m<sup>2</sup> in extent, as prescribed by the National Heritage Resources Act (Act 25 of 1999). The task involved identification and mapping of possible heritage resources within the proposed project area, an assessment of their significance, related impact by the proposed development and recommendations for mitigation where relevant.

## **Methodology**

The palaeontological and archaeological significance of the affected area was evaluated through a desktop study and carried out on the basis of existing field data, database information and published literature. This was followed by a field assessment by means of a pedestrian survey. A Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a digital camera were used for recording purposes. Relevant information, aerial photographs and site records were consulted and integrated with data acquired during the on-site inspection. A site visit was carried out in March 2016.

## **Terms of Reference**

- Identify and map possible palaeontological and archaeological sites and occurrences using available resources.
- Determine and assess the potential impacts of the proposed development on potential heritage resources;
- Recommend mitigation measures to minimize potential impacts associated with the proposed development.

## **Field Rating**

Site significance classification standards, as prescribed by SAHRA, were used for the purpose of this report (**Table 1**).

## Details of Area Surveyed

### Locality Data

1 : 50 000 scale topographic maps: 2824 BA Majeng and 2824 BC Windsorton.

1:250 000 scale geological map: 2824 Kimberley

Rooidam 101 is located on the right bank of the Vaal River and about 10 km north of Windsorton. The landscape at Rooidam is dominated by broad, low-angle plains, bounded by the Vaal river valley to the east and isolated rocky outcrops to the west. The proposed development footprint at Rooidam is divided into two areas (**Fig. 2**). Area 1 borders a rocky outcrop along the south-western boundary of the farm while Area 2 is located next to the right bank of the Vaal River at the south-eastern boundary of the farm.

### General Site Coordinates:

Area 1: 28°13'5.64"S 24°39'21.90"E

Area 2: 28°15'13.38"S 24°42'32.02"E

### Geology

The Vaal River in the vicinity of Windsorton is flanked by a wide, Post-African pediplain that transects rocks of the Ventersdorp Supergroup (*Ra*), Dwyka tillites and shales (*Ppt*) as well as dolerite inselbergs (koppies) of the Karoo Supergroup (*Jd*). According to the geological map of the area, bedrock at Rooidam is made up of amygdaloidal and porphyritic andesites (*Ra*) (1:250 000 scale geological map 2824 Kimberley) (**Fig. 3**).

The Vaal River pediplain is the end result of Cenozoic erosional cycles (denudation) that exposed a series of ancient river terraces and alluvial fills (collectively known as the “Older” and “Younger Gravels”), identified at the 66m, 33m and 23m levels (Songhe and Visser 1937; Partridge and Brink 1967; Helgren 1979). The gravels are spread across a pre-Karoo platform of Ventersdorp lava pockmarked with thin remnants of Karoo sediments occasionally preserved in depressions.

The “Older Gravels” are best developed between Windsorton and Barkley West and were originally divided into the overlying “Red Older Gravels” and the calcretized

“Basal Older Gravels” – the former being a weathered and colluvially reworked residual of the latter (Cooke 1947). Partridge and Brink (1967) were the first to explicitly identify terraces within the “Older Gravels” and subsequently re-labelled the “Red Older Gravels” as “Derived Gravels” and the “Basal Older Gravels” as “Primary Alluvial Gravels”. Butzer *et al.* (1973) identified several fluvial platforms within the “Older Gravels” near Windsorton, including the Protch Koppie Platform (equivalent to Partridge and Brink’s 33m terrace), the Holpan Platform (equivalent to Partridge and Brink’s 66m terrace) and the Wedburg Platform (equivalent to Partridge and Brink’s 23m terrace).

The Younger Gravels were laid down after the river valley was deepened by 20 to 50 m by stream incision which resulted in the exhumation of the current Pre-Karoo channel-way between Windsorton and Sydney on Vaal (Helgren 1977; 1978; 1979). The Younger Gravels sequence at Windsorton is made up of a complex valley fill which is overlain by the Riverton Formation is primarily composed of fine-grained alluvium that are represented by several terraces along the modern floodplain. This formation spans the later mid-Pleistocene, late Pleistocene and the Holocene (Helgren 1979).

