

Phase 1 Archaeological Impact Assessment of a  
proposed water pipeline adjoining the R712 between  
Sterkfontein Dam and Puthaditjhaba

February 2008

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## **Executive Summary**

A 20km long and 30m wide section of the R712 between Puthaditjhaba and the Sterkfontein Dam Nature Reserve was investigated during a foot survey to prepare for a proposed water pipeline that will be placed belowground on the eastern side of the R712 in the shoulder area directly adjoining the tarred road.

The general status of the section that was surveyed can largely be described as disturbed agricultural land.

Historical farm ruins, recorded in the section covering the Sterkfontein Dam Nature Reserve, represent the original Sterkfontein homestead built towards the end of the 19<sup>th</sup> century.

Fossil bone fragments, pottery and associated subfossilized bone were identified and relate to the occurrence of palaeontological remains in the Beaufort Group and local Iron Age settlements, respectively.

Potential impact of the proposed pipeline is minimal provided that certain mitigative measures are taken into consideration.

It is recommended that

1. a particular segment of pipeline be moved to the opposite side the R712 and away from the adjacent hillside where archaeological features have been identified.
2. the segment of pipeline running between the R712 and historical farm ruins at the Sterkfontein Dam Nature Reserve (Section 5), be placed along the old, existing farm road leading to and away from the ruins.
3. follow-up archaeological investigations are conducted during the construction phase.

## **Introduction**

A new water pipeline is to be installed alongside the R712 between the Sterkfontein Dam Nature Reserve and Puthaditjhaba (Weltevreden 190) (Figure 1). An HIA of the area was carried out in February 2008. 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. The task involved identification of possible archaeological sites or occurrences in the proposed zone, an assessment of their significance, possible impact by the proposed development and recommendations for mitigation where relevant.

## **Archaeological Background**

The range of archaeological sites encountered on the Drakensberg Mountains and its slopes and foothills in the northeastern Free State is extensive, in terms of both typology and chronology. This include retouched blades and trimmed points from the Middle Stone Age to the microlithic Wilton and Smithfield Complexes from the Holocene. Archaeological sites have been identified along the foothills of the Drakensberg between Oliviershoek and Bergville while the area around Cathkin Peak has produced a number of sealed sites and rock art localities (Figure 1a).

Stone enclosures found on and around dolerite koppies along the Wilge and Elands River valleys exhibit telltale signs of basic structural units including huts, large enclosures, pieces of walling and stone circles related to Late Iron Age settlements in the area. These sites were occupied from as early as the sixteenth and seventeenth centuries and represent a system that can be broadly attributed to groups ancestral to the Sotho-speaking people of today. Extensive Iron Age settlements have been recorded previously in the region at Beginsel, Weltevreden, Israel, Bakers Kop and Elandsrivierkop (Figure 1b).

