

**Phase 1 Archaeological Impact Assessment of a
proposed new water pipeline and associated
infrastructure between Ventersburg and the
Koppie Alleen pump station, FS Province.**

Report prepared for
Enviroworks Environmental Consultants

by

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Executive Summary

A Phase 1 Archaeological Impact Assessment was carried for a proposed new water pipeline and associated infrastructure between Ventersburg and the Koppie Alleen pump station in Riebeeckstad, Free State Province. Two culturally significant areas were recorded in the vicinity of the proposed pipeline route but the field assessment indicated that the development will not lead to any significant archaeological impact. The proposed pipeline route and associated development areas are regarded as of low archaeological significance and are assigned the rating of Generally Protected C (GP.C).

Table of Contents

Executive Summary.....	2
Introduction.....	4
Terms of Reference.....	5
Methodology.....	6
Field Rating	6
Locality data.....	6
Background.....	7
Field Assessment.....	7
Impact Statement and Recommendation	8
Pipeline from Mmamahabane Township to the Ventersburg SW reservoir	8
Construction of a new 5Ml reservoir at the Ventersburg SW reservoir	8
Pipeline from the Ventersburg SW reservoir to Phomolong and Hennenman.....	8
Pipeline Hennenman to the Brabant pump station	9
Construction of two new 12Ml reservoirs at Brabant and upgrading of the Brabant pump station	9
Pipeline between Brabant and Koppie-Alleen and upgrading of the pump station at Koppie-Alleen.....	9
References.....	10
Tables and Figures.....	11

Introduction

A Phase 1 Archaeological Impact Assessment was carried for a proposed new water pipeline and associated infrastructure between Ventersburg and the Koppie Alleen pump station in Riebeeckstad, Free State 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 and palaeontological 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 including archaeological and palaeontological sites in the area to be developed, and that make recommendations for protection or mitigation of the impact of the 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 of development relevant to the pipeline development listed in Section 34 (1), Section 35 (4), Section 36 (3) and Section 38 (1) of the NHR Act 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 m² 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 m²; or
- Any other category of development provided for in regulations by the South African Heritage Resources Agency (SAHRA).

Terms of Reference

A site visit and subsequent assessment took place during **August 2016**. 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 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 publications, aerial photographs (incl. Google Earth) and site records were consulted and integrated with data acquired during the on-site inspection.

Field Rating

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

Locality data

The proposed pipeline route covers portions of the 1:50 000 scale topographic maps 2726 DD Riebeeckstad, 2727CC Hennenman and 2827AA Ventersburg (**Fig. 1**). The proposed development will involve the following (**Fig. 2, Table 2**):

- New 4.0km long parallel pipeline to the existing pipeline from Mmamahabane Township in Ventersburg to the Ventersburg SW reservoir;
- Construction of a new 5Ml reservoir at the Ventersburg SW reservoir;
- New 6km long parallel pipeline to the existing pipeline from the Ventersburg SW reservoir to Phomolong;
- New 7.9km long parallel pipeline to the existing pipeline from Phomolong to Hennenman;
- New 5.3km parallel pipeline to the existing pipeline from Hennenman to the Brabant pump station;
- Construction of two new 12Ml reservoirs at Brabant and upgrading of the Brabant pump station;
- New 9.3km long parallel pipeline to the existing pipeline section between Brabant and Koppie-Alleen;
- Upgrading of the pump station at Koppie-Alleen

Background

The central Free State region between Bloemfontein and Kroonstad is generally rich in Stone Age open-site assemblages, the majority of which are associated with moderate to large river systems, pans and artesian springs (Brink 1987; Churchill *et al.* 2001, L. Rossouw 2006; De Ruiter *et al.* 2011). This may include capped occurrences and surface scatters of Early Stone Age Acheulian bifaces and cores; long, high-backed blades from the early Middle Stone Age; typical Florisian retouched blades, trimmed points and Levallois core types; the characteristically large sidescrapers, sub-circular and endscrapers from the Lockshoek Industry (terminal Pleistocene); and the Smithfield Industries of the Holocene. There are no records of rock engravings within the immediate vicinity of the study area. The proposed pipeline footprint is situated at the western periphery of distribution of Late Iron Age settlements in the Free State (Maggs 1976).