## **Background**

### **Palaeontology**

The Vaal River gravels yielded many vertebrate fossils when historical digging operations involved the manual removal of overburden and excavation by hand of the underlying gravel. No fossils have been explicitly reported from the Older Gravels, but more ancient forms of uncertain provenance have been retrieved together with the extensive fossil fauna of the Younger Gravels. These include vertebrate fauna such as the extinct proboscidian, *Mammuthus subplanifrons* that are estimated to be ranging in age from 4.5 to 3.5 million years old. Other fossil remains include an extinct suid (*Notochoerus capensis*) and more proboscidian taxa, notably *Elephas iolensis* (Cooke 1949; Cooke and Maglio 1978). Most of the fossils from the Younger Gravels have come from poorly exposed gravels in the modern river channel and include suids, equids, giraffids, proboscideans, hippos and a large variety of bovids (Cooke 1949). Faunal cross-correlation studies suggest a mid-Pleistocene upper limit for the age of the

Younger Gravels fauna (Cooke and Maglio 1978). According to Helgren (1979), the river has entrenched itself deeply in Ventersdorp lava north of Windsorton and the Younger Gravels are hardly ever found.

## **Archaeology**

The lower Vaal River basin is generally rich in archaeological heritage, especially in terms of Stone Age human occupation on the landscape. In terms of the fluviially deposited river gravels, archaeological finds are exclusively derived from the Younger Gravels and include an abundance of Acheulian (Early Stone Age) handaxes, cleavers and core-axes, primarily made from quartzite. In addition, the gravel deposits are largely mantled by Hutton Sands, of which the lower levels have shown evidence of high densities of Fauresmith blades, which is regarded as an important transitional stone tool industry at the beginning of the Middle Stone Age. The incidence of Later Stone Age artifacts as open-site scatters is also common on the modern landscape. There are plentiful rock art sites with petroglyphs in the Lower Vaal River Basin including the area around Warrenton. Rock engravings have been recorded at Four Streams, Nazareth and Schoolplaats that include human figures, animals, therianthropes and geometric motifs.

## **Field Assessment**

### **Area 1**

The site is underlain by Ventersdorp andesites that are largely capped by a dark red sandy overburden laced with a veneer of polymict gravels (**Fig. 4 & 5**). One isolated LSA core was mapped during the pedestrian survey of the terrain (**Fig. 6, Table 2**). The graves and structural remains of a Koranna mission station are located about 700 m west-northwest of the study area (**Fig. 7 No. 1; Fig. 8 & 9**). Previously reported by Morris (2012), the Morija Mission Station was established in 1892 by Heinrich Christian Kallenberg and abandoned after his death in 1901.

### **Area 2**

The site is underlain by a cobble grade conglomerate with granular to pebbly clasts made up of quartz, quartzite, agate, chert or banded ironstone and set within a matrix of dark red, fine to medium sand (**Fig. 10**). Geologically recent alluvium and sandy overbank

deposits are exposed along the modern river bank (**Fig. 11**). The terrain has been severely degraded following decades of prospecting activities in the region (**Fig. 12**). A large rectangular stone – walled structure is located on the riverbank (**Fig. 7 No. 2; Fig 13**), while the remains of a circular stone-walled structure is situated higher up and about 650 m west of the river bank (**Fig. 7 No 3; Fig. 14**).

### **Impact Statement and Recommendations**

The alluvial diamond deposits along the Vaal River, between Warrenton and Barkly West, have been worked for more than one century by thousands of private diggers. The diamonds are recovered from two sedimentary units of Cenozoic age, collectively known as the “Older” and “Younger Gravels”, which in turn rest on a basement of Ventersdorp Supergroup andesites and Karoo Sequence sediments that have been intruded by Cretaceous kimberlites.

A foot survey of Area 1 revealed no evidence of Quaternary fossil remains or *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of settlement structures, graves, rock art or historical buildings older than 60 years within the Area 1 footprint. The site context of the stone tool surface scatter in Area 1 is clearly derived / removed / disturbed etc., but viewed within the context of cultural landscape, the weathered / *ex situ* stone tool scatters can be regarded as clear indication of Stone Age human presence on the landscape, and as such, is assigned an overall site rating of Generally Protected A (GP.A). As far as the archaeological and palaeontological heritage is concerned, development in Area 1 may proceed with no further assessments required. If, in the unlikely event that localized fossil material is discovered within the sandy overburden in Area 1, it is recommended that a professional palaeontologist be called to assess the importance and rescue the fossils if necessary. It is also advised that the graves and structural remains of the Koranna mission station previously identified by Morris (2012) is fenced off and avoided.