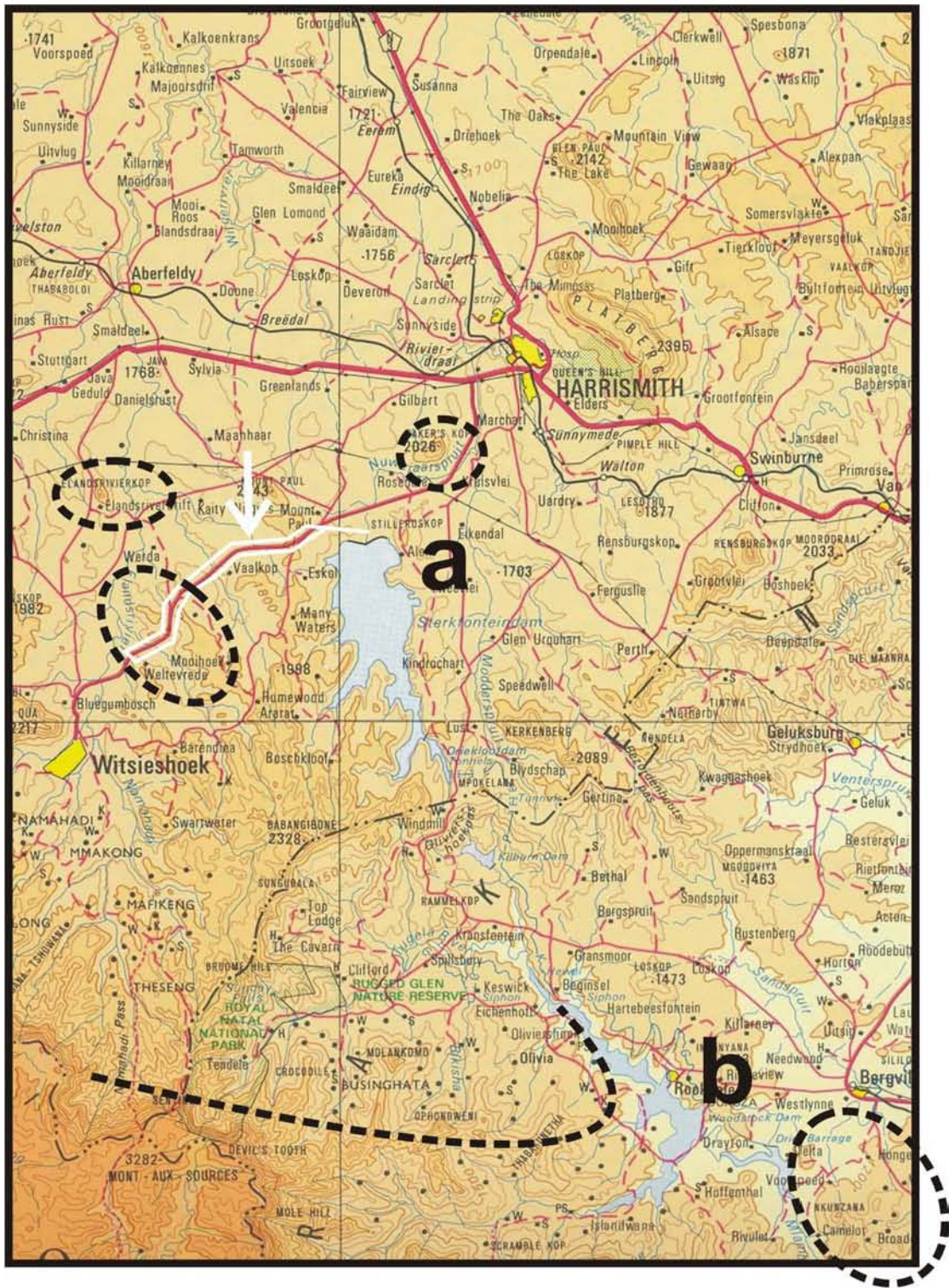
## **Description of the Affected Area**

### **Details of area surveyed**

#### Locality data

1:250 000 2828 Harrismith

A 20km long and 30m wide section adjacent to the R712 was investigated during a foot survey. The survey was kicked off at the Puthaditjhaba – end (Weltevreden 190) of the proposed pipeline and terminated at the Sterkfontein Dam Nature Reserve. The



**Figure 1. 1:500 000 topographic map of the area. White line and arrow indicate the extend of the survey area. Black dotted lines indicate archaeologically sensitive areas.**

pipeline will be placed belowground on the eastern side of the R712 in the shoulder area directly adjoining the tarred road.

### Methodology

All structures and sites that were observed were recorded using a Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a SonyW17 digital camera. The survey area was divided into five sections and evaluated accordingly (Figures 2 - 7).

### Geology

Fluvially derived sedimentary rocks of the Karoo Supergroup, comprising mudstones and sandstones of the Beaufort Group (Tarkastad Subgroup) dominate the regional geology between Weltevrede 190 and the Sterkfontein Dam Nature Reserve.

## **Results of Survey**

Several features were recorded within the vicinity of the survey area (e.g. Table 1). A large area, covered by historical farm ruins, was recorded in Section 5 and represent the original Sterkfontein homestead built towards the end of the 19<sup>th</sup> century (Figure 7B) Fossil bone fragments, pottery and associated subfossilized bone were recorded in Section 2 (Figure 8) and relate to the occurrence of palaeontological remains in the Beaufort Group and local Iron Age settlements, respectively.

