

Phase 1 Archaeological Impact Assessment of three
proposed new water pipelines in Frankfort, Fezile Dabi
District Municipality, FS Province.

Report prepared for:
MDA Environmental Consultants

by

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Summary

A Phase 1 Archaeological Impact Assessment was carried out for the proposed installation of three new water pipelines in Frankfort, Free State Province. The proposed development involves the construction of a 1380 m long water pipeline between the new Namahadi pump station and the Namahadi WTW, a 3570 m long bifurcated water pipeline between the new Namahadi pump station and the Namahadi Township and a 6240 m long water pipeline between the Frankfort WTW and the Namahadi Reservoir. All three pipeline footprints are located on degraded terrain. There is no above-ground evidence of building structures older than 60 years, Stone Age archaeological remains, Iron Age remnants, graves or material of cultural significance within the confines of the development footprints. The proposed pipeline footprints are assigned a site rating of General Protection C (GP.C). It is recommended that the project may proceed provided that all related industrial activities are restricted to within these development footprints.

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Introduction

A Phase 1 Archaeological Impact Assessment was carried out for the proposed installation of three new water pipelines in Frankfort, Free State Province (**Fig. 1 & 2**). 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 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

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. Three separate site visits took place in April, May and September 2016.

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

Details of area surveyed

Maps: 1:50 000 topographical map 2728AB Van Rheenenskop, 2728AD Frankfort and 2728BC Frankfort East.

The proposed development involves the construction of

1. a 1380 m long water pipeline between the new Namahadi pump station and the Namahadi WTW (**Fig. 3**),
2. a 3570 m long bifurcated water pipeline between the new Namahadi pump station and the Namahadi Township (**Fig. 4**)
3. and a 6240 m long water pipeline between the Frankfort WTW and the Namahadi Reservoir (**Fig. 4**).

Pipeline Coordinates (**Fig. 3 & 4**):

#	Coordinates	
A	27°15'41.08"S	28°29'15.47"E
B	27°15'43.60"S	28°29'43.10"E
C	27°15'47.53"S	28°29'52.10"E
D	27°15'43.48"S	28°29'56.47"E
E	27°15'47.53"S	28°29'52.10"E
F	27°15'33.98"S	28°30'1.82"E
G	27°15'4.38"S	28°30'12.60"E
H	27°14'52.73"S	28°30'12.91"E
I	27°14'37.74"S	28°30'21.02"E
J	27°15'3.79"S	28°30'16.18"E

K	27°14'59.19"S	28°30'18.03"E
L	27°14'48.03"S	28°30'38.16"E
M	27°16'49.00"S	28°30'40.06"E
N	27°15'40.79"S	28°31'29.00"E
O	27°15'11.81"S	28°31'36.16"E
P	27°14'47.57"S	28°31'5.99"E
Q	27°14'13.53"S	28°30'18.49"E

Background

The archaeological footprint in the region is characterized by large numbers of Iron Age stone-walled settlements. Maggs' classification of late Iron Age settlement patterns in the Free State indicates that different settlement types produced huts and kraals of different materials in different styles (Maggs 1976). The type site of the oldest Iron Age settlements in the region is named after Ntsuanatsatsi hill, the legendary place of origin of the Fokeng people, which is situated between Frankfort and Vrede (Type site OU1, farm Helena, Maggs 1976) (**Fig 5 & 6**). Type N settlement units are characterized by primary enclosures arranged in a ring linked by secondary walling thus forming a large secondary enclosure in the middle with refuse middens scattered around the outside. Corbelled huts are absent. Instead, houses were made clay-plastered walls of reeds and grass with floors of smeared dung on stone paving. This settlement type is the oldest late Iron Age settlement type from the north-eastern corner of the Free State with radiocarbon dates going back to between the 15th and 17th century A.D. Their occupation is linked to the early Fokeng, Koena and Kgatla lineages (Maggs 1976:315). Type N settlements subsequently led to Type V settlement units (Type site OO1 Makgwareng, Lindley District), after the former were replaced or converted into a new settlement pattern (Maggs 1976). Type V settlements spread out further to the south and east, but did not extend further than the Vet River and the Drakensberg escarpment and is named after Vegkop, the Ndebele - Voortrekker battle site of 1836 located south of Heilbron. Settlements are located in the central and eastern Free State over a wide area roughly around Marquard, Ventersburg, Senekal, Lindley, Frankfort and Heilbron (**Fig. 6**). They are represented by circular to oval stone enclosures of varying sizes arranged in a circle that are joined by connecting walls to form a large single enclosure.