A foot survey of Area 2 revealed extensive degradation of the terrain as a result of past excavation activities into “Older Gravel” deposits with no evidence of *in situ* fossil exposures or Stone Age archaeological material, capped or distributed as surface scatters



on the landscape. There are also no indications of graves, rock art or historical buildings older than 60 years within the Area 2 footprint. Area 2 is assigned an overall site rating of Generally Protected A (GP.A). As far as the archaeological and palaeontological heritage is concerned, development in Area 2 may proceed provided that the two stone – walled structures identified during the survey are protected by a 10 m-wide buffer zone.

## Tables and 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

**Table 2.** Summary of finds recorded during the field survey

Feature	Site	Coordinates
Stone Tool Surface Scatter	Area 1	S28 13 11.0 E24 39 26.6
Mission Station	700 m west- northwest of Area 1  (Fig. )	S28 12 47.2 E24 40 16.4
Rectangular Stone- walled structure	Area 2 (Fig.	S28 15 16.2 E24 42 45.7
Circular Stone-walled Structure	Area 2 (Fig.	S28 14 59.9 E24 42 25.4

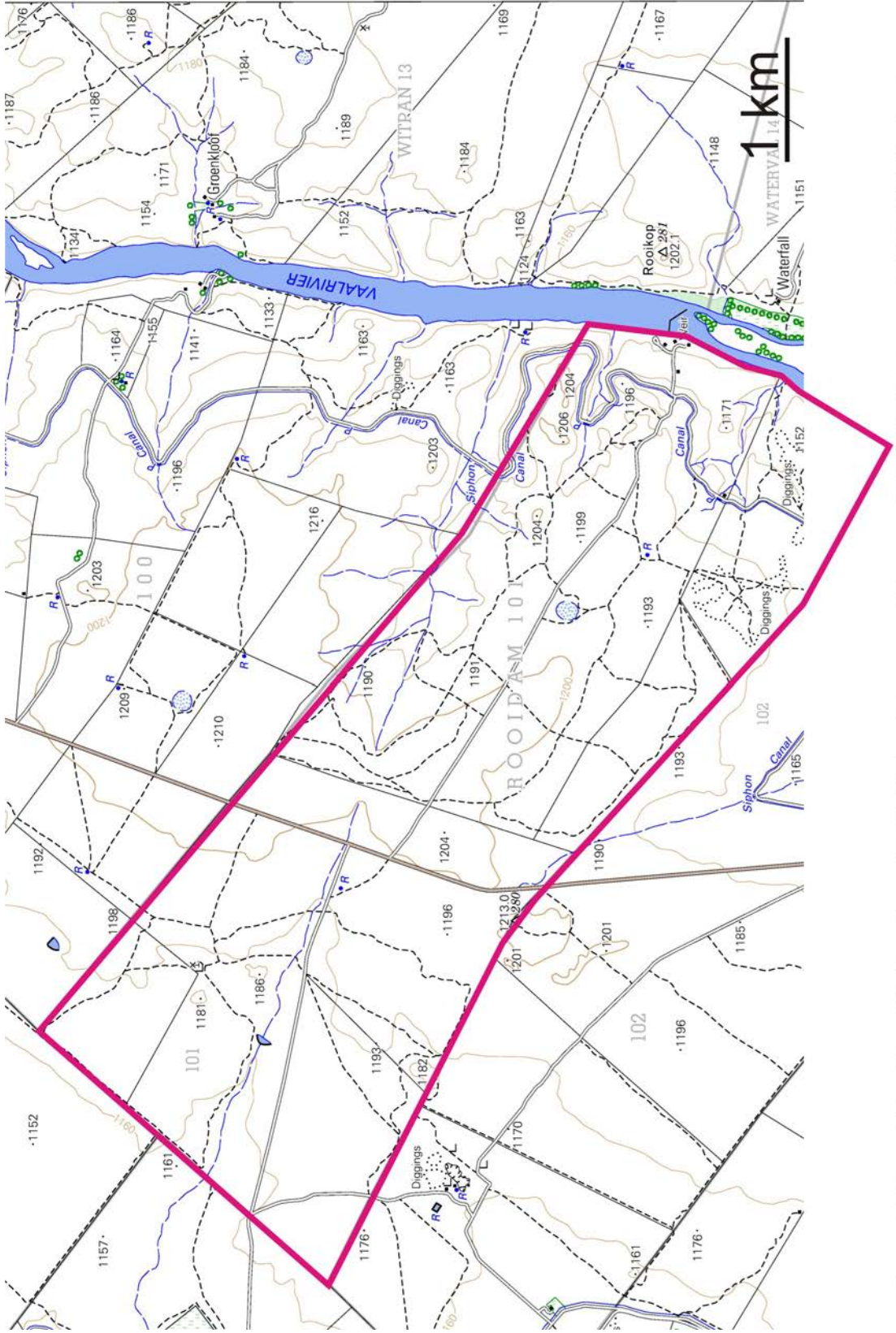


Figure 1. Map of Rooidam 101 (portion of 1:50 000 scale topographic maps 2824 BA Majeng and 2824 BC Windsorton



