

Phase 1 Heritage Impact Assessment of a proposed new
5 ha Gravel Quarry on the farm Johns Rust 1361,
Warden, Free State Province.

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Summary

A Phase 1 Heritage Impact Assessment was carried for a proposed new 5ha gravel quarry on the farm Johns Rust 1361 located near Warden in the Free State Province. The proposed development will affect palaeontologically insignificant dolerite bedrock and superficial soils. As far as the palaeontological heritage is concerned, the proposed development may proceed with no additional heritage assessments necessary. The foot survey revealed no evidence of intact Stone Age localities or artifacts distributed as surface scatters on the landscape. There are also no indications of prehistoric structures or remains or historically significant structures older the 60 years within the boundaries of the proposed development footprint. Impact on potentially intact Stone Age archaeological remains, rock art localities or Iron Age structures is considered unlikely. Following site significance classification standards as prescribed by SAHRA (2005) it is recommended that the affected areas are assigned a site rating of Low Significance (Generally Protected C). As far as the archaeological heritage is concerned, the proposed development may proceed provided that the old stone-walled kraal and sheep-dip structure recorded near the northeastern boundary of the footprint is protected by a 10 m no-go buffer zone that should preferably also include a clearly marked fence.

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Introduction

A Phase 1 Heritage Impact Assessment was carried for a proposed new gravel quarry on the farm Johns Rust 1361 located near Warden in the Free State Province (**Fig. 1**) The extent of the proposed development (over 5000 m²) 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 during October 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 assessment consists of a desktop study as well as pedestrian survey of the site. The desktop study provides an assessment of known and potential palaeontological and archaeological heritage within the study area, with recommendations for mitigation where considered necessary. The assessment is based on existing field data and published scientific literature. The geology represented within the study area was determined from published literature and associated geological maps. Relevant archaeological and palaeontological information were assimilated for the report and integrated with data acquired during the on-site inspection.

Description of the Affected Area

Locality data

Maps: 1:50 000 topographical map 2728DD Warden

1:250 000 geological map 2728 Frankfort

The affected area covers 5ha of relatively high relief, open grassland including a 260 m long new access road on the farm Johns Rust 1361, which is located approximately 25 km due north of Warden (**Fig. 2 & 3**).

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

A) 27°42'47.51"S 28°54'58.65"E

B) 27°42'44.94"S 28°55'2.86"E

C) 27°42'48.76"S 28°55'9.06"E

D) 27°42'53.59"S 28°55'10.60"E

E) 27°42'55.76"S 28°55'8.19"E

Geology

From oldest to youngest, the geology around Warden is made up of Late Permian sandstones (Normandien Formation *Pn*: type profile from nearby Normandien Pass between Memel and Harrismith), early Triassic sandstones of the Tarkastad Subgroup (*Trt*), Jurassic dolerite intrusions (*Jd*, Karoo Dolerite Suite), Quaternary alluvium and residual soils (Muntingh 1989).

The abovementioned late Palaeozoic, Mesozoic and late Cenozoic sediments in the region are generally considered to be highly significant in terms of palaeontological heritage (**Fig. 4**). However, the study area is exclusively underlain by palaeontologically insignificant Jurassic dolerite intrusions (*Jd*) that are capped by a veneer of geologically recent residual soils (**Fig. 5**).

Background History

Small, fossil-rich alluvial exposures of the Cornelia Formation have been recorded near the Vaal River, about 65 km north of Warden (**Fig. 6**). These Quaternary deposits are characterized by several distinct fossil mammal species, including *Stylochoerus compactus*, *Connochaetes laticornutus* and *Megalotragus eucornutus* (Butzer *et al.* 1974; Brink & Rossouw 2000). There is currently no record of Cornelia Formation sediments in the vicinity of Warden.

The archaeological landscape of the region is characterized by large numbers of stone built Late Iron Age settlements made of dry stone walling and rock shelters containing paintings and stone tool assemblages (Harding 1951 a,b; Maggs 1976). The region is characterized by a marked proliferation of Late Iron Age settlements after 1640 AD which led to their southerly expansion of Sotho-Tswana peoples into the north-eastern Free State (Maggs 1976). The settlements spread out to the south and east, but did not extend further than the Vet River and the Drakensberg escarpment. Stone walling structures located near Warden are assigned to the characteristic Type V settlement units by Maggs (1976) (**Fig. 7**).

Rock paintings have been recorded in the Warden district on the farm Goedgegeven 164 and further south near Bethlehem where paintings were found together with Later Stone Age artefacts on the farms Saulspoot and Trekpad.