Rock art (paintings) have been recorded on the farm Tweelingskop 221 in the Frankfort district.

Frankfort town (originally spelt Frankfurt) was established next to the Wilge River on the farm Roodepoort in 1869 and by 1890 the town had 20 permanent residential buildings (Jacobs 1952). Declared heritage sites within the town include the Old Magistrate's Court, Police Station and Post Office, all located in Van Reenen Street.

Field Assessment

Pipeline 1 - new Namahadi pump station to Namahadi WTW:

From the proposed new pump station the pipeline crosses a small tributary of the Wilge River at J.J. Hadebe Street and then follows the road for about 100 m in a northerly direction before crossing it to follow the Namahadi WTW access road to its termination point at the western boundary of the facility (**Fig. 7**)

Pipeline 2 - new Namahadi pump station to Namahadi Township:

The pipeline follows a small tributary of the Wilge River, crosses it twice going northeast and split into two separate lines going into the township at the Aberdeen dam wall (**Fig.**).

Pipeline 3 – Frankfort WTW to Namahadi Reservoir:

From the Frankfort WTW the pipeline runs adjacent to the R26 for about 3.5 km and then divert to follow an existing gravel road into the Namahadi Township for another 3 km in a northwesterly direction where it passes the_Namahadi Reservoir to terminate at the northwestern boundary of the township (**Fig.**).

Impact Statement & Recommendation

All three pipeline footprints are located on degraded terrain. There is no above-ground evidence of building structures older than 60 years, Stone Age archaeological remains, Iron Age remnants, graves or material of cultural significance within the confines of the development footprints. The proposed pipeline footprints are assigned a site rating of General Protection C (GP.C) (see **Table 1**). It is recommended that the project may proceed provided that all related industrial activities are restricted to within these development footprints.

References

- Jacobs, J. F. 1952. *Oranje Blanje Blou. Die romantiek van die Vrystaatse dorpe*. Afrikaanse Pers Boekhandel. Johannesburg.
- Maggs T. M. O’C 1976. *Iron Age Communities of the Southern Highveld*. Occasional Publications of the Natal Museum No. 2. Natal Museum, Pietermaritzburg.

