

Phase 1 Heritage Impact Assessment of the proposed
upgrading of a 3 km – long road section in Botshabelo,
Free State Province.

Report prepared for:
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Executive Summary

A Phase 1 Heritage Impact Assessment was carried out for the proposed 3 km – long road upgrade (tarring) and provision of an alternative section across the Klein Modder River in Botshabelo, Free State Province. In terms of both the proposed road upgrade as well as the construction of the alternative road section across the Klein Modder River, the potential for palaeontological impact on Karoo bedrock is considered low as a result of a well-developed superficial overburden covering an extensively degraded terrain, while the alluvial deposits exposed along the riverbed of the Klein Modder River appears to be sterile in terms of Quaternary vertebrate fossils and potentially intact archaeological remains. The field assessment provided no above-ground evidence of prehistoric structures, buildings older than 60 years, or material of cultural significance or *in situ* archaeological sites within the development footprint. The proposed development footprint is not considered palaeontologically or archaeologically vulnerable and is assigned a site rating of Generally Protected C (GP.C).

Introduction

A Phase 1 Heritage Impact Assessment was carried out for the proposed 3 km – long road upgrade (tarring) and provision of an alternative section across the Klein Modder River in Botshabelo, Free State Province (**Fig. 1 & 2**). The survey is required as a prerequisite for new development in terms of the National Environmental Management Act and is also called for in terms of the National Heritage Resources Act 25 of 1999. A site visit and subsequent assessment took place in March 2016. The task involved identification of possible heritage sites or occurrences within the proposed zone, an assessment of their significance, possible impact by the proposed development and recommendations for mitigation where relevant.

Methodology

A pedestrian survey was conducted in the affected area. A Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a digital camera, were used to record relevant data. Relevant archaeological and palaeontological information were assimilated for the report and integrated with data acquired during the on-site inspection.

Field Rating

Site significance classification standards as prescribed by SAHRA (2005) were used for the purpose of this report (**Table 1**).

Description of the Affected Area

1:50 000 scale topographic map 2926BC Meadows

1:250 000 scale geological map 2826 Bloemfontein

GPS coordinates (**Fig. 1**)

A) 29°15'2.59"S 26°42'24.76"E

B) 29°15'46.23"S 26°42'7.85"E

C) 29°16'1.95"S 26°41'50.02"E

D) 29°16'3.93"S 26°41'38.25"E

The site is located in Botshabelo next to the Klein Modder River and about 8 km south of the N8 national road between Bloemfontein and Thaba Nchu, and is surrounded by degraded open veld and residential developments (**Fig 3**). Sedimentary rocks underlying the survey area belong to fossil – bearing sandstones, shales and mudstones of the Adelaide Subgroup (Beaufort Group, Karoo Supergroup) (**Fig. 4**),

while superficial sediments are made up of Quaternary deposits younger than two million years in age, comprising unconsolidated soils and well-developed overbank sediments along the Klein Modder River drainage (**Fig. 5**).

Background

The Karoo geological strata within the affected area are generally accepted to be Late Permian in age and are assigned to the *Dicynodon* Assemblage Zone (AZ). This biozone is characterized by the presence of a distinctive and fairly common dicynodont genus. Sediments assigned to the *Dicynodon* AZ are associated with stream deposits consisting of floodplain mudstones and subordinate, lenticular channel sandstones. In addition, numerous Quaternary-age vertebrate fossils, have been recorded from various localities along the Modder River north of Sannaspos towards Bloemfontein (**Fig. 6**). Surface scatters of Later Stone Age and Middle Stone Age artefacts are frequent archaeological components along erosional gullies of the nearby Modder River and its tributaries.

Botshabelo originated in 1979 when over 60 000 Sotho squatters were forced out of Bloemfontein and resettled in the area.

Results of Survey

The study area is located within an outcrop area of potentially fossil-bearing sediments (Adelaide Subgroup), but visible exposures within the proposed impact area is scarce as a result of the low relief terrain and showed no evidence of intact fossil remains. The terrain is also extensively degraded by human activities. An investigation of topsoils and nearby alluvial sediments show no evidence of intact Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There is also no indication of prehistoric stone-walled structures or evidence for the accumulation and preservation of intact fossil material within the Quaternary sediments (topsoils) covering the underlying sedimentary rocks. No graves or graveyards were recorded within the proposed footprint area. Historical buildings or structures older than 60 years are absent from the site (e.g. military movements by British forces during the Anglo-Boer War occurred well towards the east of Bloemfontein around Sannaspos and Thaba Nchu). Impact on potential *in situ* archaeological material, prehistoric structures, historical structures, rock engravings or graves in the affected area is considered unlikely.