Field Assessment

From its connection point at Mmamahabane, (**Fig. 3 no. 1 & Fig. 4**) the pipeline goes under the N1 national road and then traverses the southern and southwestern outskirts of Ventersburg parallel to an existing pipeline (**Fig. 3 nos. 2-3 & Fig. 5**) and adjacent to historically significant structures (**Fig. 3 no. 4 & Figs 6 – 10; Table 3**), to connect with the Ventersburg SW reservoir, where an additional 5Ml reservoir will be constructed (**Fig. 3 no. 5 & Fig. 11**). From here to Phomololong, Hennenman and the Brabant pump station, the new pipeline is primarily located next to the R70 provincial road on degraded farmland and adjacent to the old trench lines of an existing water pipeline (**Fig. 12**). A large Iron Age complex covering about 33ha and consisting of circular and oval-shaped, bilobial stone enclosures (designated OXF 1 by Maggs, 1976), is located on a koppie about 3.5 km southeast of Phomolong and approximately 200 m north-northeast of the R70 provincial road (**Fig 13 no. 6; Table 3**). It is one of a distinct group of sites distributed to the west of the province. Stone walls were built in a customary manner of two faces of stacked stones with a rubble infill. Dwellings consisted of a cone on cylinder hut with stone-walled courtyards at both front and rear, forming a bilobial layout. These bilobial dwellings were arranged around a cluster of central cattle byres. According to radio-carbon dating and oral history, these types of settlements were occupied from the 16th to early 19th century

(Maggs 1976). At the Brabant pump station, the pipeline cuts across an old farmstead area (**Fig 14 no. 7 & Figs. 15 - 16**) and then continues west on degraded farmland and urbanized sections, adjacent to the R70 and an existing pipeline until it reaches the Koppie Alleen pump station facility in Riebeeckstad (**Figs. 17 – 19**).

Impact Statement and Recommendation

Pipeline from Mmamahabane Township to the Ventersburg SW reservoir

It is unlikely that the proposed development will result in any significant archaeological impact. A foot survey of the development footprint revealed no indication of historically significant structures, Iron Age sites, graves or *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. Although the western wall of the Voortrekker Monument (**Figs 6 – 10**) is located only 25 m away from the proposed route, it is a highly visible structure and can be easily avoided during the construction phase of this section. The section is regarded as of low archaeological significance and is assigned the rating of Generally Protected C (GP.C).

Construction of a new 5Ml reservoir at the Ventersburg SW reservoir

It is unlikely that the proposed development will result in any significant archaeological impact. A foot survey of the development footprint revealed no indication of historically significant structures, Iron Age sites, graves or *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. The proposed development area is regarded as of low archaeological significance and is assigned the rating of Generally Protected C (GP.C).

Pipeline from the Ventersburg SW reservoir to Phomolong and Hennenman

It is unlikely that the proposed development will result in any significant archaeological impact. A foot survey of the section revealed no indication of historically significant structures, Iron Age sites, graves or *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. The Iron Age complex located southeast of Phomolong and north-northeast of the R70 provincial road (**Fig. 13**) will not be impacted by the proposed development. The section is regarded as of low archaeological significance and is assigned the rating of Generally Protected C (GP.C).

Pipeline Hennenman to the Brabant pump station

It is unlikely that the proposed development will result in any significant archaeological impact. A foot survey of the section revealed no indication of historically significant structures, Iron Age sites, graves or *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. The old farmstead area at the Brabant pump station was mapped and photographed, but it is not considered to be historically significant. The section is regarded as of low archaeological significance and is assigned the rating of Generally Protected C (GP.C).