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

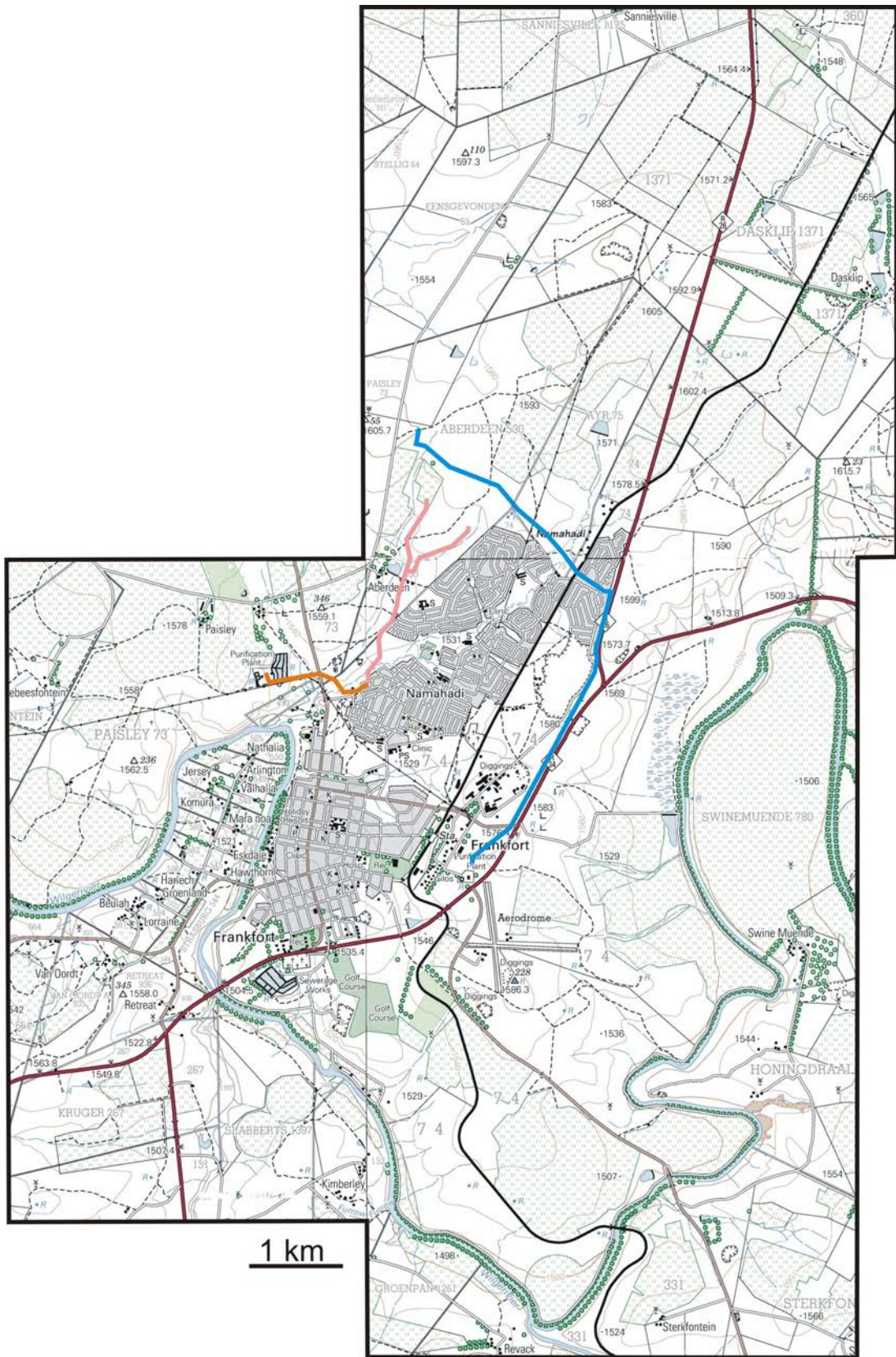


Figure 1. Map of Frankfort and study area (portion of 1:50 000 scale topographic maps 2728AB Van Rheenenskop, 2728AD Frankfort and 2728BC Frankfort East).