Results of Survey

The proposed new access road and quarry footprint were investigated via a pedestrian survey. There is no evidence of intact or capped Stone Age artefacts, Iron Age structures or Quaternary fossils within the confines of the footprint. There are no indications of prehistoric structures or rock engravings graves or historical buildings older than 60 years within the confines of the footprint. An old, rectangular stone-walled kraal and sheep-dip structure, covering about 60 m², is located about 20 m northeast of the site (GPS coordinates 27°42'45.91"S 28°55'6.41"E) (Fig. 8 & 9).

Impact Statement & Recommendation

The proposed development will affect palaeontologically insignificant dolerite bedrock and superficial soils. As far as the palaeontological heritage is concerned, the proposed development may proceed with no additional heritage assessments necessary. The foot survey revealed no evidence of intact Stone Age localities or artifacts distributed as surface scatters on the landscape. There are also no indications of prehistoric structures or remains or historically significant structures older the 60 years within the boundaries of the proposed development footprint. Impact on potentially intact Stone Age archaeological remains, rock art localities or Iron Age structures is considered unlikely. Following site significance classification standards as prescribed by SAHRA (2005) it is recommended that the affected areas are assigned a site rating of Low Significance (Generally Protected C). As far as the archaeological heritage is concerned, the proposed development may proceed provided that the old stone-walled kraal and sheep-dip structure recorded near the northeastern boundary of the footprint is protected by a 10 m no-go buffer zone that should preferably also include a clearly marked fence.

References

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Tables & 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

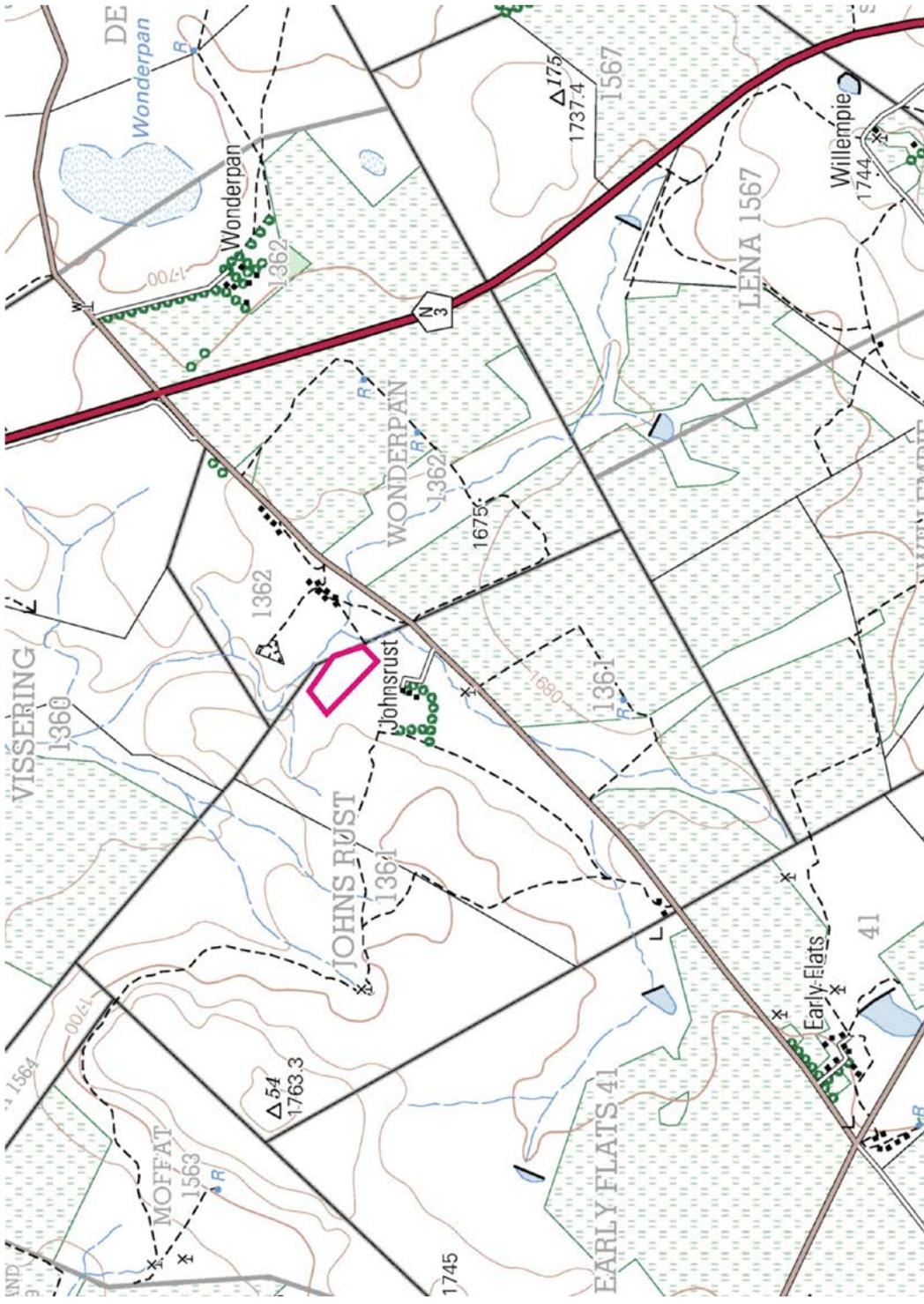


Figure 1. Portion of 1:50 000 scale topographic map 2728DB Roadside of the study area .



