

# **Phase 1 Heritage Impact Assessment for proposed expansion of the Burgersdorp Correctional Facility, Burgersdorp, Eastern Cape Province.**

Report prepared by Palaeo Field Services, PO Box 38806 Langenhovenpark 9330.

05 / 09 / 2019



-----

## Summary

A Phase 1 Heritage Impact Assessment was carried out for the proposed expansion of the Burgersdorp Correctional Facility, located outside Burgersdorp in the Eastern Cape Province. The chances of palaeontological impact resulting from the proposed development are considered to be improbable because of the nature of the underlying geology. As far as the palaeontological heritage is concerned, the proposed development affecting Area 1 and 2, as well as the river crossing area may proceed with no further palaeontological assessments required. If, in the unlikely event that localized fossil material is discovered within the alluvial overburden near the spruit during the construction phase of the project, it is recommended that a professional palaeontologist be called in to record and rescue the fossils where necessary. Both study areas are located within a region that has previously yielded ample archaeological as well as historical evidence of the early movement and settlement of Khoi herders and San hunter-gatherers along the Orange River during the last 2000 years. However, the proposed development footprint is located on fairly degraded terrain resulting from previous and ongoing prison operations. Areas 1 and 2, as well as the river crossing area, are not considered archaeologically vulnerable, and there are no major archaeological grounds to suspend the proposed development, provided that all excavation activities are confined to within the confines of the development footprints. All the study areas considered to be of low archaeological significance and is assigned a site rating of Generally Protected C.

## **Contents**

Summary .....	2
Introduction.....	3
Site Information .....	3
Background.....	5
Field Assessment .....	6
Impact Statement and Recommendations.....	6
References.....	7
Tables and Figures .....	9

## **Introduction**

A Phase 1 Heritage Impact Assessment was carried out for the proposed expansion of the Burgersdorp Correctional Facility, located southeast of the R58 provincial road entering the town from the direction of Venterstad (**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.

## **Site Information**

1 : 50 000 scale topographic map

1 : 250 000 scale geological map

The Burgersdorp Correctional Facility is located southeast of the R58 provincial road entering the town from the direction of Venterstad (**Fig. 1**). The project calls for:

- the proposed expansion of the existing prison infrastructure (Area 1, total area covering about 15 ha) (**Fig. 2 – 5**).
- The proposed new site demarcated for agricultural purposes (vegetable gardens, Area 2, total area covering about 8 ha) (**Fig. 2 & 6**)
- Low-level river crossing over the Buitendagspruit River to allow prison staff to access the new vegetable gardens in Area 2.

#### Site centroid coordinates

##### Existing Prison Facility

Area 1: 30°59'39.69"S 26°18'33.29"E

Area 2: 30°59'41.40"S 26°18'11.33"E

Low-level river crossing over the Buitendagspruit River: 30°59'42.23"S 26°18'20.62"E

The geology of the region has been described by Bruce and Kruger (1983) and is made up of Tarkastad Subgroup, Burgersdorp Formation (Beaufort Group, Karoo Supergroup) sandstones and mudstones (green areas below) and intrusive dolerites (Karoo Dolerite Suite, pink areas below). Superficial deposits consist of Quaternary aged valley fill, alluvial sediments and residual soils (site marked by white star, on portion of 1: 250 000 scale geological map 3026 Aliwal North, below).



#### **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, published literature and maps. This was followed up with a field assessment by

means of a pedestrian survey and investigation of all exposed sections 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**).

## **Background**

### **Palaeontology**

The sedimentary bedrock in the region is assigned to the *Cynognathus* Assemblage Zone (AZ) (Kitching 1995; **Fig. 7**). This biozone is characterized by the presence of the marker taxa *Cynognathus*, *Diademodon* and *Kannemeyeria* and the absence of *Lystrosaurus*. Plant fossils include *Dadoxylon* and *Dicroidium*. Several fossil localities have been recorded around Burgersdorp and between Aliwal North and Rouxville.