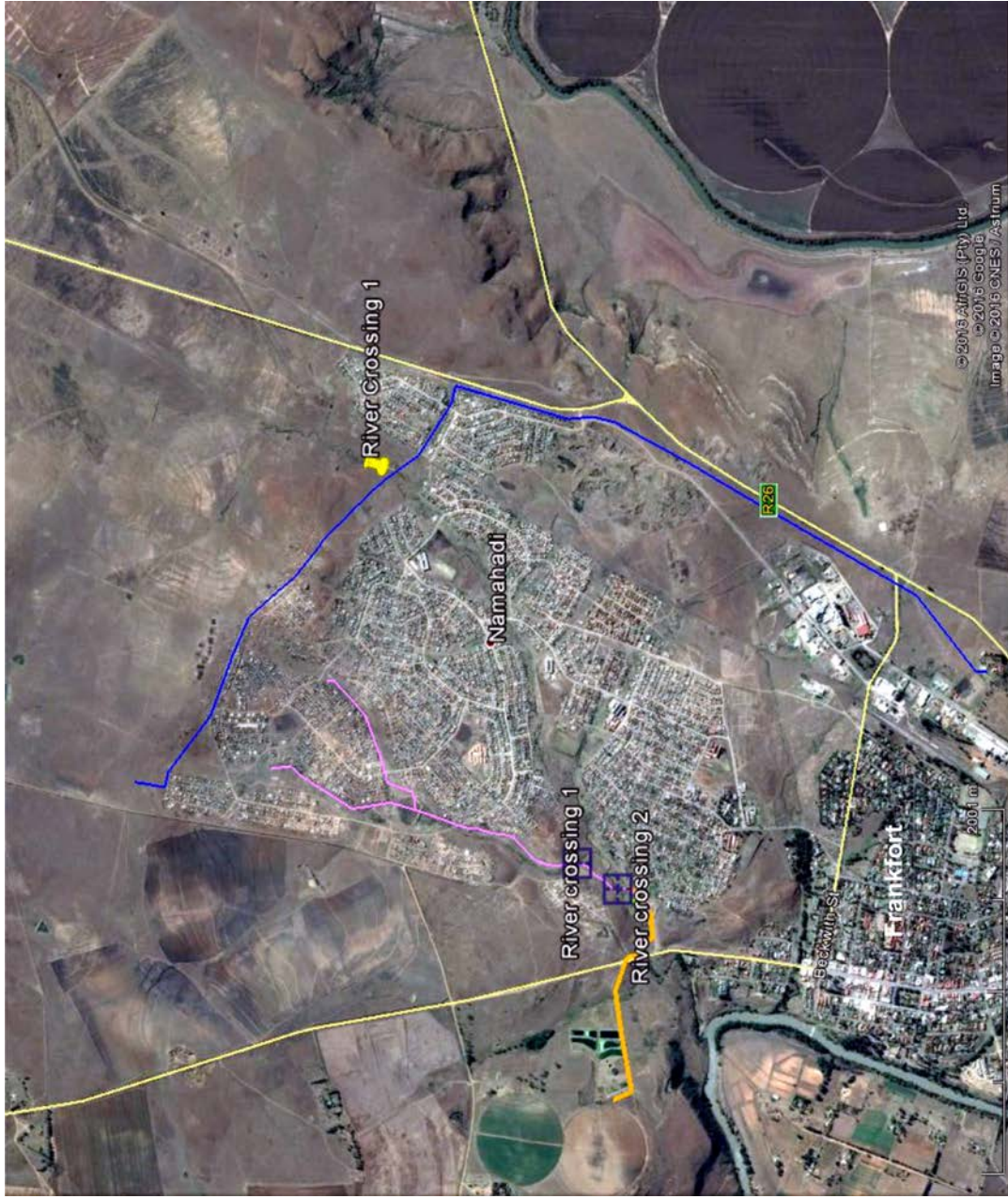


Figure 2. Aerial view and layout of the proposed new pipeline footprints.