Figure 2. Aerial view of the proposed footprint.



Figure 4. General view of the study area, looking south.

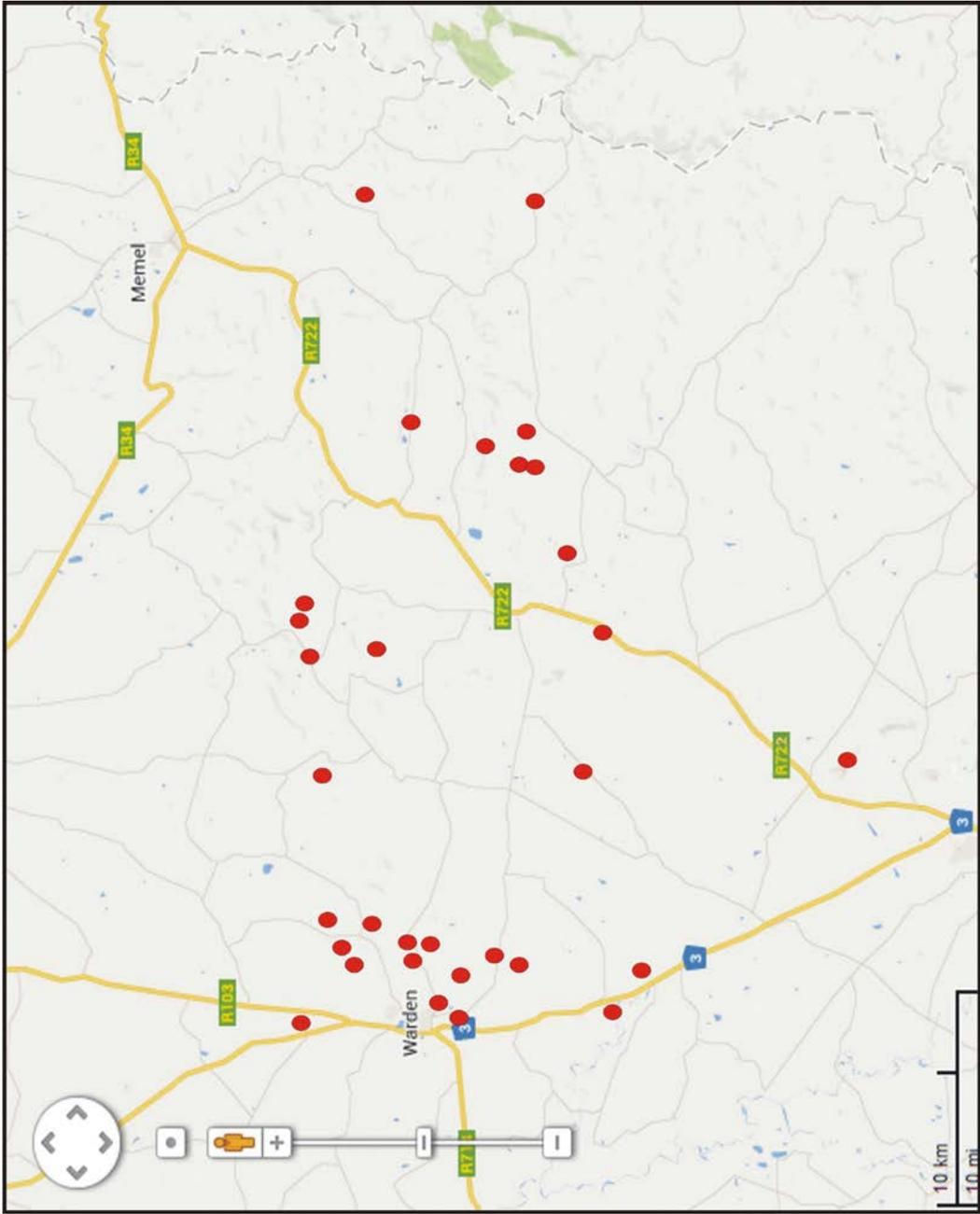


Figure 4. Distribution of Karoo vertebrate fossil localities between Warden and Memel (after Kitching 1977 and Groenewald 1990).



