

Phase 1 Heritage Impact Assessment of a new Waste  
Water Treatment Works at the Ganspan Settlement near  
Jan Kempdorp, North West Province

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L Rossouw  
National Museum  
PO Box 266  
Bloemfontein  
9300

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## Summary

A phase 1 Heritage Impact was carried out for the development of a new Waste Water Treatment Works next to an existing reservoir at the Ganspan Settlement near Jan Kempdorp in the North West Province. The study area is underlain by palaeontologically insignificant Ventersdorp Supergroup lavas that are capped by geologically recent (Quaternary) aeolian sand, alluvium and residual soils. A foot survey of the terrain revealed no evidence for the accumulation and preservation of intact fossil material within these superficial Quaternary sediments. The pedestrian survey revealed no indication of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of rock art (engravings) or glacial striations, prehistoric structures, graves or historically significance buildings older than 60 years within the boundaries of the study area. Several concrete and small, stone-walled structures are located to the north of the study area but will not be affected by the development. It is highly unlikely that fossil remains will be encountered during excavation activities within the study area. There is also little chance of finding fossil material within the superficial overburden because of a lack of suitable Quaternary-aged alluvial deposits at the site. There are no major palaeontological grounds to suspend excavation activities within the proposed development footprint. There are no major archaeological grounds to suspend excavation activities within the proposed development footprint. The proposed development footprint is assigned a site rating of Generally Protected C (GP.C).

## **Table of Contents**

Summary .....	2
Introduction .....	4
Locality Data .....	6
Background .....	6
Field Assessment .....	8
Impact Statement and Recommendation .....	8
References .....	8
Tables & Figures .....	10

## Introduction

A phase 1 Heritage Impact was carried out for the development of a new Waste Water Treatment Works next to an existing reservoir at the Ganspan Settlement near Jan Kempdorp in the North West Province (**Fig. 1**). The assessment 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 (NHRA) 25 of 1999. The region's unique and non-renewable archaeological heritage sites are 'Generally' protected in terms of the National Heritage Resources Act (Act No 25 of 1999, section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority. As many such heritage sites are threatened daily by development, both the environmental and heritage legislation require impact assessment reports that identify all heritage resources in the area to be developed, and that make recommendations for protection or mitigation of the impact of such sites.

The NHRA identifies what is defined as a heritage resource, the criteria for establishing its significance and lists specific activities for which a heritage specialist study may be required. In this regard, categories relevant to the proposed development are listed in Section 34 (1), Section 35 (4), Section 36 (3) and Section 38 (1) of the NHR Act and are as follows:

34. (1) No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

35 (4) No person may, without a permit issued by the responsible heritage resources authority—

- destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
- *b)* destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;

36 (3) No person may, without a permit issued by SAHRA or a provincial heritage resources authority—

- (a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- (b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- (c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

38 (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—

- The construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- The construction of a bridge or similar structure exceeding 50m in length;
- Any development or other activity which will change the character of the site
  - a) exceeding 5000 m<sup>2</sup> in extent; or
  - b) involving three or more existing erven or subdivisions thereof; or
  - c) involving three or more subdivisions thereof which have been consolidated within the past five years;
- The rezoning of a site exceeding 10 000 m<sup>2</sup>; or
- Any other category of development provided for in regulations by the South African Heritage Resources Agency (SAHRA).

### Terms of Reference

The task involved the following:

- Identify and map possible heritage 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.

## Methodology

The heritage significance of the affected area was evaluated 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. Maps and aerial photographs (incl. Google Earth) were consulted and integrated with data acquired during the on-site inspection.

## Field Rating

Site significance classification standards prescribed by SAHRA (2005) were used to indicate overall significance and mitigation procedures where relevant (**Table 1**).

## **Locality Data**

Maps: 1:50 000 scale topographical map 2724DD Jan Kempdorp

1:250 000 scale geological map 2724 Christiana

General Site Coordinates (**Fig. 3**):

A) 27°58'51.52"S 24°46'17.87"E

B) 27°58'55.03"S 24°46'21.79"E

C) 27°58'58.49"S 24°46'16.84"E

D) 27°58'55.99"S 24°46'14.44"E

The affected area is located on the southeastern slope of a basalt and andesite outcrop at the Ganspan Settlement, about 5.8 km due west of the N18 national road between Kan Kempdorp and Warrenton, Northern Cape Province (**Fig. 2 & 3**).