Impact Statement and Recommendations

In terms of both the proposed road upgrade as well as the construction of the alternative road section across the Klein Modder River, the potential for palaeontological impact on Karoo bedrock is considered low as a result of a well-developed superficial overburden covering an extensively degraded terrain, while the alluvial deposits exposed along the riverbed of the Klein Modder River appears to be sterile in terms of Quaternary vertebrate fossils and potentially intact archaeological remains. However, if *in situ* fossil material is exposed in fresh sedimentary bedrock as a result of excavations needed for bridge foundations where the alternative section should cross the river, it is important that the finds are reported to SAHRA and a professional palaeontologist as soon as possible. The field assessment provided no above-ground evidence of prehistoric structures, buildings older than 60 years, or material of cultural significance or *in situ* archaeological sites within the development footprint. The proposed development footprint is not considered palaeontologically or archaeologically vulnerable and is assigned a site rating of Generally Protected C (GP.C).

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Tables and Figures

Table 1. Field rating categories for heritage sites 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

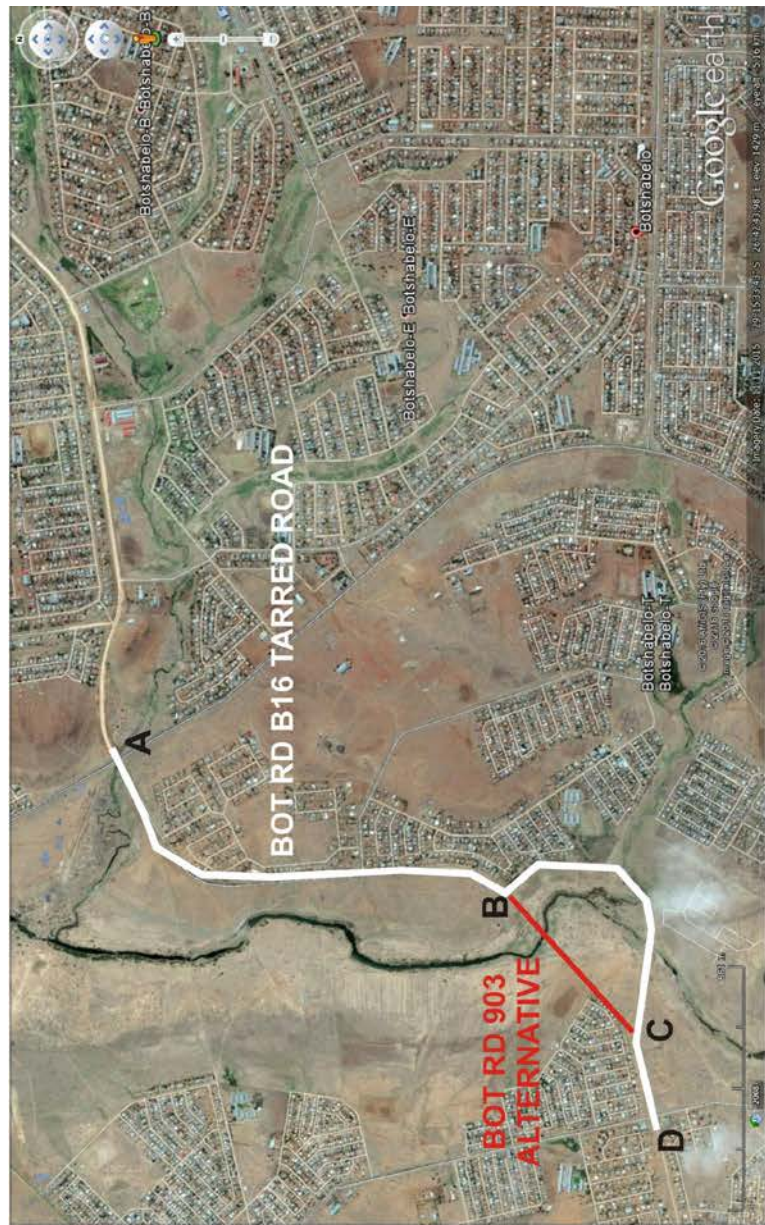
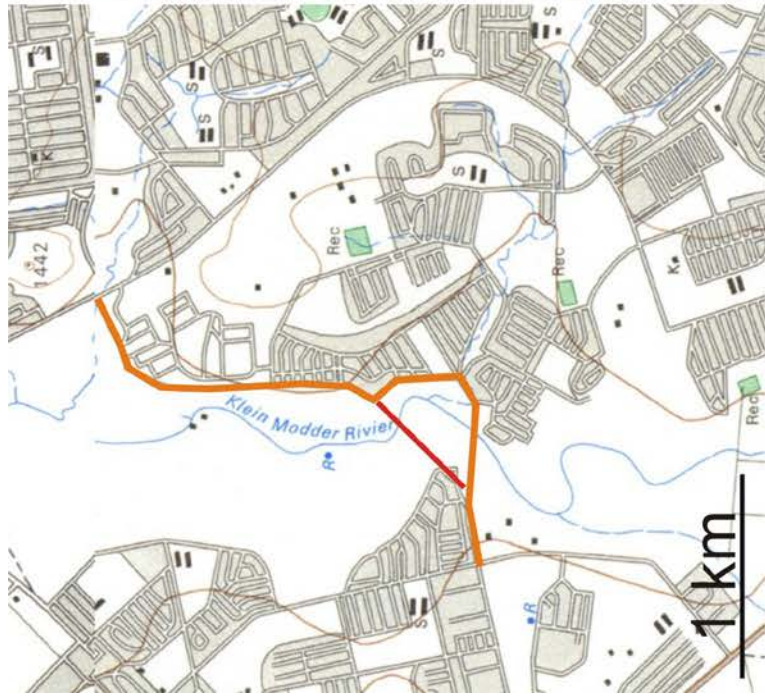