### **Archaeology**

The Burgersdorp region bears evidence of Stone Age inhabitants and their descendants (San) as well as of white settlers who occupied the foothills of the Stormberg range during the first half of the 19<sup>th</sup> century. The archaeological footprint in the region is primarily represented by Stone Age localities and rock art sites, early indigenous farming communities as well as historical structures related to early trek-farmers (Goodwin & Van Riet Low 1929; Lye 1967; Sampson 1968, 1972; Maggs 1976). Examples of stone tool “factory” sites are found at Spitzkop near Smithfield, the Smithfield Townlands (the original Smithfield material used by Goodwin and Van Riet Low to describe the Smithfield Stone Tool Industry in 1929 was a surface collection retrieved from the banks of a stream running through the town, locality unknown), Ventershoek near Wepener and Mooifontein near Zastron. Extensive surveying during the late 1960’s revealed that the Gariep Dam flood basin, including the Orange-Caledon interfluvium has a very rich Stone Age archaeological footprint with multiple open and buried sites (Sampson 1968, 1972) (**Fig. 8**). Stone tool open-sites have been recorded at Goedemoed, Weenkop and Wesselsdal near Rouxville and at Middelplaats, Melkspruit, Grassridge Farm in the Aliwal North district. Rock art localities recorded in the region include the Burgersdorp Townlands (Klipfontein Farm), Modderfontein and Waterval farms (**Fig. 9**). European trek-farmers crossed the Orange River from the Cape as early as 1819 and settled throughout the region during the 1820’s and 1830’s (Schoeman

2003). Major historical skirmishes took place in the district, including the Battle of Stormberg, in which the Boers defeated the British forces on the 10<sup>th</sup> of December 1899 to take possession of Burgersdorp.

## **Field Assessment**

### **Area 1**

The site is primarily located on palaeontologically insignificant dolerite intrusions that are capped by well-developed residual soils and alluvium along its western boundary where it borders a small spruit (Buitendagspruit River). There is no aboveground evidence of intact Stone Age archaeological assemblages or sites, prehistoric structures, graves or historically significant structures older than 60 years located at the site. The northern and eastern part of the proposed footprint largely consists of degraded terrain as a result of previous and ongoing human activities related to the construction and operation of the existing correctional facility.

### **Area 2**

The site is primarily located on palaeontologically insignificant dolerite intrusions that are capped by well-developed residual soils and also some alluvial deposits along its eastern boundary where the latter flanks a small spruit (Buitendagspruit River) (**Fig. 10 & 11**). There is no aboveground evidence of intact Stone Age archaeological assemblages or sites, prehistoric structures, graves or historically significant structures older than 60 years located at the site. The footprint largely consists of degraded terrain as a result of previous and ongoing human activities related to the operation of the existing correctional facility (**Fig. 12 & 13**).

### **Low-level river crossing over the Buitendagspruit River**

The crossing area at the Buitendagspruit River traverses culturally and palaeontologically sterile alluvial overbank deposits that mantles a small exposure of Burgersdorp Formation sandstone (**Fig. 14 & 15**).

## **Impact Statement and Recommendations**

The chances of palaeontological impact resulting from the proposed development are considered to be improbable because of the nature of the underlying geology in Areas 1 and 2 and the well-developed alluvial overbank deposits capping the crossing area at the Buitendagspruit River. As far as the palaeontological heritage is concerned, the proposed

development affecting Area 1 and 2, as well as the river crossing area may proceed with no further palaeontological assessments required. If, in the unlikely event that localized fossil material is discovered within the alluvial overburden near the spruit during the construction phase of the project, it is recommended that a professional palaeontologist be called in to record and rescue the fossils where necessary. Both study areas are located within a region that has previously yielded ample archaeological as well as historical evidence of the early movement and settlement of Khoi herders and San hunter-gatherers along the Orange River during the last 2000 years. However, the proposed development footprint is located on fairly degraded terrain resulting from previous and ongoing prison operations.

Areas 1 and 2, as well as the river crossing area, are not considered archaeologically vulnerable, and there are no major archaeological grounds to suspend the proposed development, provided that all excavation activities are confined to within the confines of the development footprints. Both study areas considered to be of low archaeological significance and is assigned a site rating of Generally Protected C (**Table 1**).

## References

Bruce, R.W. and Kruger, G.P. 1983. Die geologie van die gebied Aliwal-Noord. *Geologiese Opname*, 9 pp.

Lye, W.F. 1967. The Difaqane – the Mfecane in the Southern Sotho area, 1822 – 1824. *Journal of African History* 8 (1): 107-131.