Construction of two new 12Ml reservoirs at Brabant and upgrading of the Brabant pump station

It is unlikely that the proposed development will result in any significant archaeological impact. A foot survey of the development footprint revealed no indication of historically significant structures, Iron Age sites, graves or *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. The proposed development area is regarded as of low archaeological significance and is assigned the rating of Generally Protected C (GP.C).

Pipeline between Brabant and Koppie-Alleen and upgrading of the pump station at Koppie-Alleen

It is unlikely that the proposed development will result in any significant archaeological impact. A foot survey of the development footprint revealed no indication of historically significant structures, Iron Age sites, graves or *in situ* Stone Age archaeological material, capped or distributed as surface scatters on the landscape. The proposed section and development area is regarded as of low archaeological significance and is assigned the rating of Generally Protected C (GP.C).

References

The archaeozoology of Florisbad, Orange Free State. *Memoirs of the National Museum, Bloemfontein* 24.

De Ruiter, D.J., Churchill, S.E., Brophy, J.K. & Berger, L.R. 2011. Regional Survey of Middle Stone Age Fossil Vertebrate Deposits in the Virginia-Theunissen area of the Free State, South Africa. *Navorsing van die Nasionale Museum* 27(1): 1-20.

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DECLARATION OF INDEPENDENCE

I, Lloyd Rossouw ID 6711225124086, declare that I act as an independent specialist consultant in the field of archaeology. 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 authorisation of this project and have no conflicting interests in the undertaking of the activity.



30/ 09 / 2016

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

Table 2. Pipeline Route Coordinates

Connection Point	GPS coordinates
Mmamahabane:	28° 5'38.03"S 27° 8'13.78"E
Ventersburg SW reservoir	28° 4'15.88"S 27° 6'48.57"E
Phomolong	28° 1'19.51"S 27° 4'8.14"E
Hennenman	27°58'33.75"S 27° 2'5.78"E
Brabant pump station	27°56'58.98"S 26°58'25.00"E
Koppie-Alleen pump station	27°55'12.08"S 26°47'43.26"E

Table 3. GPS coordinates of culturally significant areas in the vicinity of the proposed development.

Feature	Section	GPS coordinates
Voortrekker Monument & Grave	Mmamahabane Township to the Ventersburg SW reservoir	28° 5'5.90"S 27° 7'45.34"E
Iron Age complex	Ventersburg SW reservoir to Phomolong	28° 3'26.07"S 27° 6'12.12"E

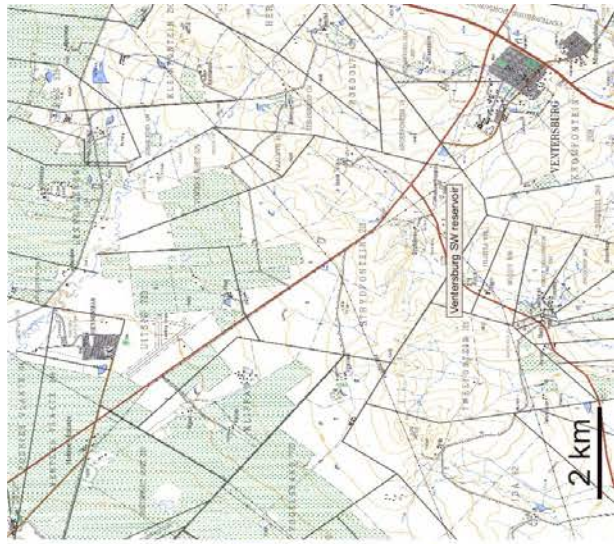


Figure 1. The proposed pipeline route covers portions of 1:50 000 topographic sheets 2726 DD Riebeeckstad (left), 2727CC Hennenman (center) and 2827AA Venterburg (right).