Figure 1. Map of the proposed development (portion of 1 : 50 000 topographic map 2926 BC Meadows), left, and aerial view of the affected area (right).



Figure 2. The proposed road section, looking northwest (top) and southwest towards the Klein Modder River (bottom).



Figure 3. The surrounding area consists of degraded open veld and residential developments.

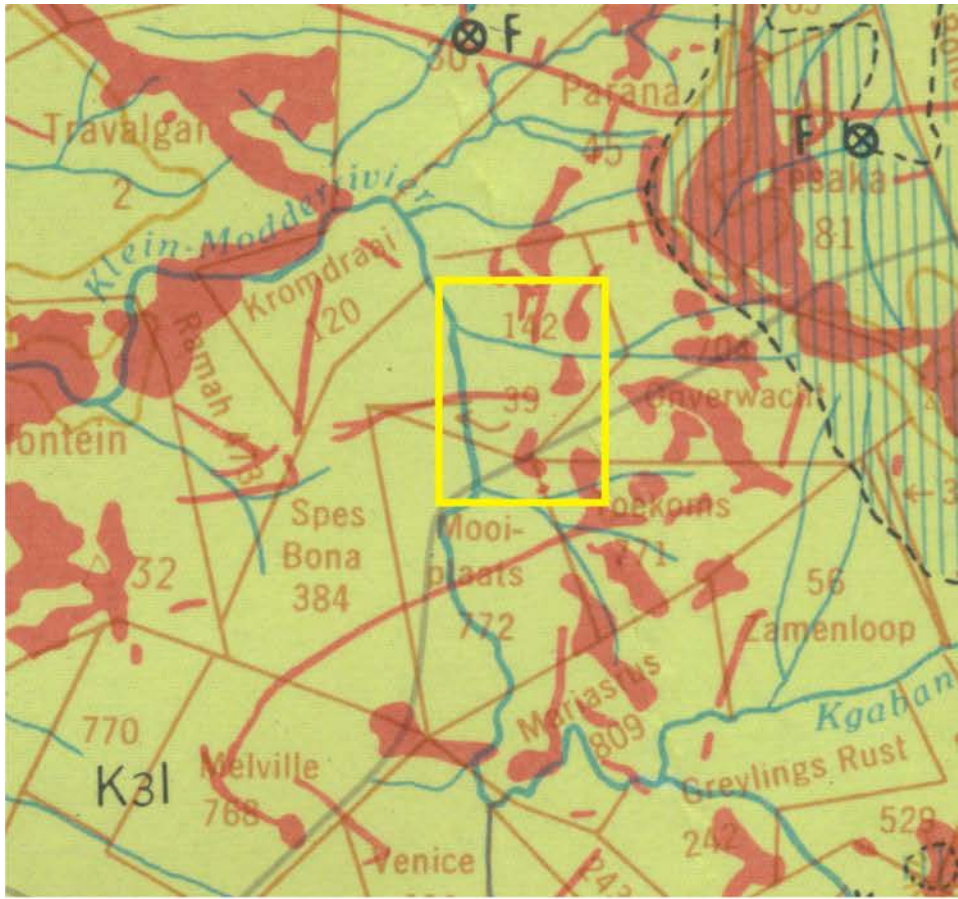


Figure 4. Portion of 1:250 000 scale geological map of the area (top). Sedimentary rocks underlying the development footprint belong to Karoo Supergroup, fossil – bearing sandstones, shales and mudstones of the Adelaide Subgroup (below and marked in green on geological map).