Goodwin H.J. & Van Riet Lowe, C. 1929. The Stone Age cultures of South Africa. *Annals of the South African Museum* 27: 1 – 289.

Johnson, M.R., *et al.* 2006. Sedimentary rocks of the Karoo Supergroup:461-499. In Johnson, M.R., Anhaeusser, C.R. and Thomas, R.J. eds (2006) *The geology of South Africa*. Geological Society of South African and Council for Geoscience, Pretoria.

Kitching, J.W. 1977. Distribution of Karoo vertebrate fauna with special reference to certain genera and the bearing of this distribution on the zoning of the Beaufort Beds. *Memoirs of the BPI* 1: 131pp.

Kitching, J.W. 1995. Biostratigraphy of the *Cynognathus* Assemblage Zone IN B.S. Rubidge (ed.) *Biostratigraphy of the Beaufort Group*. *Biostrat. Ser. S.Afr. Comm. Strat.* 1, 40 - 45.

Maggs T. M. O’C 1976. *Iron Age Communities of the Southern Highveld*. Occasional Publications of the Natal Museum No. 2. Natal Museum, Pietermaritzburg.

Rubidge, B. S. 1995. (ed.) *Biostratigraphy of the Beaufort Group*. Biostrat. Ser. S.Afr. Comm. Strat. 1: 1 – 45.

Sampson, C.G. 1968. The Middle Stone Age of the Orange River Scheme Area. National Museum, Bloemfontein. Memoir, no. 4.

Sampson 1972. The Stone Age Industries of the Orange River Scheme and South Africa. National Museum, Bloemfontein. Memoir, no. 6.


Schoeman, K. 2003. Early white travelers in the Transgariep 1819 - 1840. Protea Book House. Pretoria.

SAHRA, 2005. Minimum Standards for the Archaeological and the Palaeontological Components of Impact Assessment Reports.

Van Riet Lowe, C. 1941. *Prehistoric Art in South Africa*. Archaeological Series No. V. Bureau of Archaeology, Dept. of the Interior. Pretoria.

#### 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 and have no conflicting interests in the undertaking of the activity.



05 / 09 / 2019

#### Specialist Info

Lloyd Rossouw matriculated at Robertson High School in the Western Cape and obtained his Honours in Archaeology at the University of Stellenbosch where he gained wide-ranging fieldwork experience by participating in Historical and Stone Age archaeological excavations (Stellenbosch & Franschhoek built environment, farmsteads, Klasies River Mouth) as well as rock art surveys (Cederberg Mountains). He received training in mammalian osteology and Quaternary palaeontology at the Bernard Price Institute of Palaeontology (Wits), as well as instruction in human anatomy at Duke University in Durham, North Carolina, USA, and participated in multiple field surveys and excavations in the south-western Cape (Cango Valley, Hoedjiespunt, Zwartklip, Basaansklip, Langebaanweg), the central interior (northern Karoo, central Makgadikgadi, Orange, Vaal, Modder, Vet and Sand River basins), Laetoli, Tanzania, as well as at the Florisian and Cornelian Land Mammal Type sites at Florisbad and Cornelia-Uitzoek in the Free State. He gained his PhD-degree at the University of the Free State, specializing in plant microfossil research and palaeoenvironmental reconstruction of Stone Age environments in Southern Africa. He is a member of the Association for Southern African Professional Archaeologists (ASAPA) and the Palaeontological Society of Southern Africa (PSSA).