## **Background**

According to the 1:250 000 scale geological map of the region ( 2724 Christiana), the study area is underlain by Precambrian, Ventersdorp Supergroup lavas (basalts and andesites of the Allanridge Formation, *Ra*), that are capped by geologically recent (Quaternary) aeolian sand, alluvium and residual soils. The Allanridge Formation is not palaeontologically significant, but glacial striations are recorded in the basaltic andesites. The striations occurred about 300 million years ago when Southern Africa was near the South Pole and large ice sheets or glaciers (Dwyka) covered high-lying areas. As the glaciers moved, the rocks and rubble that became embedded in their undersurface scoured out scratch marks (striations) on the underlying andesite rock pavements. Sections of these andesite glacial pavements, are exposed at numerous

localities along the lower Vaal Basin including the Christiana area. The nearby Vaal River dates back to the late Cretaceous and is one of the principal fluvial conduits in southern Africa (De Wit 1993; Marshall 1996; Partridge & Maud 2000). The alluvial formations of the Vaal River basin are best developed along the lower 300 km of the river. These alluvial formations are well known for their unique record of the Pleistocene. Numerous Early Stone Age hand axes as well as the remains of Pleistocene mammalian fossils have been recovered in the region, from gravel deposits 20 m to 50 m above the current riverbed. Early to Middle Stone Age artifacts are derived from the Vaal gravels and include an abundance of Acheulian (Early Stone Age) hand axes, cleavers and core-axes, primarily made from quartzite (Sohnge *et al.* 1937; Cooke 1949). In addition, the gravel deposits are largely mantled by undifferentiated deposits of unconsolidated to semi-consolidated sediments, including calcrete, aeolianite, clay and Kalahari/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. Later Stone Age artifacts preserved in open-site scatters have been recorded on the modern land surfaces flanking the river and its tributaries. There are plentiful rock art sites with engravings in the Lower Vaal River Basin including the area around Christiana on the farm Stowlands and Stows Kopje. Further south, rock engravings have been recorded at Four Streams, Nazareth and Schoolplaats that include human figures, animals, therianthropes and geometric motifs (Morris, D *et al.* 1995). There is currently no record of engraving sites in the vicinity of Ganspan. Koranna and Bushman bands occupied the Harts-Vaal valley by the beginning of the 19<sup>th</sup> century and competed for territory with the Tswana/Thlaping immigrants from the north (**Fig. 5**). In 1867 the discovery of diamonds near the Vaal/Gariiep confluence brought about enormous changes in the social and economic make-up of the region. Diamond diggers first located the diamondiferous alluvial gravels of the Vaal River in the vicinity of Christiana and Bloemhof in the mid 1880's and by 1912, the rich diggings on Mooifontein and London, south of Schweizer Reneke, had been discovered, as had the equally rich deposits to the southwest of Wolmaransstad. Jan Kempdorp was laid out on the farm Andalusia when the first settlers bought plots in 1938. The town was proclaimed in 1953 and named after General Jan Kemp, a former Minister of Lands (Raper 1987).

## Field Assessment

A foot survey of the terrain revealed no evidence for the accumulation and preservation of intact fossil material within these superficial Quaternary sediments. The pedestrian survey revealed no indication of *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. There are also no indications of rock art (engravings) or glacial striations, prehistoric structures, graves or historically significance buildings older than 60 years within the boundaries of the study area. Several concrete (**Fig. 6 A**) and small, stone-walled structures (**Fig. 6 B**) are respectively located 430 m and 180 m to the north of the study area (at GPS coordinates 27°58'42.11"S 24°46'20.27"E and 27°58'48.98"S 24°46'18.04"E). These structures are located outside the boundaries of the proposed development footprint and will not be affected (**Fig. 7**).