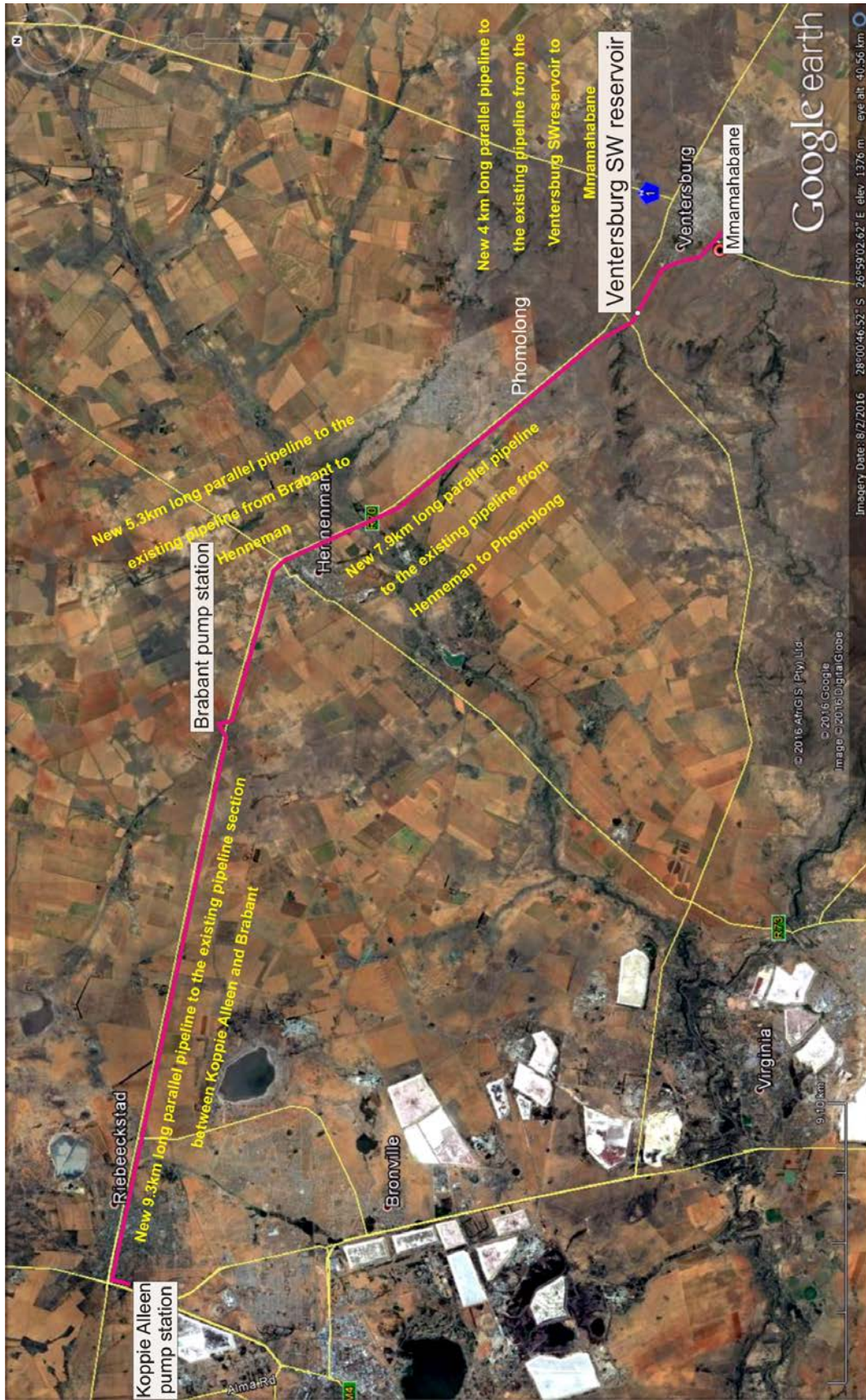


Figure 2. Aerial view of the proposed footprint between Ventersburg and Riebeeckstad.