## 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

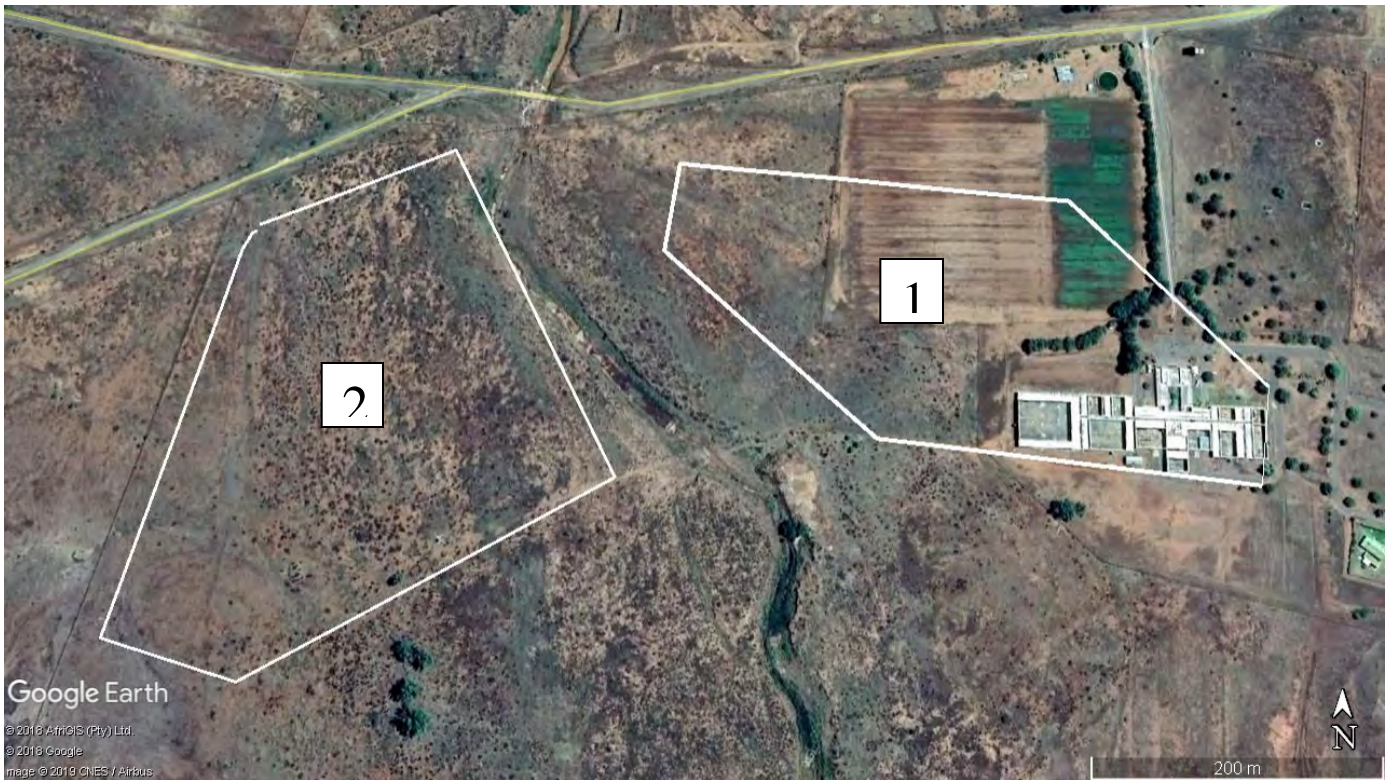
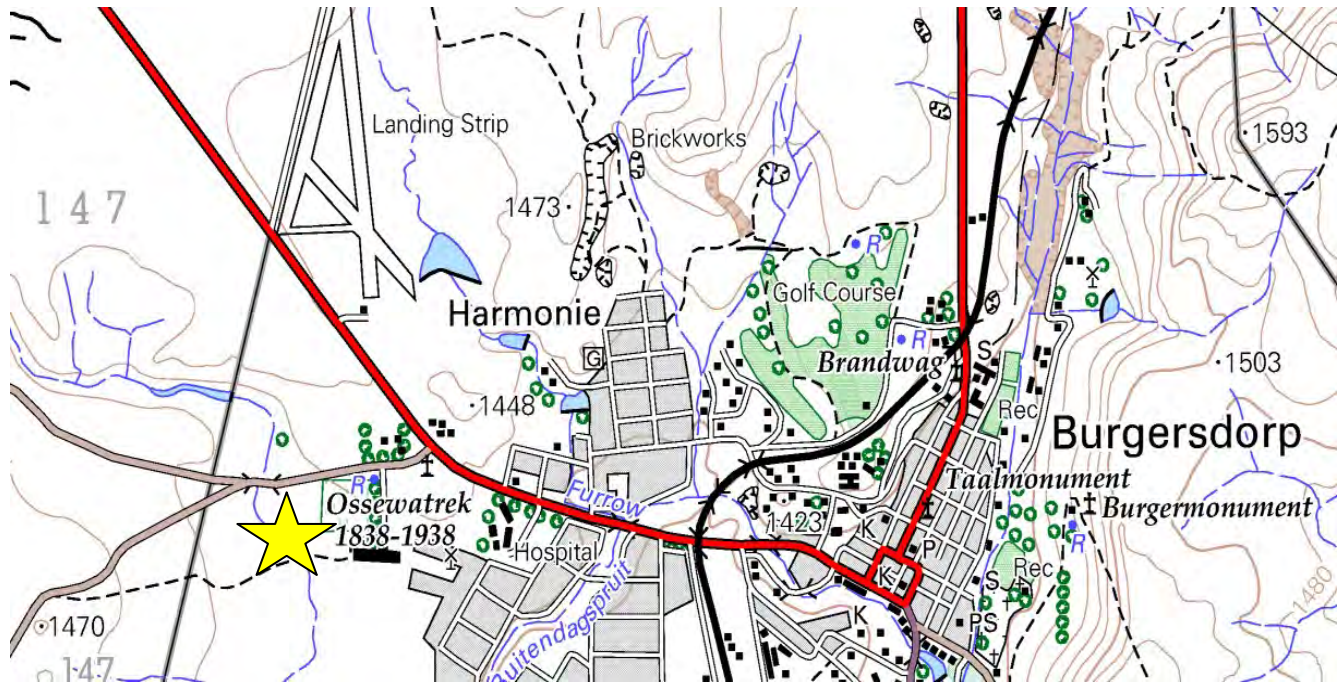


