

Phase 1 Heritage Impact Assessment of a proposed new rehabilitation facility at Odendaalsrus, FS Province.



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Executive Summary

A Phase 1 Heritage Impact Assessment was carried out at 3 ha site marked for the development of a rehabilitation centre located outside the town of Odendaalsrus in the Free State Province. The study area is underlain by moderately sensitive bedrock strata that are capped by palaeontologically sterile superficial sediments. Outcrop visibility is hampered by a lack of bedrock exposures in the area. A foot survey of the affected area revealed no evidence of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of settlement structures, graves or historical buildings older than 60 years within the boundary of the study area. It is unlikely that the proposed development will result in any significant palaeontological or archaeological impact at the site. The terrain is assigned a field rating of Generally Protected C (GP.C).

Table of Contents

Executive Summary	2
Introduction	3
Methodology	4
Terms of Reference	4
Field Rating	4
Details of Area Surveyed	4
Locality Data	4
Geology	4
Background	5
Archaeology	5
Field Assessment	6
Impact Statement & Recommendations	6
References	6
Tables and Figures	8

Introduction

A Phase 1 Heritage Impact Assessment was carried out at a site marked for the development of a rehabilitation centre located outside the town of Odendaalsrus in the Free State Province (**Fig. 1**). The heritage impact assessment is a pre-requisite for any development that will change the character of a site exceeding 5 000 m² 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.

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 map: 2726 DC Odendaalsrus

1:250 000 scale geological map: 2726 Kroonstad

General Site Coordinates: 27°52'54.79"S 26°38'51.87"E

The 3 ha site is located on flat open terrain, about 3.7 km west of the Odendaalsrus CBD on the farm Dankbaar 125. (**Fig. 2 & 3**).

Geology

Sedimentary bedrock strata in the region are represented by Ecca Group mudrocks, siltstones and sandstones of the Middle Permian, argillaceous Volksrust Formation (Pvo)

(Schutte 1994; Johnson *et al.* 2006) (**Fig. 4**). The underlying sedimentary rocks are capped by Quaternary deposits comprising unconsolidated soils (derived from the *in situ* weathering of the parent rocks), alluvial sediments found along water courses, and aeolian sands (Qs).

Background

The Volksrust Formation is characterized by the presence of plant fossils primarily represented by glossopterids, cordaitaleans and possibly other seed fern groups. Rare temnospondyl amphibian remains, invertebrates including bivalves and insects, plant fossils and petrified wood (glossopterids, cordaitaleans and possibly other seed fern groups) as well as trace fossil assemblages (Anderson and Anderson 1985; Bamford 2003; Cairncross *et al.* 2005; Ponomarenko & Mostovski 2005). Reptile fossils are absent in the formation. Pliocene, river-deposited fossil occurrences located 10 and 30 km south of Odendaalsrus respectively, have been identified in terrace gravels along the Vet River and the Sand River (De Ruiter *et al.* 2010). More recent exploratory surveys along the Doring, Sand and Vet Rivers indicate moderately fossiliferous overbank sediments and erosional gullies that frequently contain fossil remains of a variety of Quaternary-aged mammals (Brink *et al.* 1999). Ancient pan sites at Mahemspan near the Vaal River and Whites near Hennenman have equally produced abundant Quaternary-aged mammal fossil remains.

Archaeology

The Stone Age archaeological footprint in the region is largely represented by the occurrence of open-site, Middle Stone Age (MSA) and Later Stone Age (LSA) assemblages that are mainly located near river drainages. Historical records indicate that a capped MSA artefact assemblage was recovered from the Allanridge railway siding north of Odendaalsrus. Unfortunately, the context of the assemblage is unknown. MSA as well as LSA artefacts, in association with mammal fossil remains, are also found in a series of erosional gullies along the Sand and Doring Rivers between Virginia and Theunissen (De Ruiter *et al.* 2011).

There are no records of rock engravings known from the area. The ruins of a Late Iron Age settlement complex are found at Strydfontein between Hennenman and

Ventersburg, about 50 km southwest of Odendaalsrus. The study area is essentially situated outside the western periphery of distribution of Late Iron Age settlements below the Vals River in the Free State (Maggs 1976).

Field Assessment

The study area is underlain by moderately sensitive bedrock strata that are capped by palaeontologically sterile superficial sediments (**Fig. 5**) Outcrop visibility is hampered by a lack of bedrock exposures in the area. A foot survey of the affected area revealed no evidence of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of settlement structures, graves or historical buildings older than 60 years within the boundary of the study area.