Figure 5. The study area is exclusively underlain by palaeontologically insignificant Jurassic dolerite intrusions that are capped by a veneer of geologically recent residual soils (looking west (below)).
Scale 1 = 10 cm.



Figure 6. Fossil and artefact rich dongas at the Quaternary-age Cornelia Formation type site locality near Cornelia.

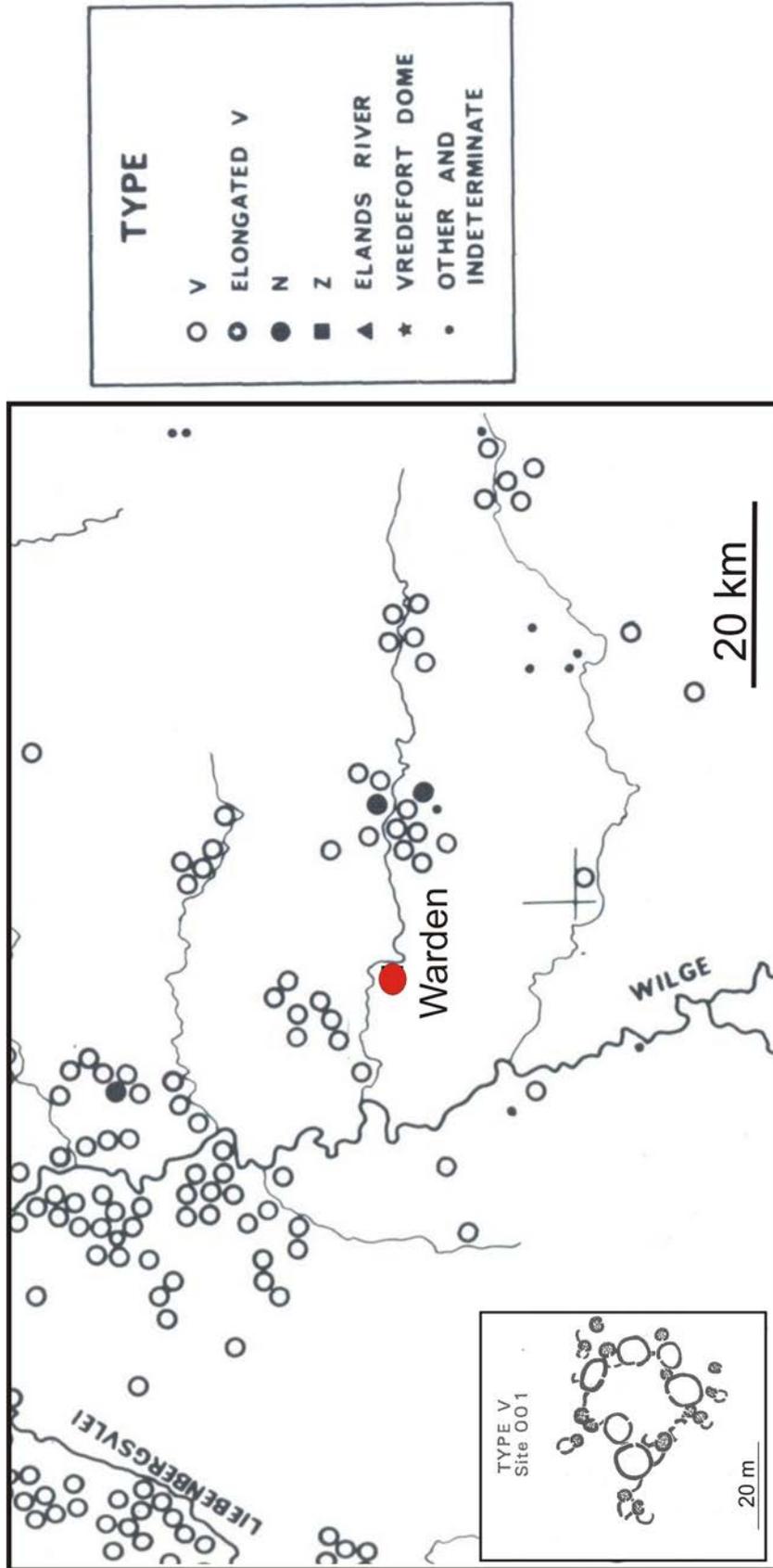


Figure 7. Distribution of Iron Age settlement types in the vicinity of Warden. The majority of the stone walling structures located in the vicinity of Warden are assigned to the characteristic Type V settlement (after Maggs 1976).



Figure 8. Aerial view of rectangular stone-walled kraal and sheep-dip structure, located about 20 m northeast of the site (GPS coordinates $27^{\circ}42'45.91''\text{S}$ $28^{\circ}55'6.41''\text{E}$).



Figure 9. The rectangular stone-walled kraal and sheep-dip structure, looking east (above) and south (below)