Figure 1. Map of the proposed new development (yellow star) indicated on portion of 1:50 000 scale topographic 3026CD Burgersdorp (above) and aerial photograph & layout of study Areas 1 and 2 (below).





Figure 2. General view of existing prison facility located in Area 1, looking east (top), southeast (center) and south (bottom).



Figure 3. General view of the agricultural area situated within Area 1, looking north. This gardens will move to Area 2 to make way for infrastructure development..





Figure 4. General view of Area 1 looking east towards prison buildings (above) and west (below).



Figure 5. General view of Area 1, looking south.





Figure 6. General view of Area 2, looking north.



Figure 7. Map of Karoo vertebrate localities previously recorded in the region.



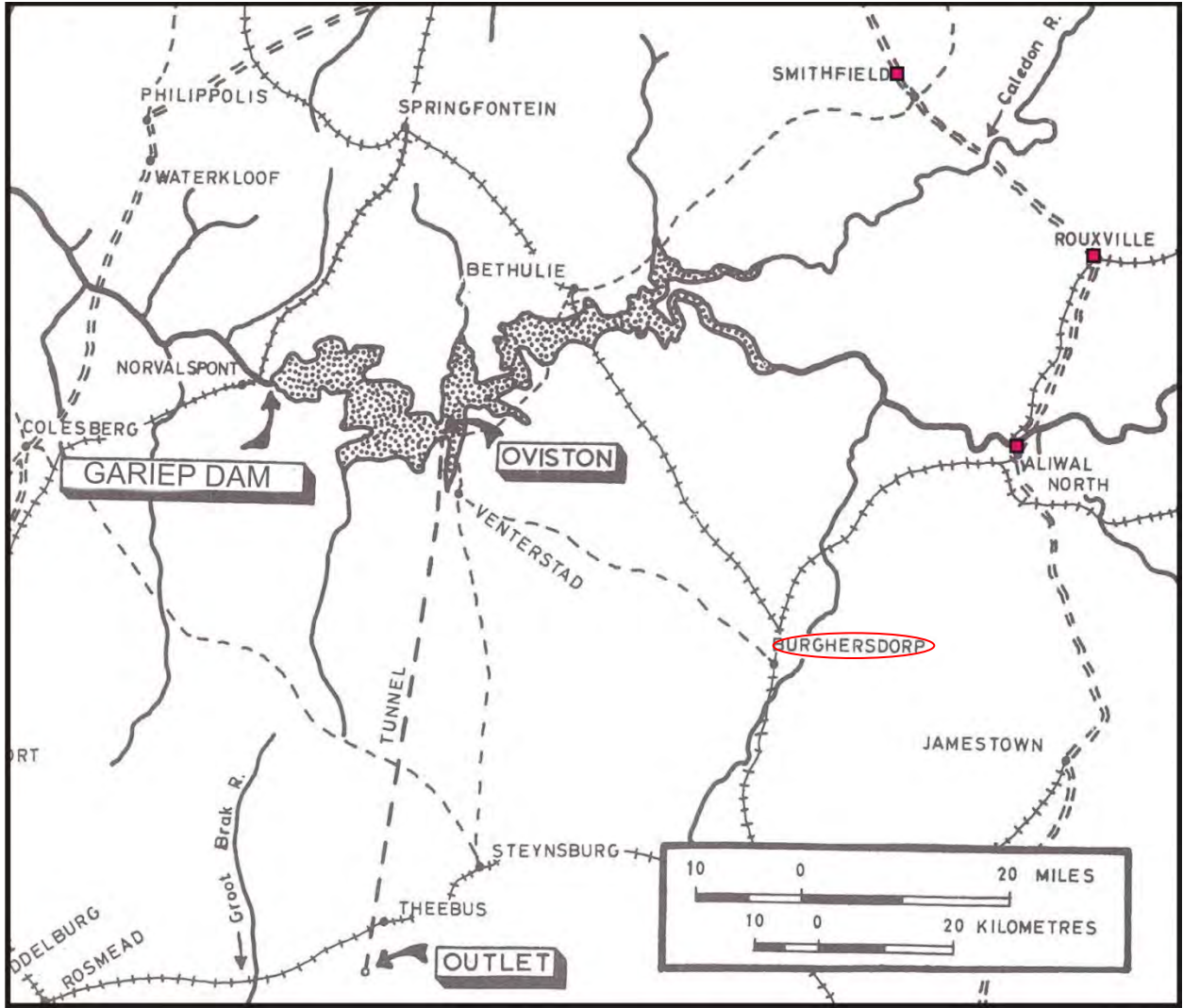


Figure 8. Map of the area surveyed by Sampson during the late 1960's (after Sampson 1968).