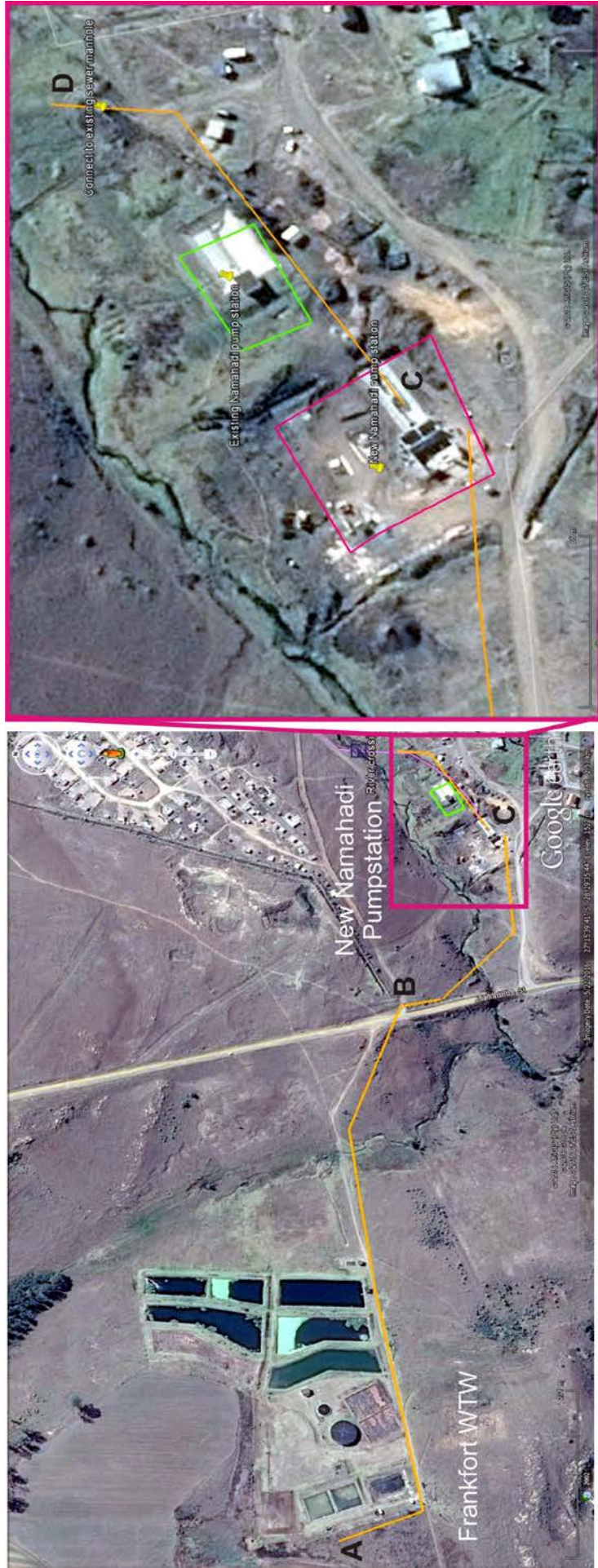


Figure 3. Aerial view of the pipeline footprint between the new Namahadi pump station and the Namahadi WTW



Figure 4. Aerial view of the pipeline footprints between the new Namahadi pump station and the Namahadi Township (left, pink line) and between the Frankfort WTW to Namahadi Reservoir (right, blue line).