Impact Statement & Recommendations

Significance of impacts are summarized in **Table 2**. It is unlikely that the proposed development will result in any significant palaeontological or archaeological impact at the site. The terrain is assigned a field rating of Generally Protected C (GP.C).

References

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Tables and Figures

Table 1. Field rating categories as prescribed by SAHRA.

Field Rating	Grade	Significance	Mitigation
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 potential impacts at the site.

Geological Unit	Rock types and Age	Potential Palaeontological / Archaeological heritage in region	Palaeontological significance	Archaeological significance	Development Impact	Heritage Impact at the site
Regolith	Residual soils. Aeolian sand Quaternary to Recent	Intact or uncapped stone tool assemblages, Rock art, Prehistoric structures; Historical structures; Graves/graveyards	Low	High	High	Low
Ecca Group, Volksrust Formation (Karoo Supergroup)	Lacustrine deposits of silty shale with siltstone and sandstone lenses. Middle Permian	Amphibian remains, invertebrates (bivalves, insects), plant fossils and petrified wood; trace fossil assemblages	Moderate	Low	Low	Low

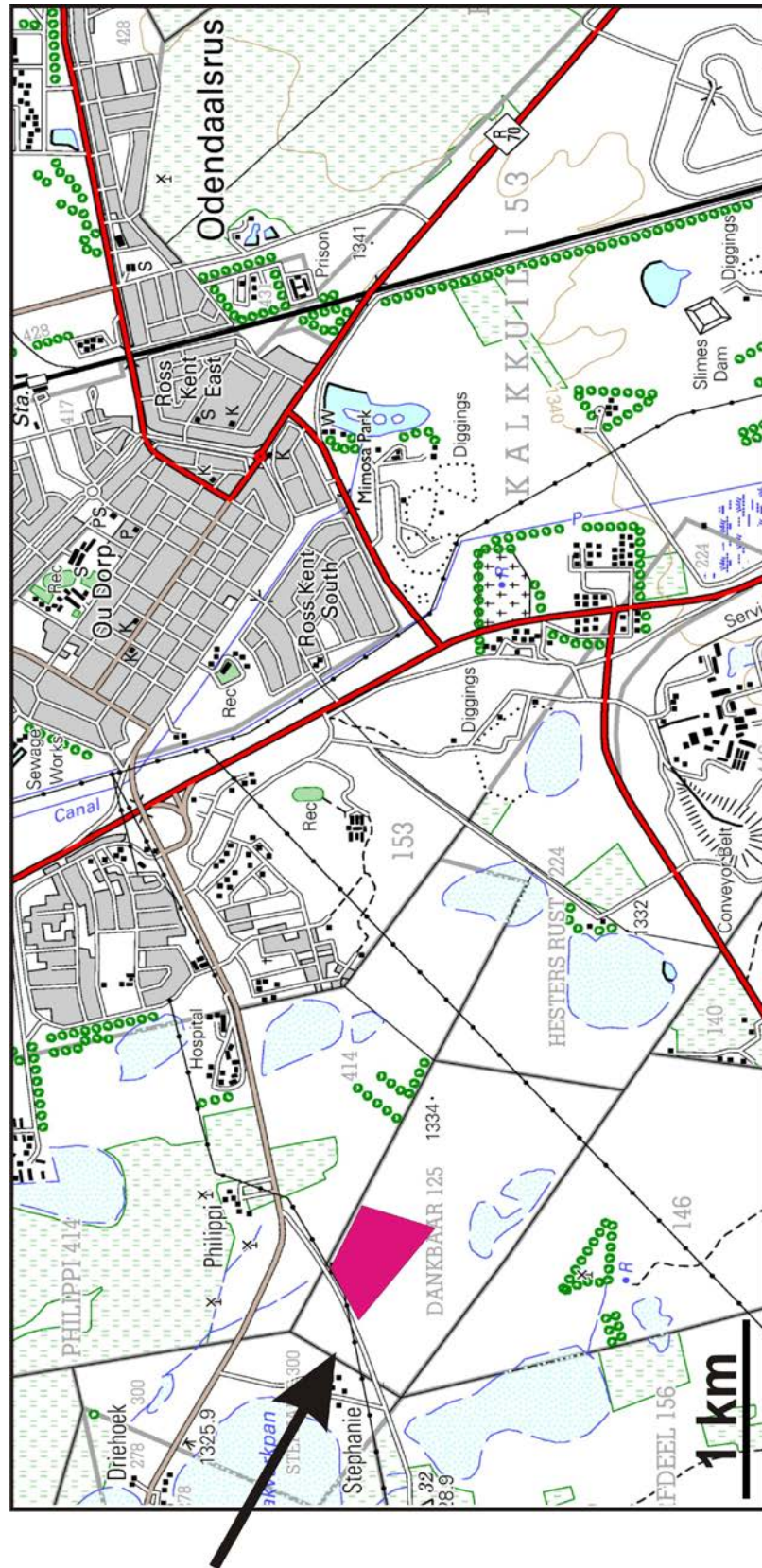


Figure 1. Map of the study area (portion of 1:50 000 scale topographic map 2726 DC Odendaalsrus).