Table 1. Locality data.

<b>Locality</b>	<b>Coordinates</b>	<b>Altitude</b>
Calcrete, erosional dongas, Elands River tributary	S28 26.730 E28 52.718	1701 m
Dry spruit, Elands River tributary	S28 25.659 E28 53.147	1722 m
Fossil fragment	S28 25.648 E28 53.156	1725 m
Pottery, Bone Fragments	S28 25.613 E28 53.171	1728 m
Concrete slab	S28 24.313 E28 55.098	1711 m
Historical Farm ruins	S28 23.348 E28 58.461	1743 m

## Statement of Significance

The general status of the section that was surveyed can largely be described as disturbed agricultural land. Archaeologically sensitive zones have been identified in Sections 2 and 5 (Table 2). Potential impact of the proposed pipeline is minimal provided that certain mitigative measures are taken into consideration.

Table 2. Indication of findings along the proposed route, potential significance and potential impact.

<b>Survey Area</b>	<b>Landscape</b>	<b>Heritage</b>	<b>Coordinates</b>	<b>Significance</b>	<b>Impact</b>
Section 1	Undulating, irregular land, agricultural	None		Low	Low
Section 2	Rocky, low hills, mountains	Fossil material; Iron Age pottery	S28 25.648 E28 53.156	High	Medium
Section 3	Undulating, irregular land, agricultural	None		Low	Low
Section 4	Undulating, irregular land, agricultural	None		Low	Low
Section 5	Undulating, irregular land, conservation	19 <sup>th</sup> century ruins	S28 23.348 E28 58.461	Medium	Medium

## Recommendations

It is recommended that, to avoid potential impact

1. the segment of pipeline in Section 2 be moved to the opposite side of the R712 (Figure 9) and away from the adjacent hillside where archaeological features have been identified (Figure 8).
2. the segment of pipeline running between the R712 and historical farm ruins at the Sterkfontein Dam Nature Reserve (Section 5), be placed along the old, existing farm road leading to and away from the ruins.
3. follow-up archaeological investigations are conducted during the construction phase.