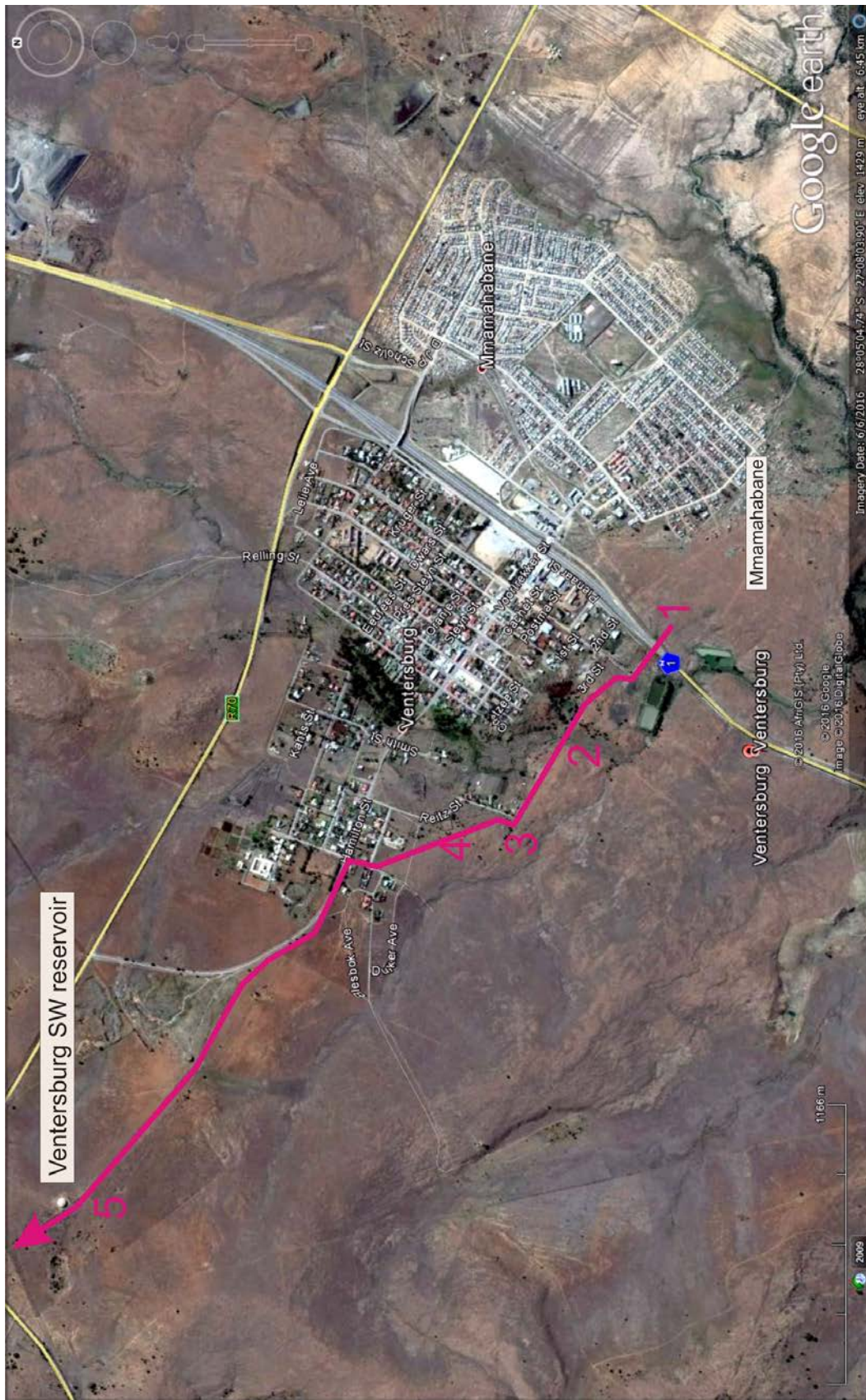


Figure 3. Aerial view of the proposed pipeline route at Ventersburg.