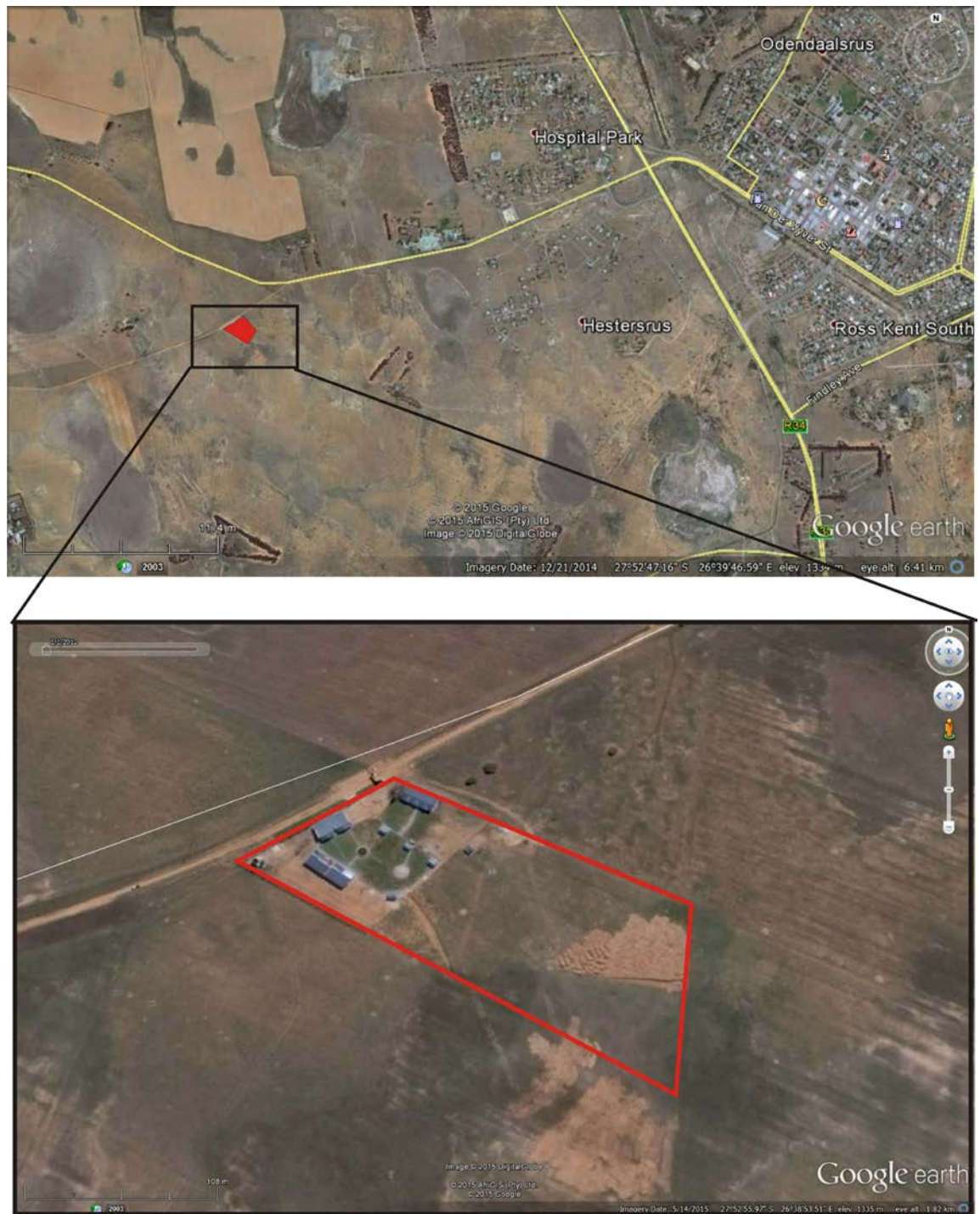


Figure 2. Aerial view of the study area.