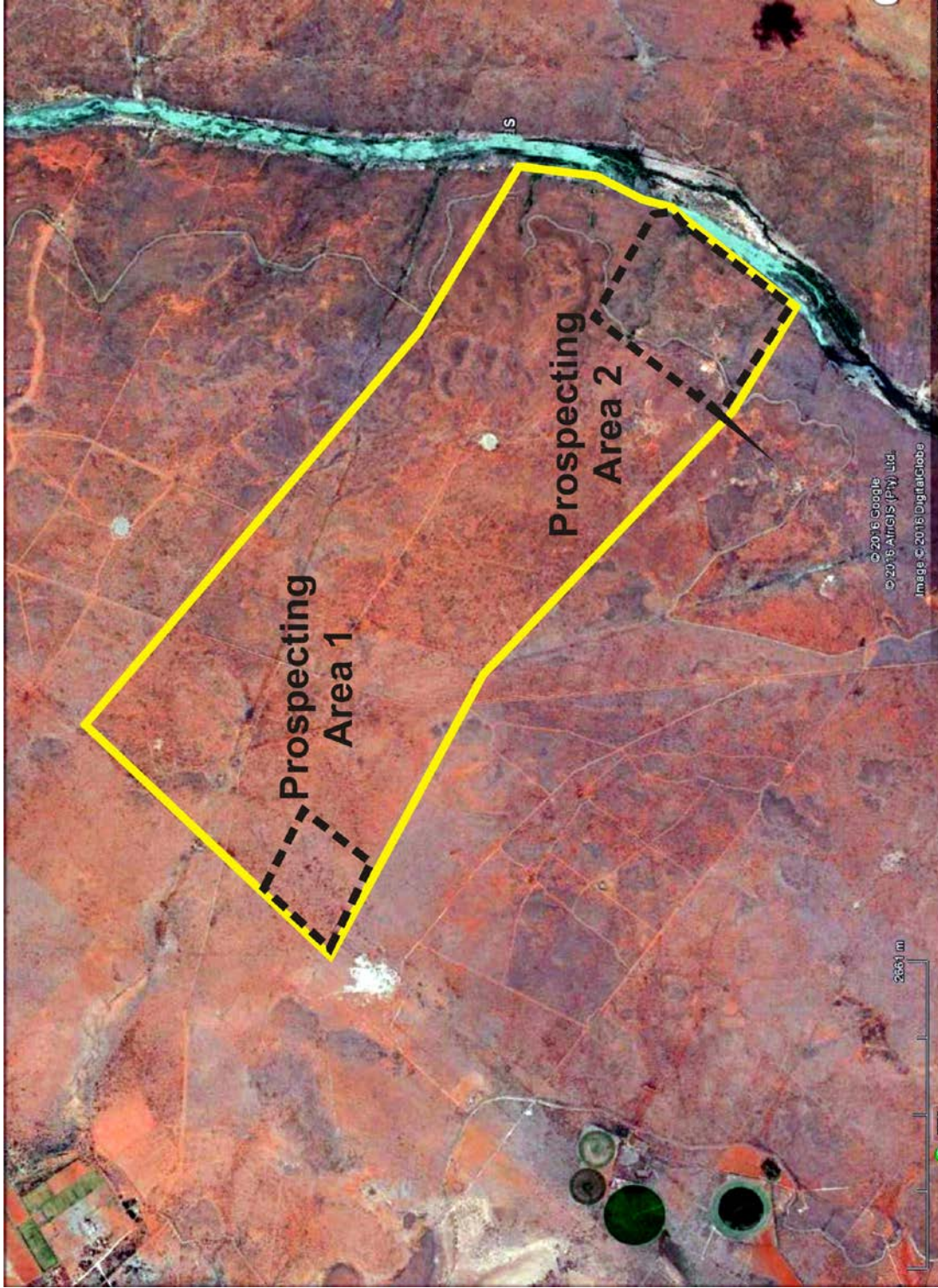


Figure 2. Aerial view of the study area and the 2 proposed development areas.

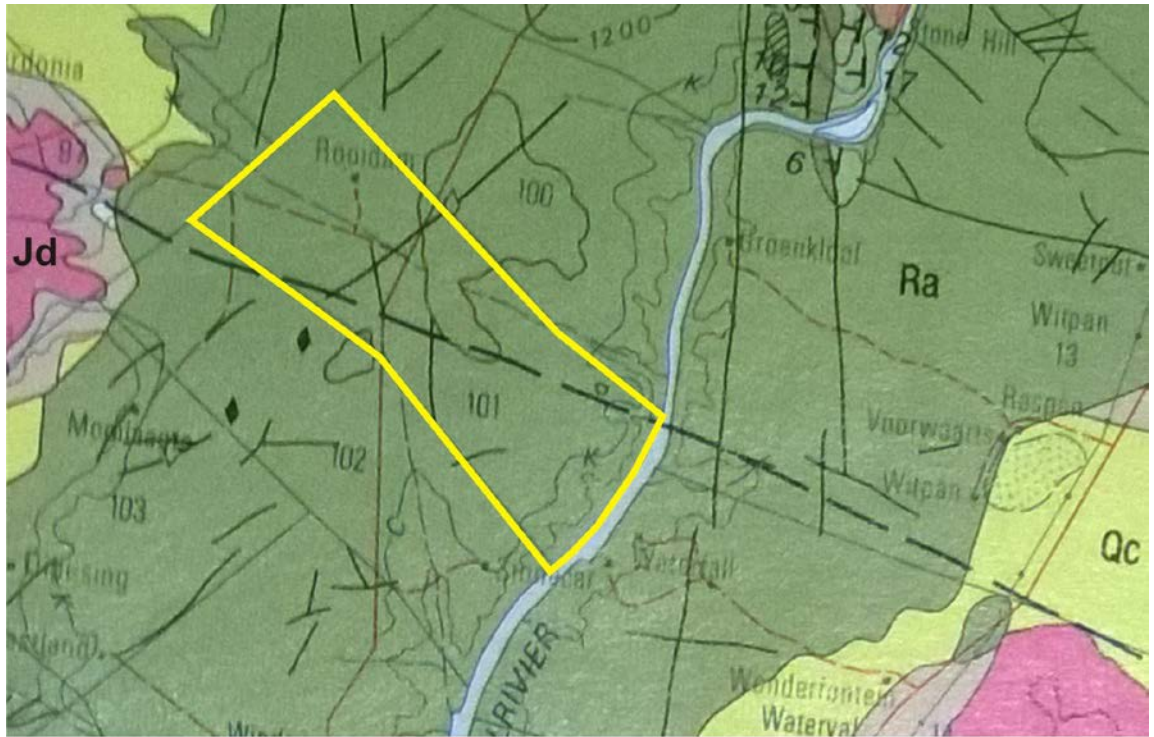


Figure 3. Portion of the 1:250 000 scale geological map 2826 Kimberley providing an indication of the underlying geology of the area.





Figure 4. Area 1 is largely capped by a dark red sandy overburden.





Figure 5. Ventersdorp andesites capped by a dark red sandy overburden laced with a veneer of polymict gravels in Area 1.