## Impact Statement and Recommendation

The affected area is underlain by intrusive volcanic rocks that are considered to be of no paleontological significance. It is highly unlikely that fossil remains will be encountered during excavation activities within the study area. There is also little chance of finding fossil material within the superficial overburden because of a lack of suitable Quaternary-aged alluvial deposits at the site. There are no major palaeontological grounds to suspend excavation activities within the proposed development footprint. Impact on potential *in situ* archaeological remains, engraving localities or historically significant structures within the study area is considered unlikely. There are no major archaeological grounds to suspend excavation activities within the proposed development footprint. The proposed development footprint is assigned a site rating of Generally Protected C (GP.C).

## References

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Partridge, T.C. & Maud, R.R. 2000. *The Cenozoic of Southern Africa*. Oxford Monographs on Geology and Geophysics No. 40.

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#### 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.



12 / 04 / 2017

## Tables & 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

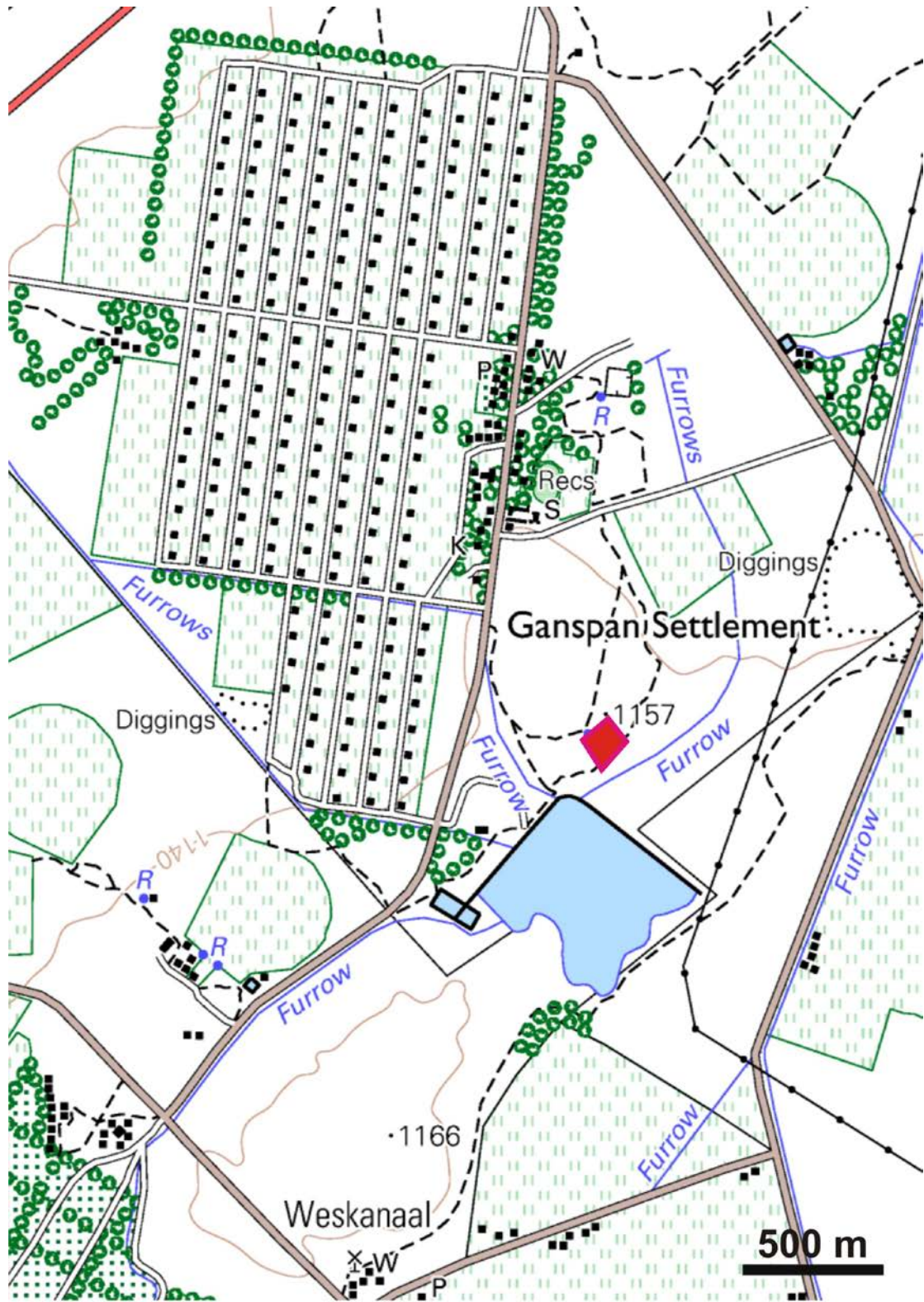


Figure 1. Map of the proposed development footprint (red polygon on portion of 1:50 000 scale topographic map 2724DD Pampierstad).