Figure 4. View of the connection point at Mmamahabane for the new pipeline section between Ventersburg and the Ventersburg SW reservoir, looking east (top) and southeast (bottom).



Figure 5. The footprint, south of Ventersburg (top and bottom left), of the proposed 4 km long pipeline parallel to the existing pipeline (bottom right) that runs between Mmamahabane and the Ventersburg SW reservoir.



Figure 6. The footprint of the proposed parallel pipeline to the existing pipeline between Mmamahabane and the Ventersburg SW reservoir, looking north-northwest, with a stone-walled historical structure located about 25 m to the right (inset below right).



Figure 7. A monument celebrating the 1938 Voortrekker Centenary (top) with oxwagon imprints (bottom) is located in the center of the stone-walled kraal.



Figure 8. View of the 43m - long western wall of the stone-walled kraal that surrounds the Voortrekker monument.



Figure 9. Sarcophagus of P.A. Venter, located outside and next to the eastern wall the stone-walled kraal. Venter was owner of the farm Kromfontein on which Ventersburg was officially declared a town in 1873.



Figure 10. The remnants of several dolerite borrow pits, which provided the raw material to build the stone-walled kraal, are located around the site.



Figure 11. The construction site of the proposed new 5MI reservoir at the existing Ventersburg reservoir (top left & right) and the proposed pipeline footprint running parallel to the existing pipeline towards the R70 provincial road in the direction of Hennenman (bottom).



Figure 12. The proposed pipeline footprint running parallel to the existing pipeline between Phomolong (left & top right) and Hennenman (bottom right).