## References

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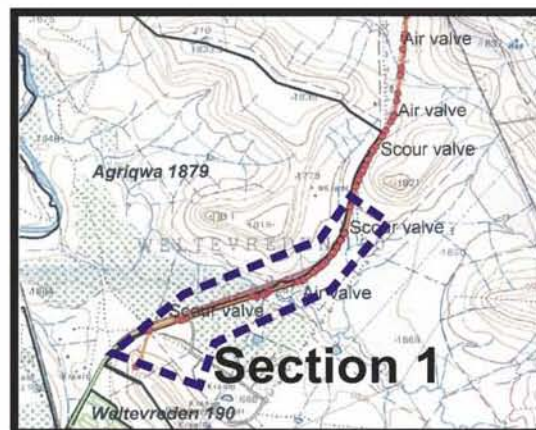
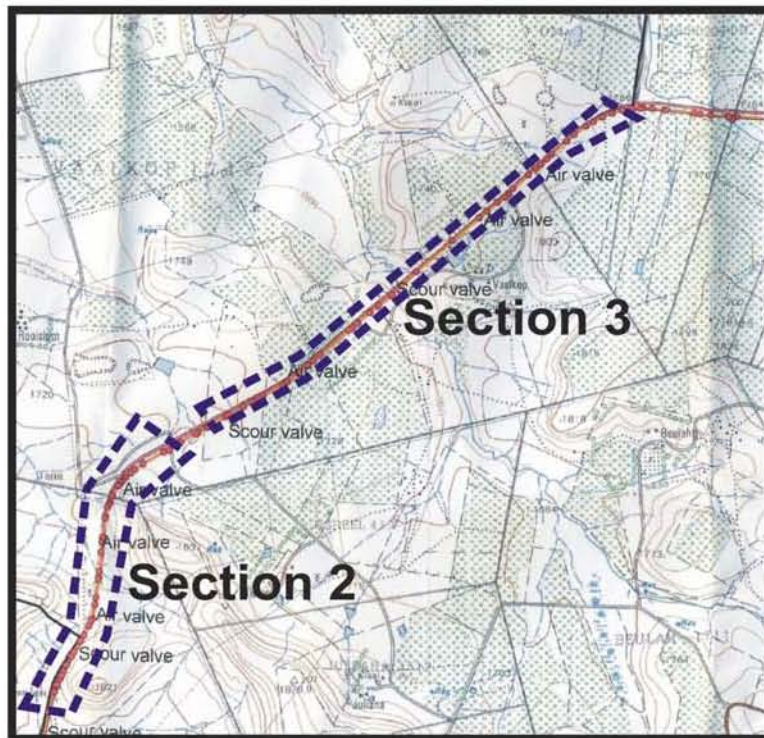
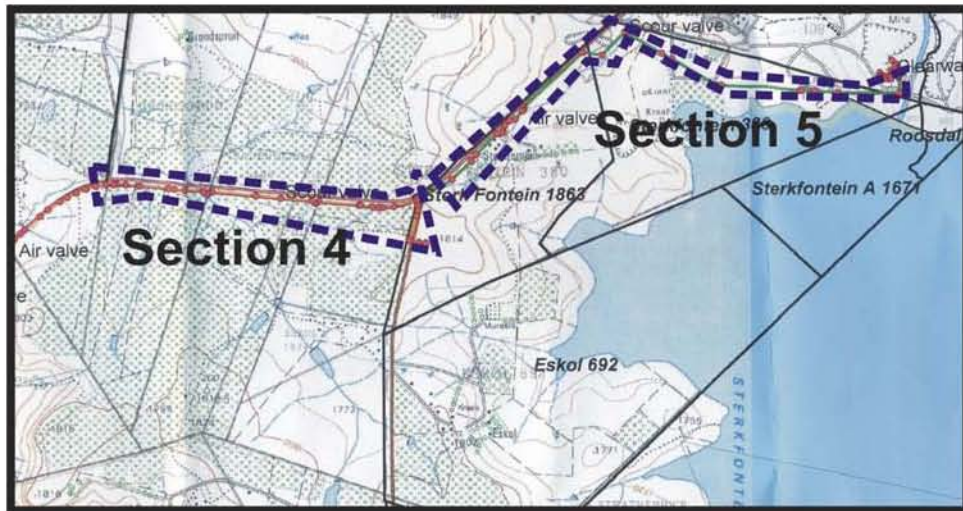
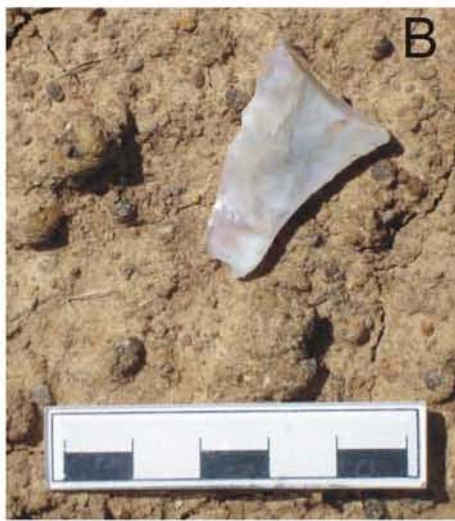


Figure 2. 1:50 000 topographic map of the R712. The survey area was divided into 5 sections.