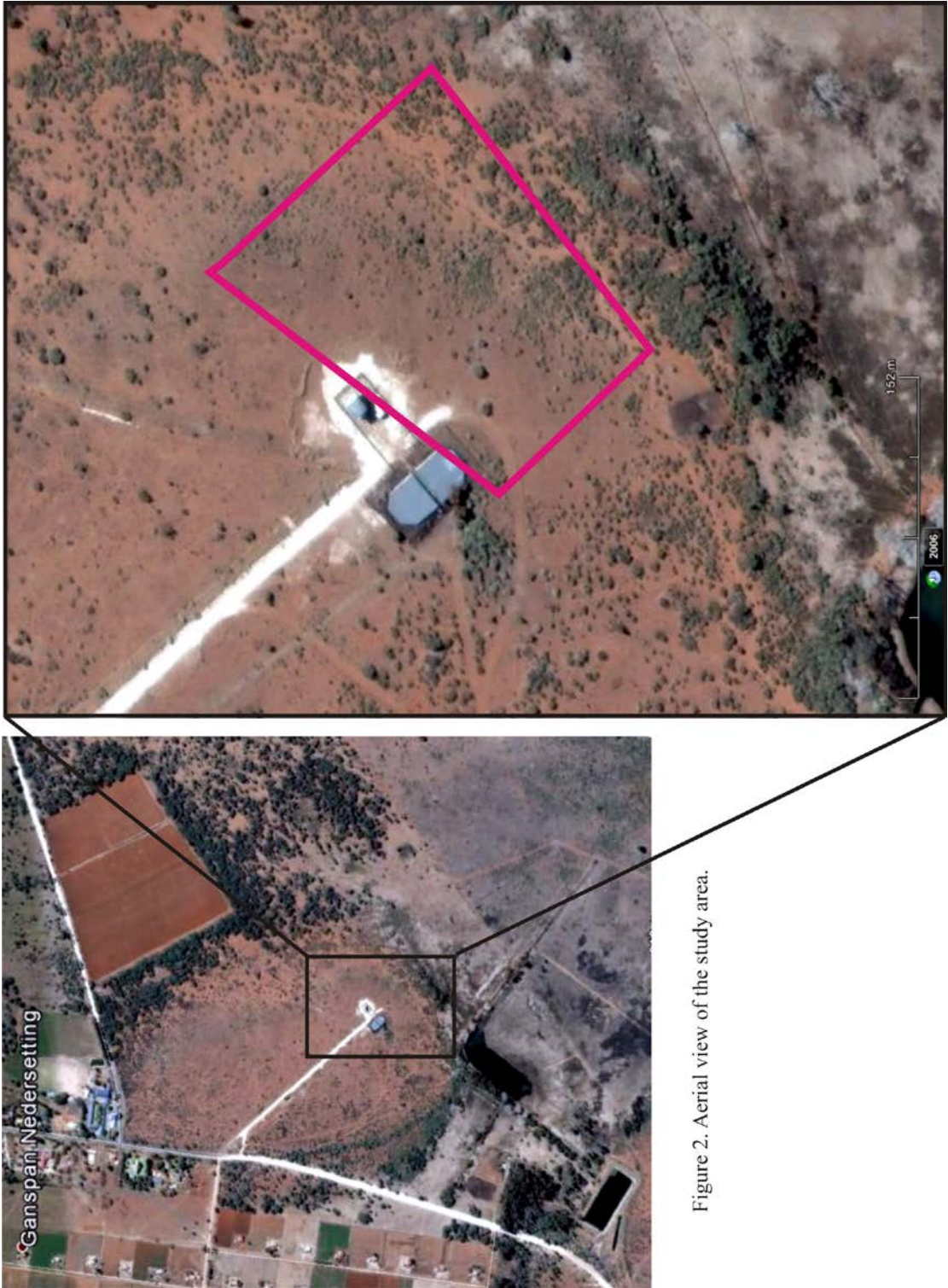


Figure 2. Aerial view of the study area.