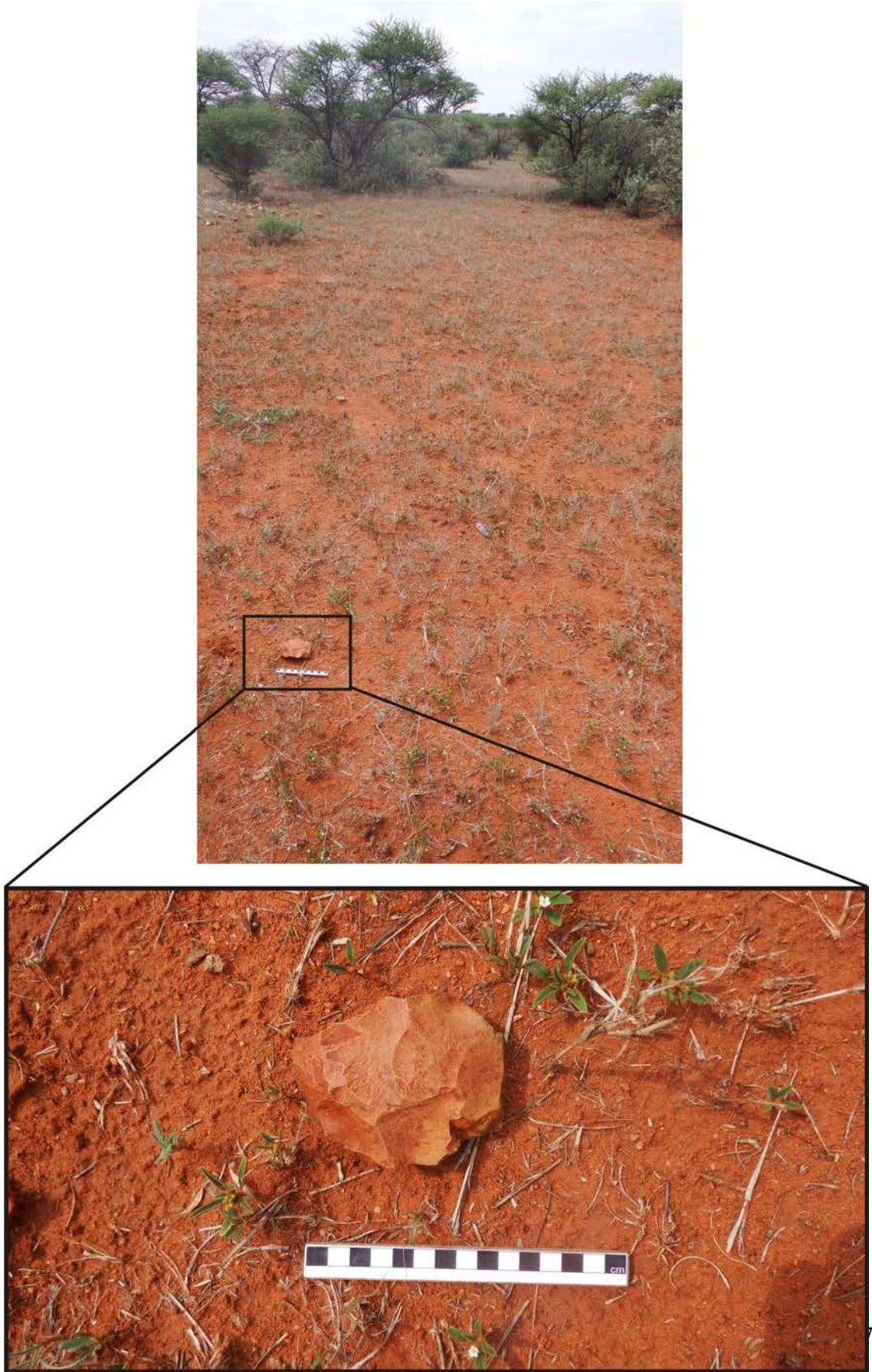


Figure 6. An isolated and uncapped LSA core in Area 1.