Figure 3. The study area, looking west (top) and south-west (bottom).

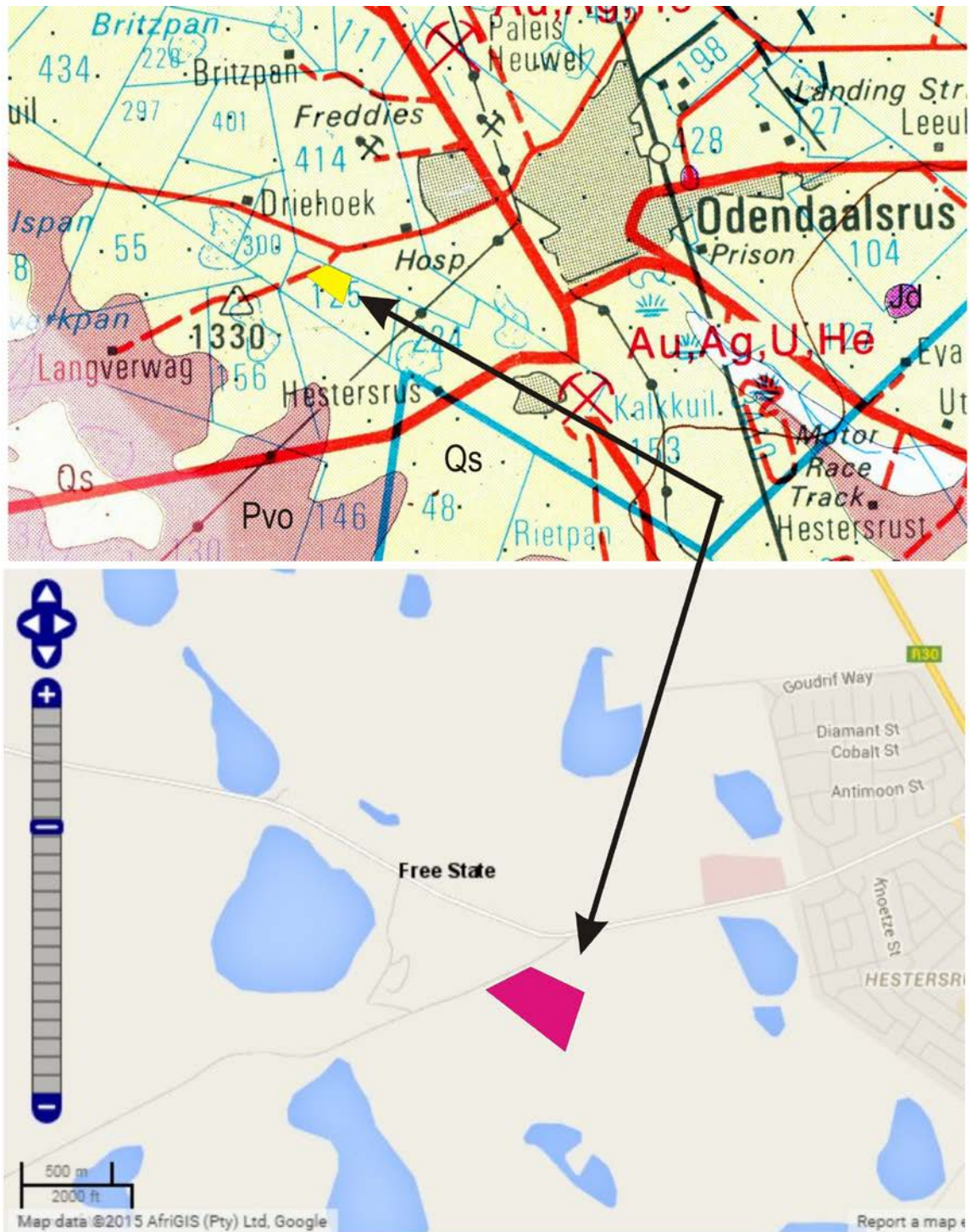


Figure 4. The study area, as shown on portion of 1:250 000 scale geological map 2726 Kroonstad (Council for Geoscience, Pretoria) (top) and the SAHRIS Palaeontological Sensitivity Map (bottom). From oldest to youngest, the geology in the area is represented by Eccca Group mudrocks, siltstones and sandstones (*Pvo*) and superficial sediments made up of alluvium and and aeolian sands (*Qs*).



Figure 5. The study area is capped by palaeontologically sterile superficial sediments