Figure 3. General view of the study area, looking northwest (top) and west (below).

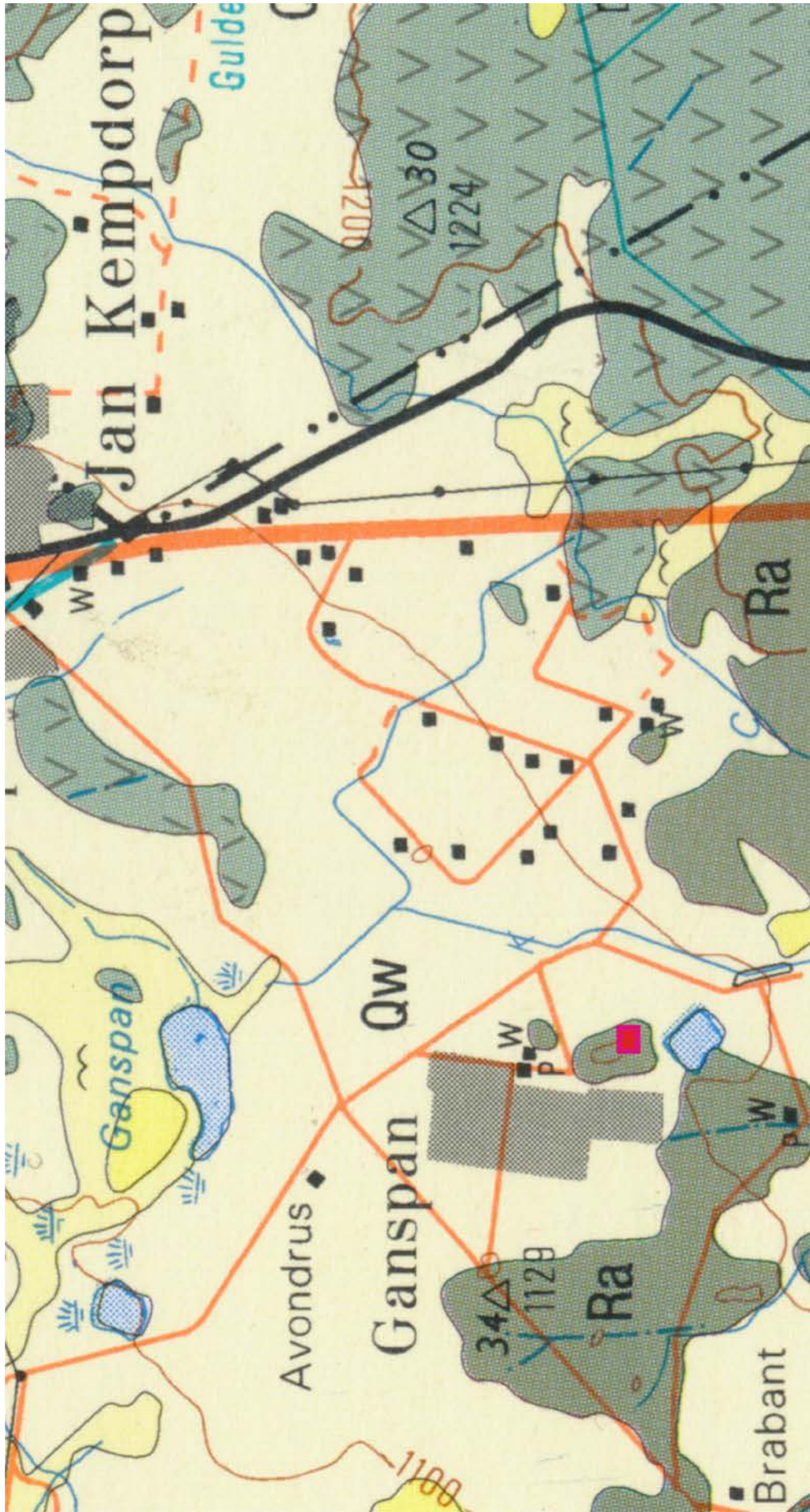


Figure 4. According to the 1:250 000 scale geological map 2724 Christiana, the study area is underlain by Precambrian, Vintersdorp Supergroup lavas (basalts and andesites of the Allannridge Formation, *Ra*),