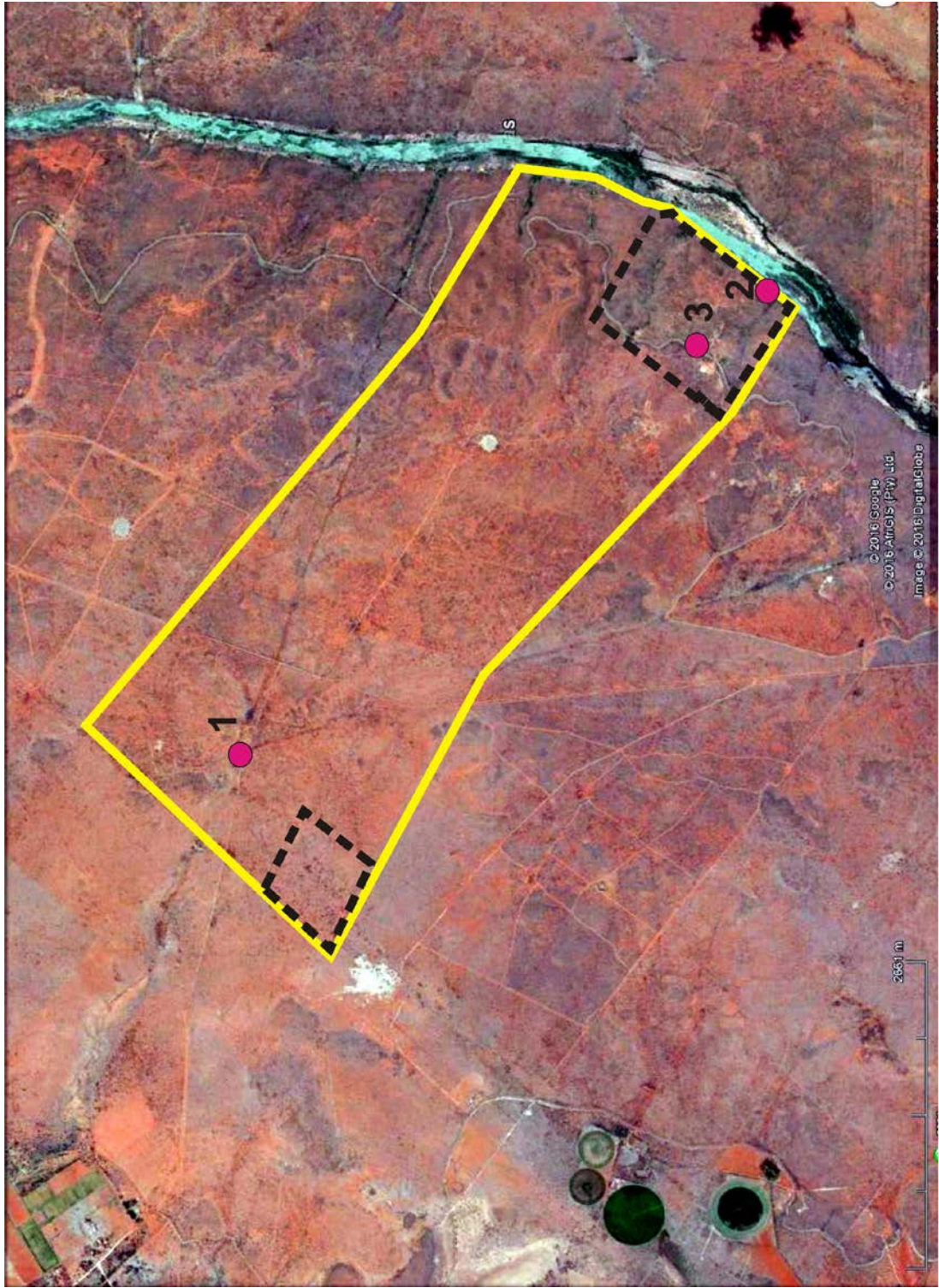


Figure 7. Map of features recorded during the field assessment.





Figure 8. Graves and structural remains of the Morija Mission Station.





Figure 9. Graves mounds at the Morija Mission Station





Figure 10. Heavily degraded gravel deposits in Area 2 made up of cobble grade conglomerate with granular to pebbly clasts.





Figure 11. Geologically recent alluvium and sandy overbank deposits exposed along the banks of the Vaal River.





Figure 12. Area 2 has been severely degraded following decades of prospecting activities in the region.





Figure 13. Rectangular stone – walled structure located on the riverbank in Area 2.





Figure 14. The remains of a circular stone-walled structure located in Area 2.