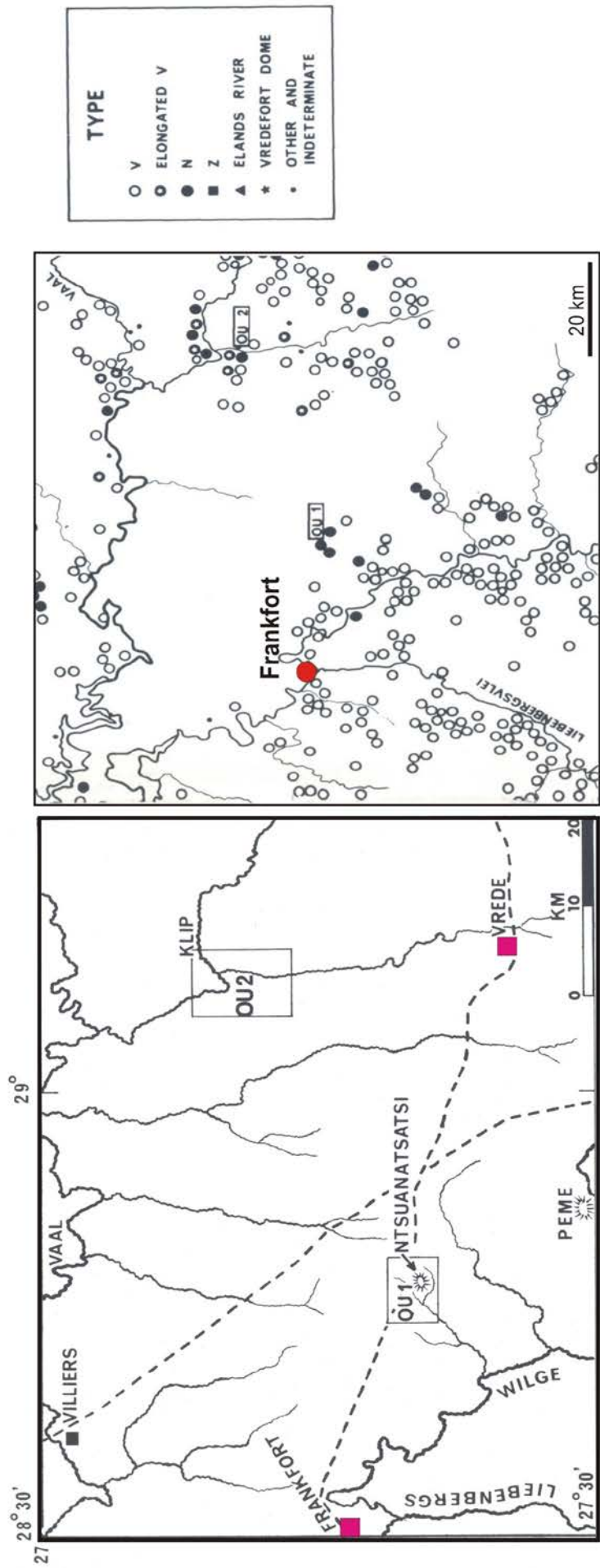
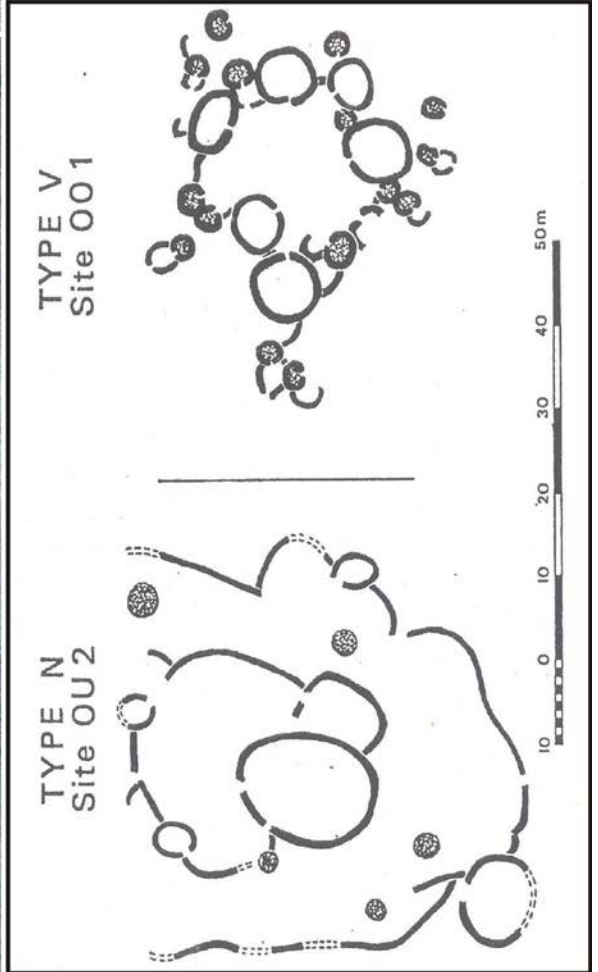


Figure 5. Map of Ntsuanatsatsi Hill, Type N type site situated between Frankfort and Vrede (left) and distribution of Type N and Type V stone-walled settlement types in the region (after Mags 1976).



Figure 6. Aerial view of Type N stone-walled ruins at Ntsuantsantsi near Frankfort (top left) and Type V stone-walled ruins at Makwareng near Lindley (top right). Settlement layouts after Maggs (1976).