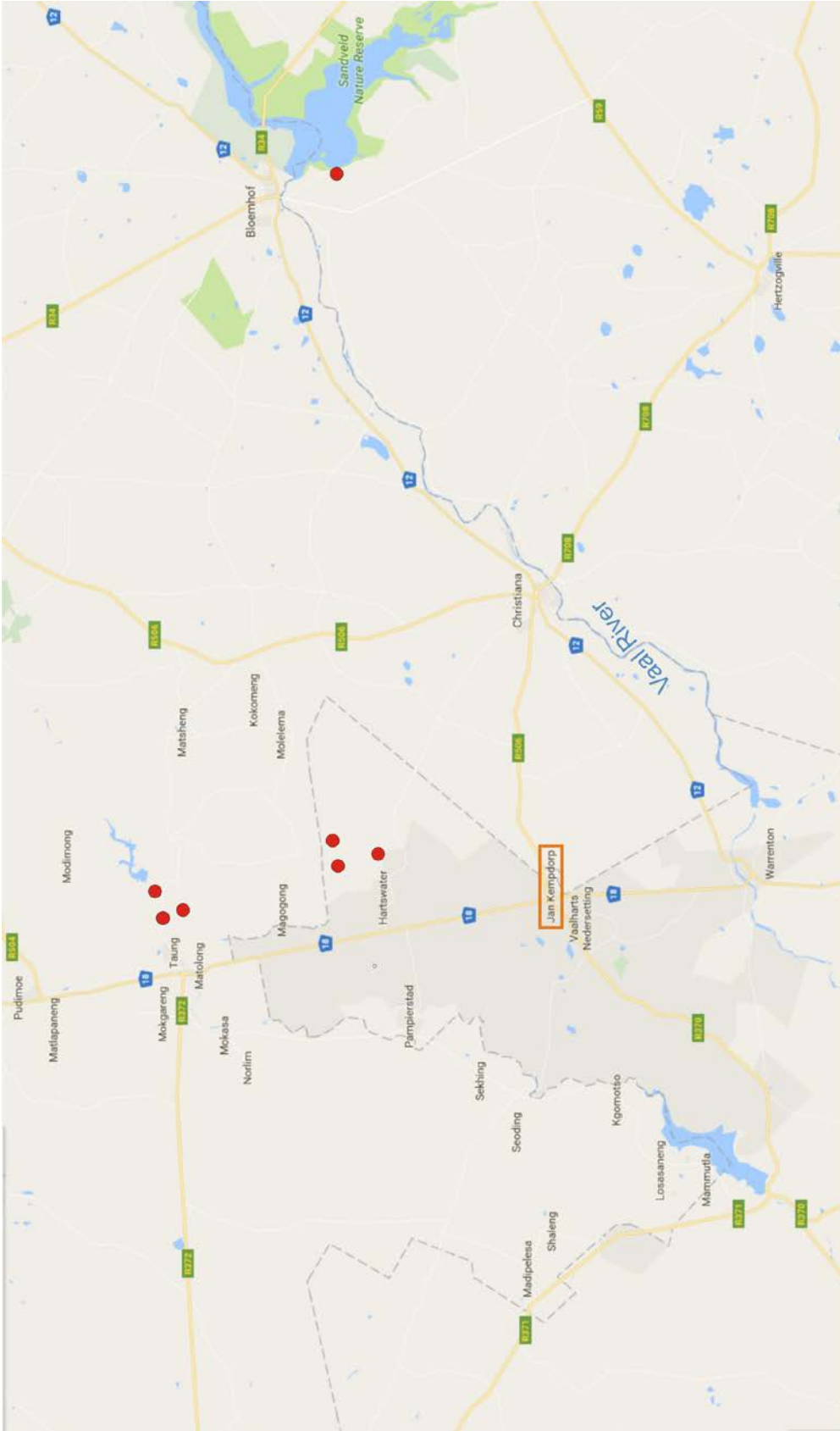


Figure 6. The Vaal River between Warrenton and Bloemhof is an archaeologically sensitive zone that also contains fossil-bearing gravels. Stone-walled settlements of Tswana origin (red circle) have been recorded between Hartswater, Taung and Bloemhof.