Figure 5 Palaeontologically and archaeologically sterile alluvial deposits exposed along the riverbed of the Klein Modder River.

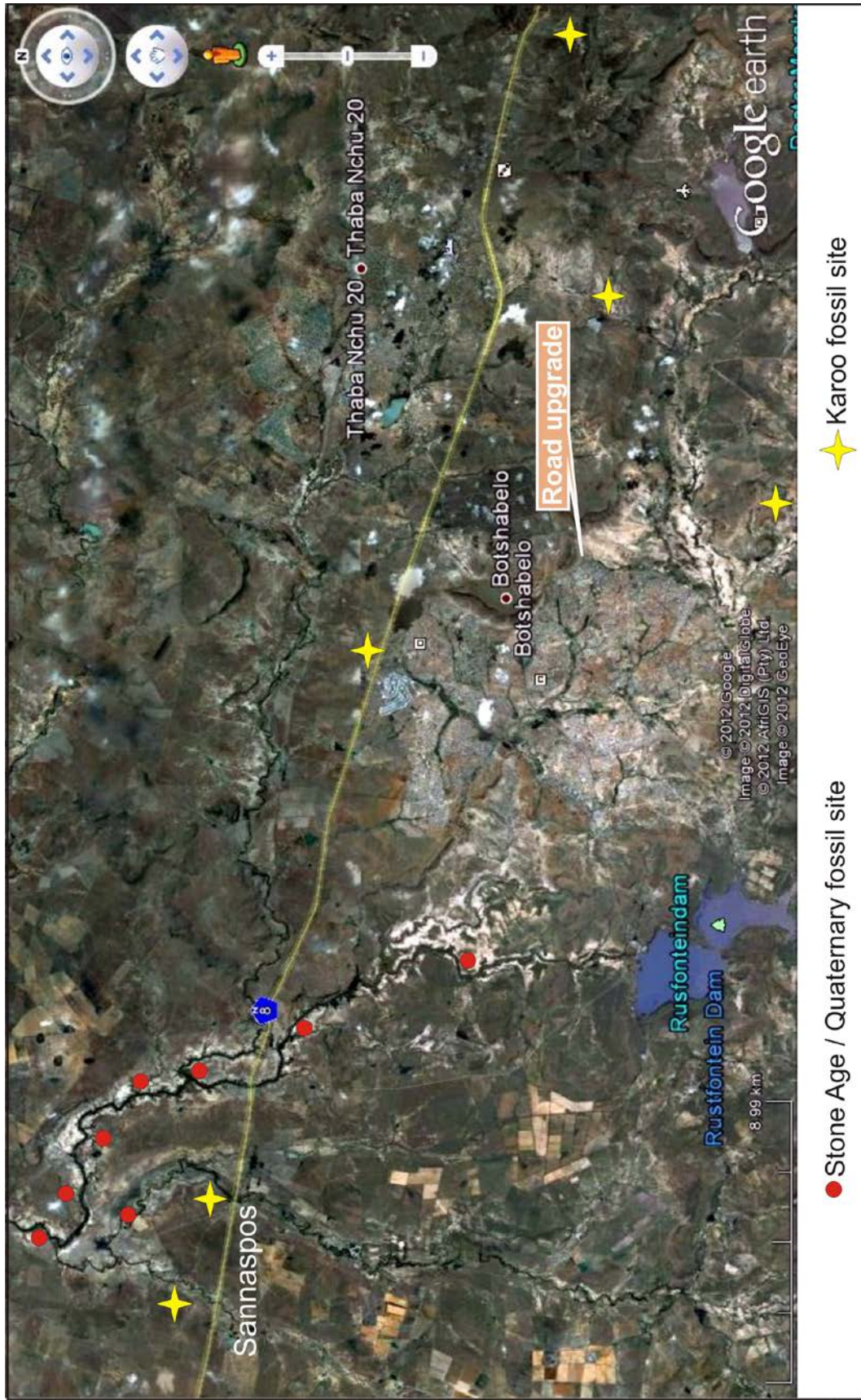


Figure 6. Distribution of archaeological and palaeontological localities in the vicinity of the study area.