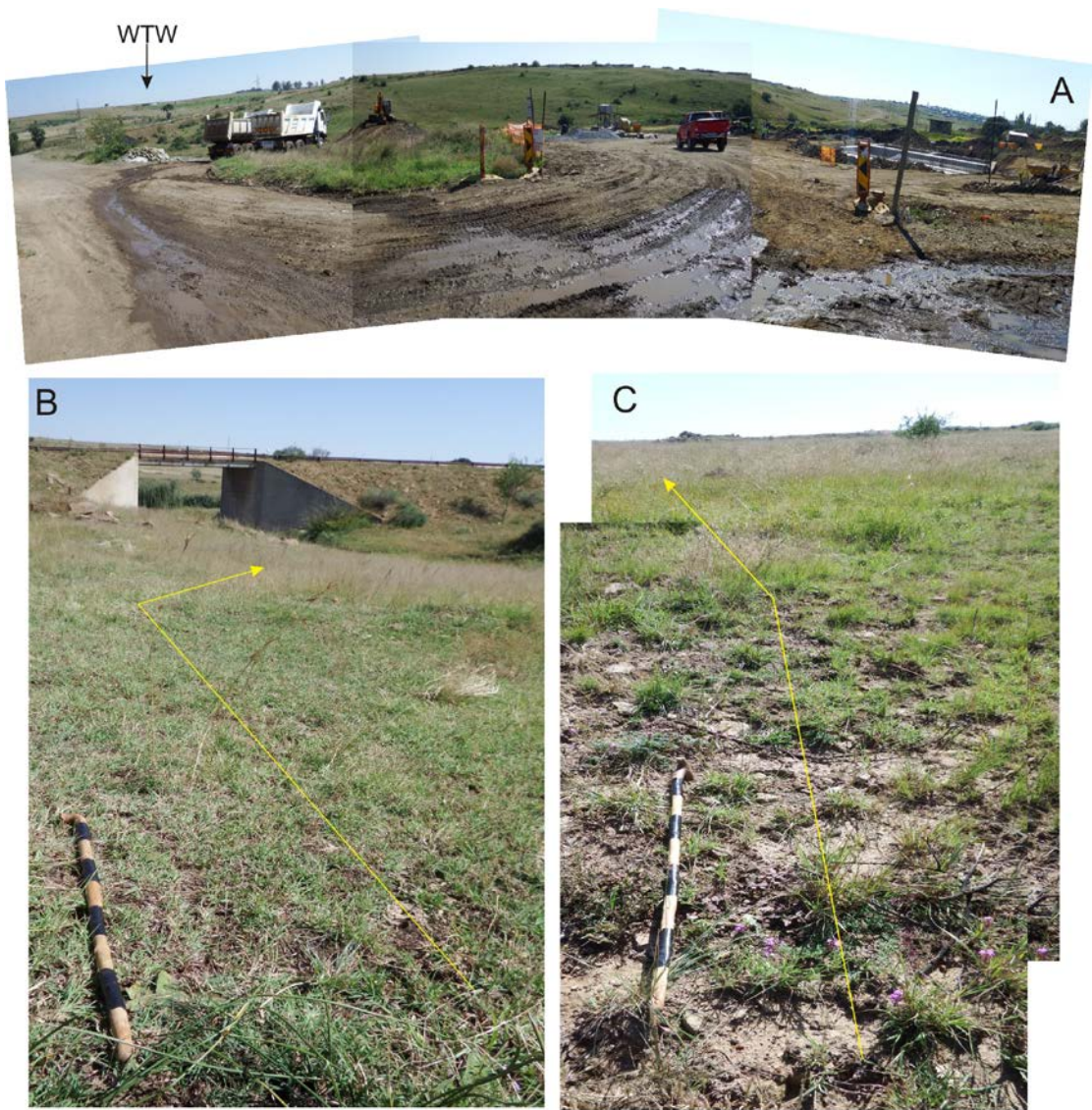


Figure 7. From the proposed new pump station site (A) the pipeline crosses a small tributary of the Wilge River at J.J. Hadebe Street (B) and then follows the road for about 100 m in a northerly direction (C).



Figure 8. The pipeline crosses J.J. Hadebe Street (A) and then follows the Namahadi WTW access road (B - D) to its termination point at the western boundary of the facility (E).