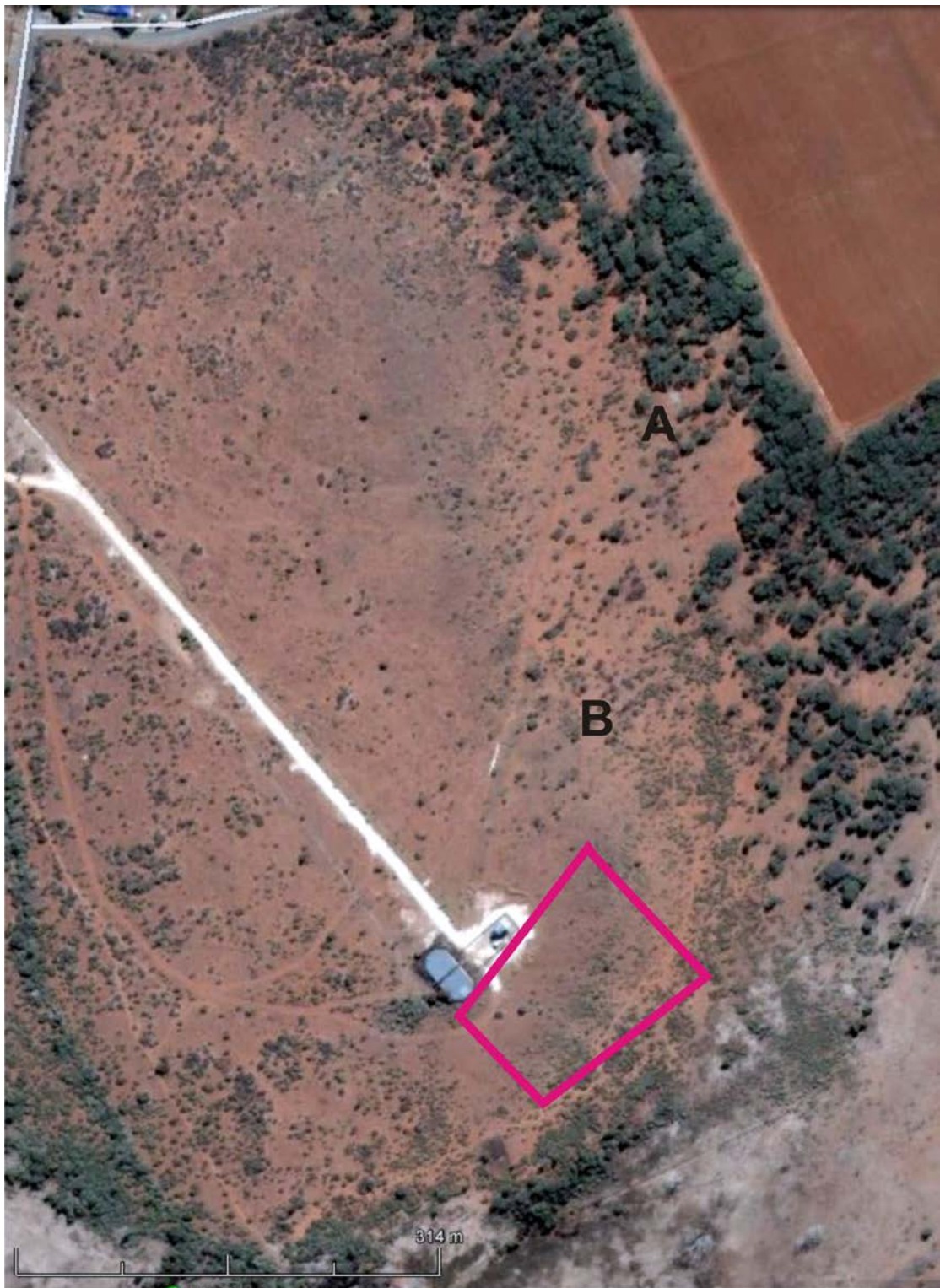


Figure 6. Map of concrete (A) and stone structures (B) located north of the study area.





Figure 7. Old concrete foundations and associated rubble heaps (top) and isolated stone-walled remnants (below).