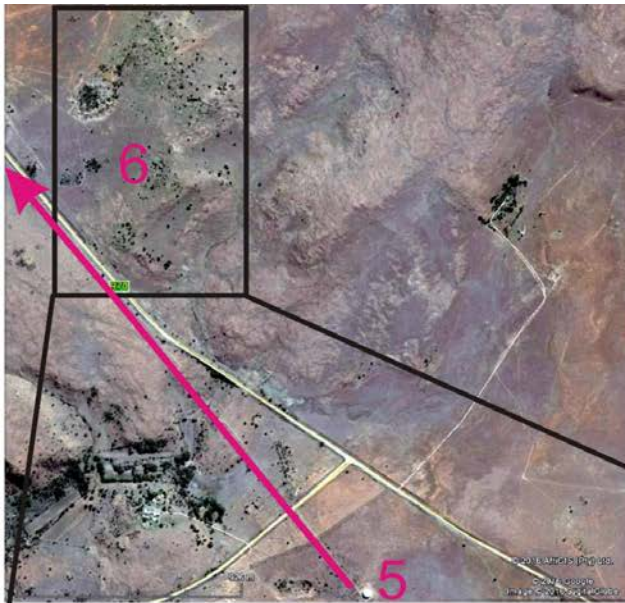
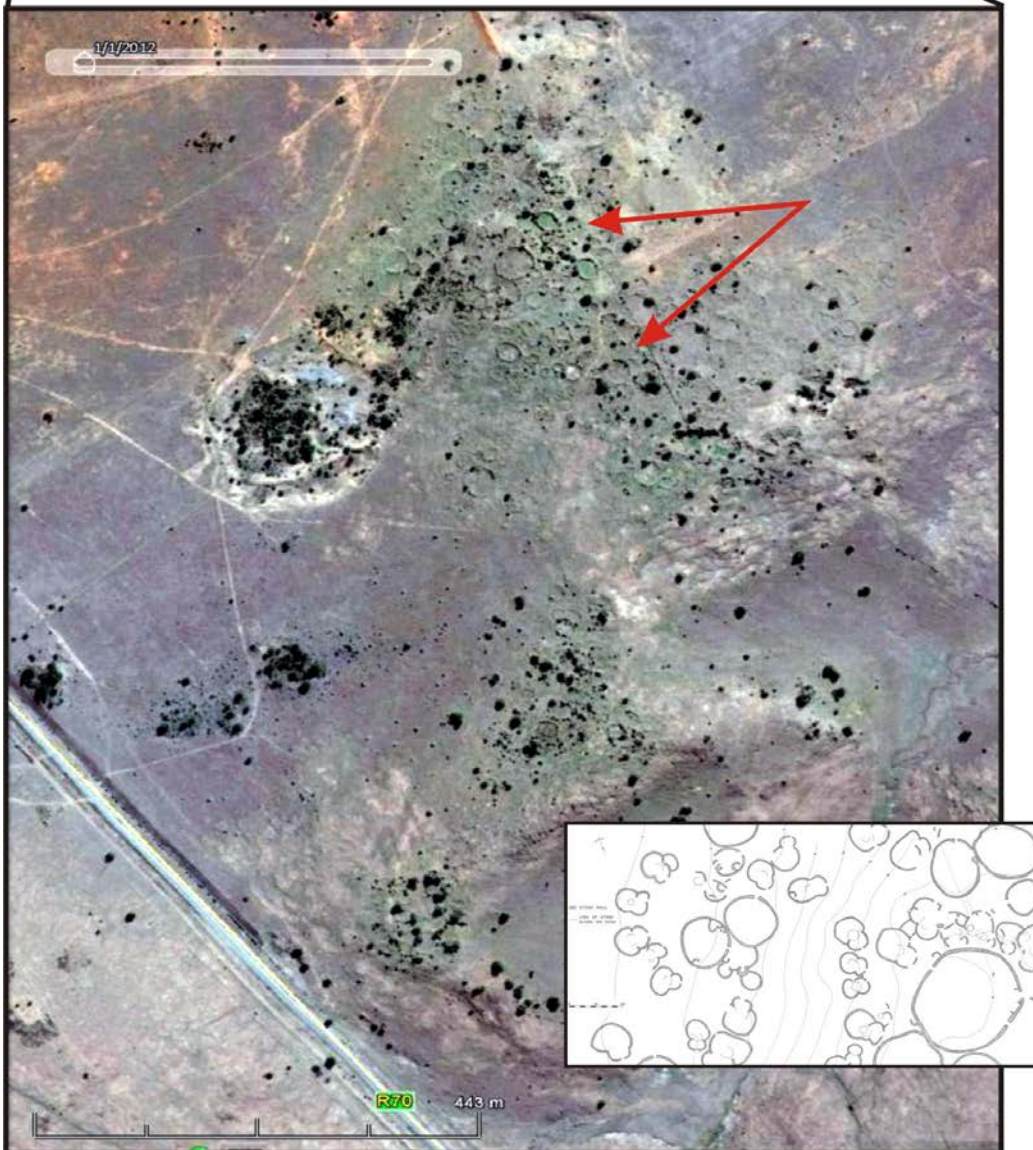


Figure 13. Aerial view of Late Iron Age settlement complex located next to the R70 and 5 km northwest of Ventersburg (top & center). Layout of circular and oval-shaped, bilobial stone enclosures after Maggs (1976, insert)