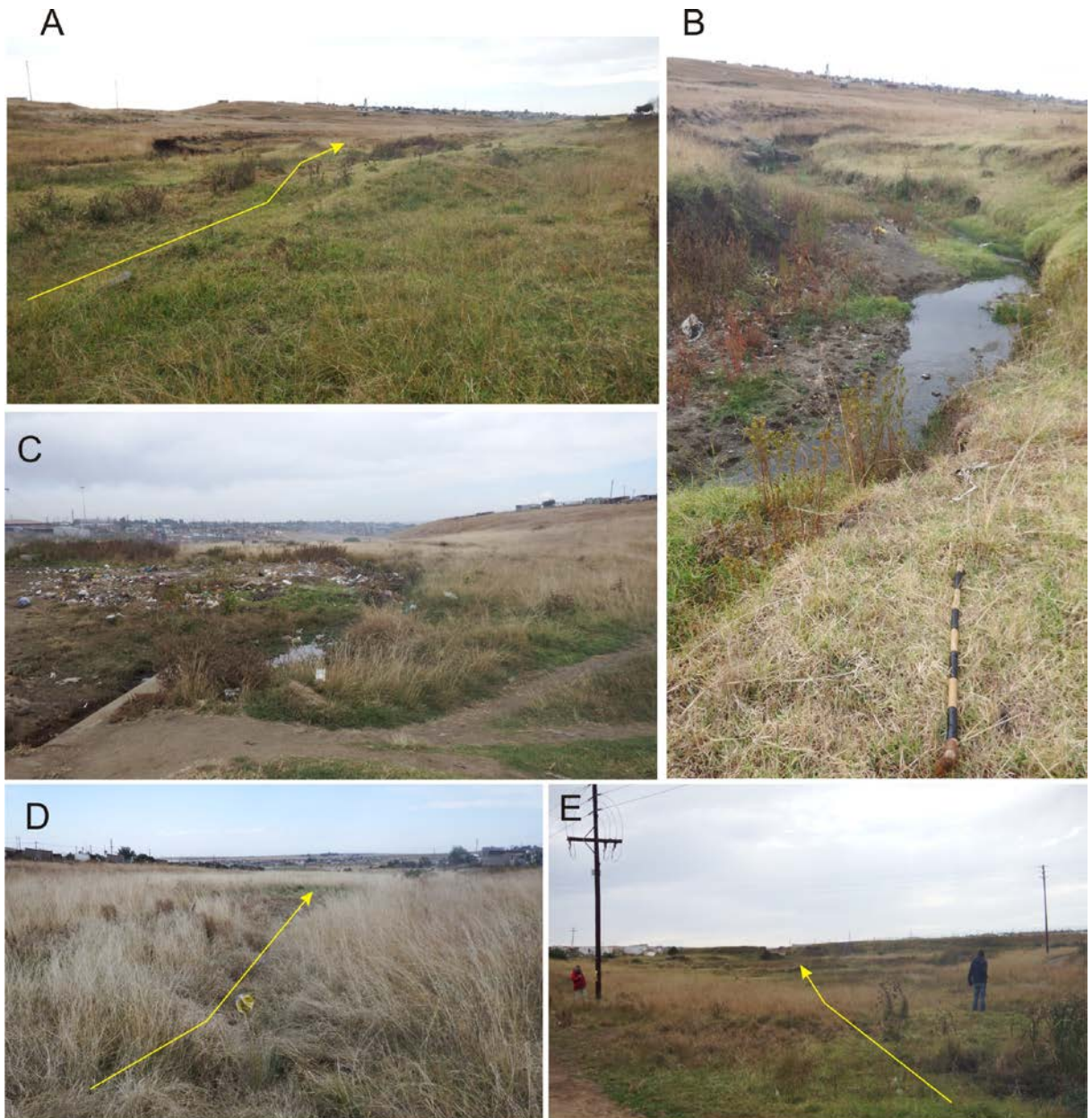


Figure 9. The pipeline follows a small tributary of the Wilge River (A) and crosses it twice going northeast (B, C) within a largely residential area (D). It then splits into two separate lines going into the township at the Aberdeen dam wall (E).



Figure 10. From the Frankfort WTW the pipeline runs adjacent to the R26 (A) and then divert left to follow an existing gravel road (B, C) in a northwesterly direction within a residential area (D - F) where it passes the Namahadi Reservoir (G) and terminates at the northwestern boundary of the township.