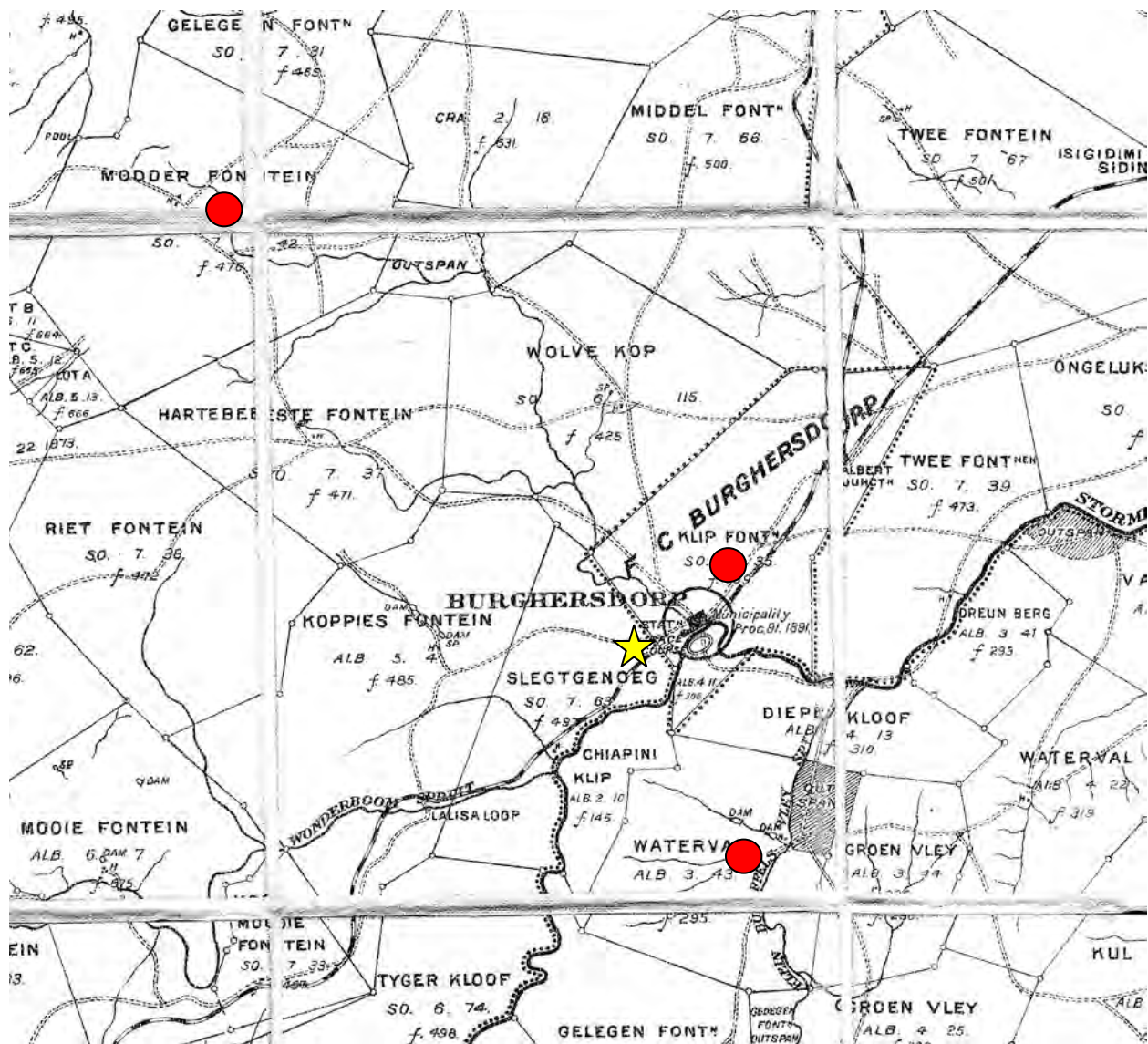


Figure 9. Cadastral map of the Albert District dated to 1902 showing previously recorded rock art localities in the area (red dots). The proposed development area is indicated by yellow star.





Figure 10. Area 2 is located on alluvial deposits (above) and well-developed, wind-blown, residual soils (below)