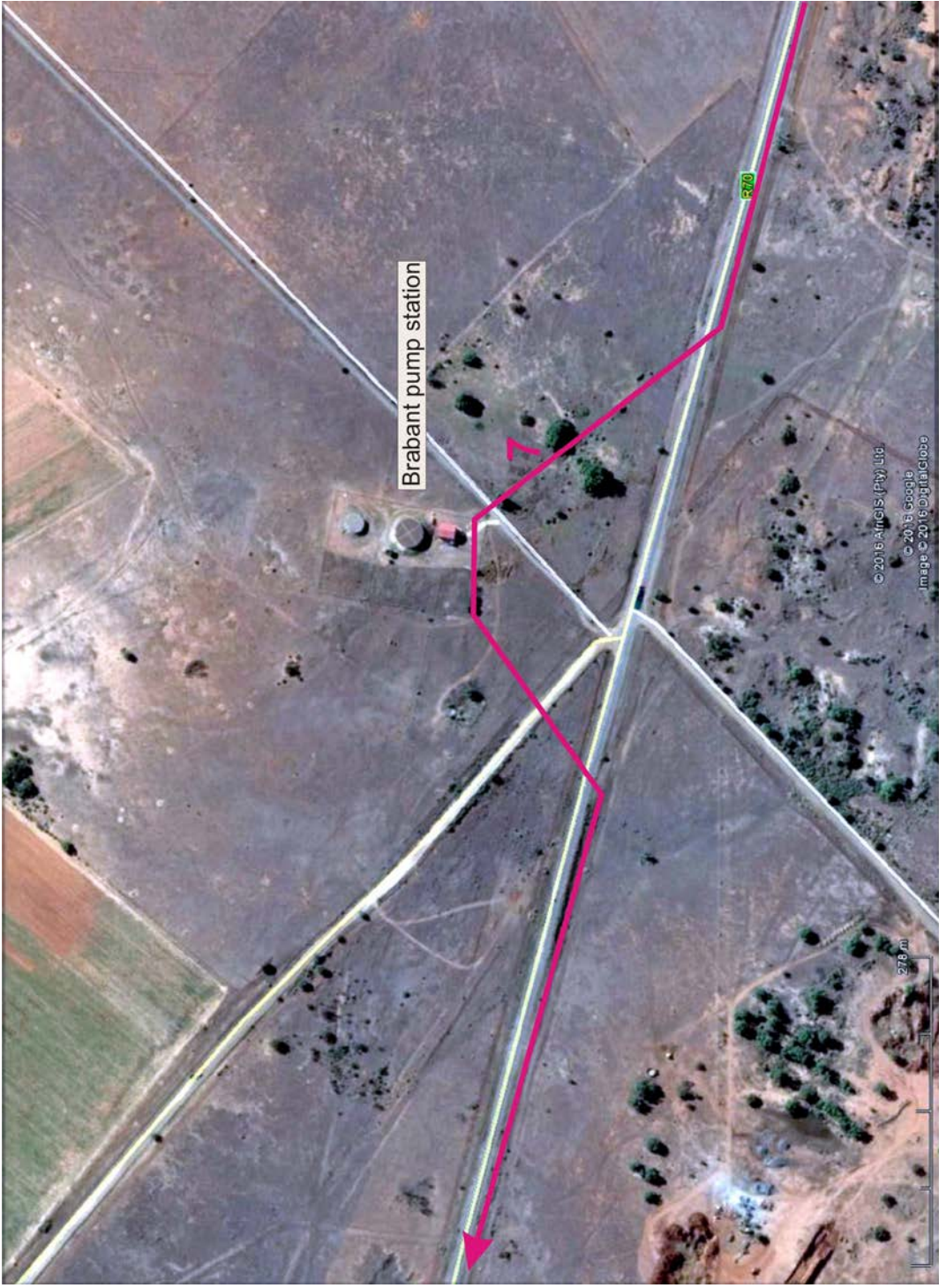


Figure 14. Aerial view of the pipeline footprint at the Brabant pump station.



Figure 15. The Brabant pump station (top) and remnants of an old farmhouse located 125 m away to the southeast (center & bottom).



Figure 16. General view of the old farmstead and proposed pipeline footprint, looking northwest towards the pump station (top) and scattered remnants associated with the farmstead (left).



Figure 17. Aerial view of the Koppie Alleen pump station facility at Riebeeckstad.



Figure 18. The footprint area of the proposed new pipeline immediately north of the Koppie Alleen pump station.



Figure 19. The Koppie Alleen pump station facility, looking northwest.