Figure 11. Superficial sediments in Area 2 are underlain by that were intruded by Jurassic-aged dolerite (*Jd*, above).





Figure 12. Modern concrete and brick structure, Area 2.





Figure 13. Modern pump station, Area 2.



Figure 8. General view of the Buitedagspruit river crossing, looking north.

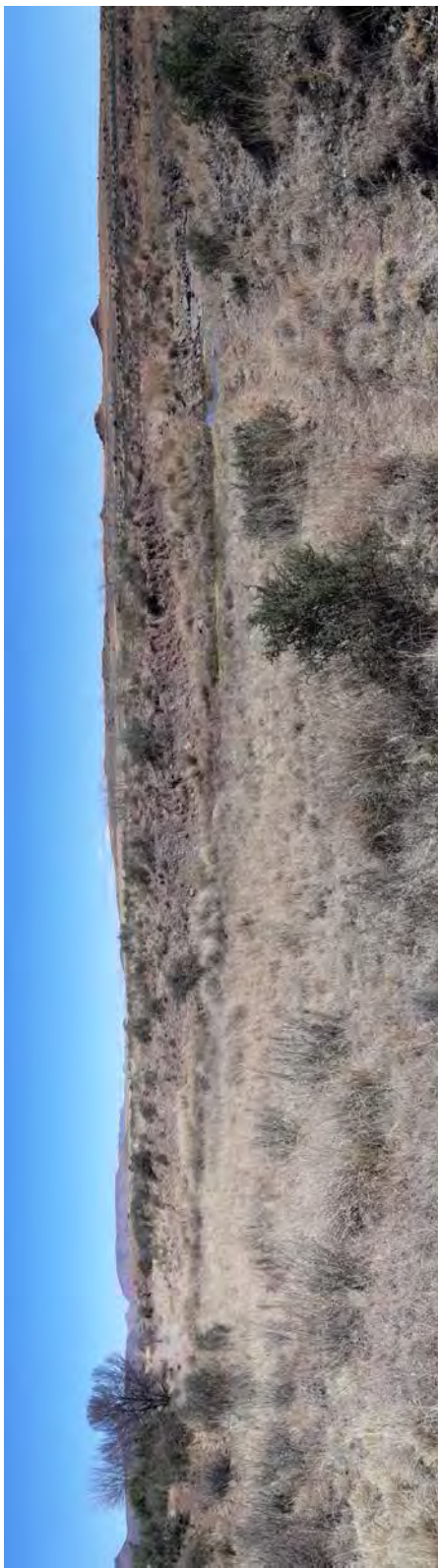


Figure 9. General view of overbank sediments at the Buitedagspruit river crossing, looking west.