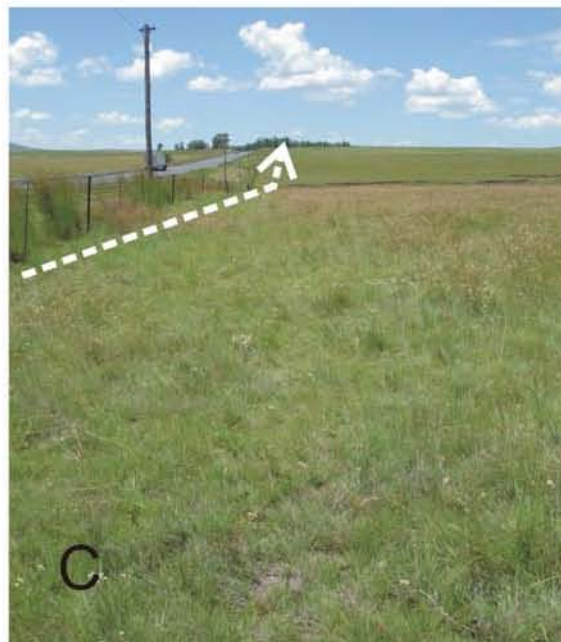




**Figure 3. Section 1, looking north. Arrow indicates layout of pipeline (A&C).  
Exposed mudstones of Tarkastad Subgroup (B).**



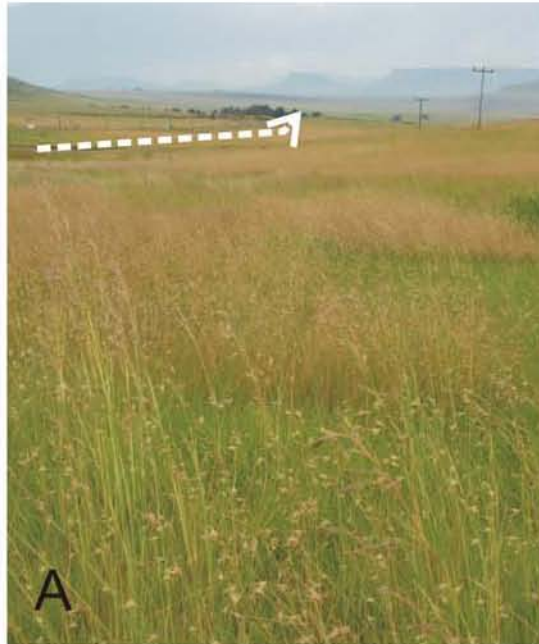
**Figure 4. Section 2. Erosional gullies (A) with occasional microlithic stone tools made from chalcedony (B) . Undulating landscape (C).**



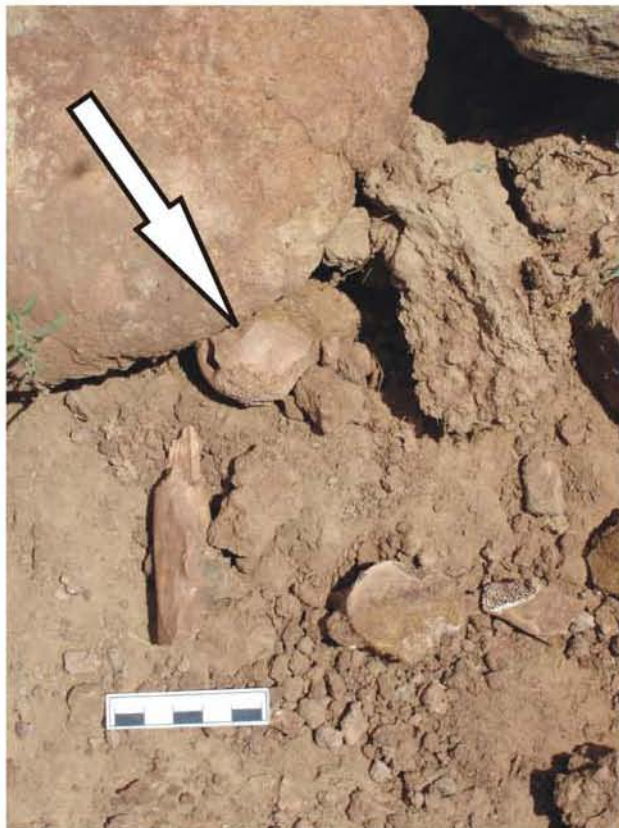
**Figure 5. Section 3. Undulating agricultural landscape (A&C) dissected by Elands River tributaries (B).**



**Figure 6. Section 4. Undulating, agricultural landscape (A&B) with occasionally exposed sandstones and intercalated shales (C).**

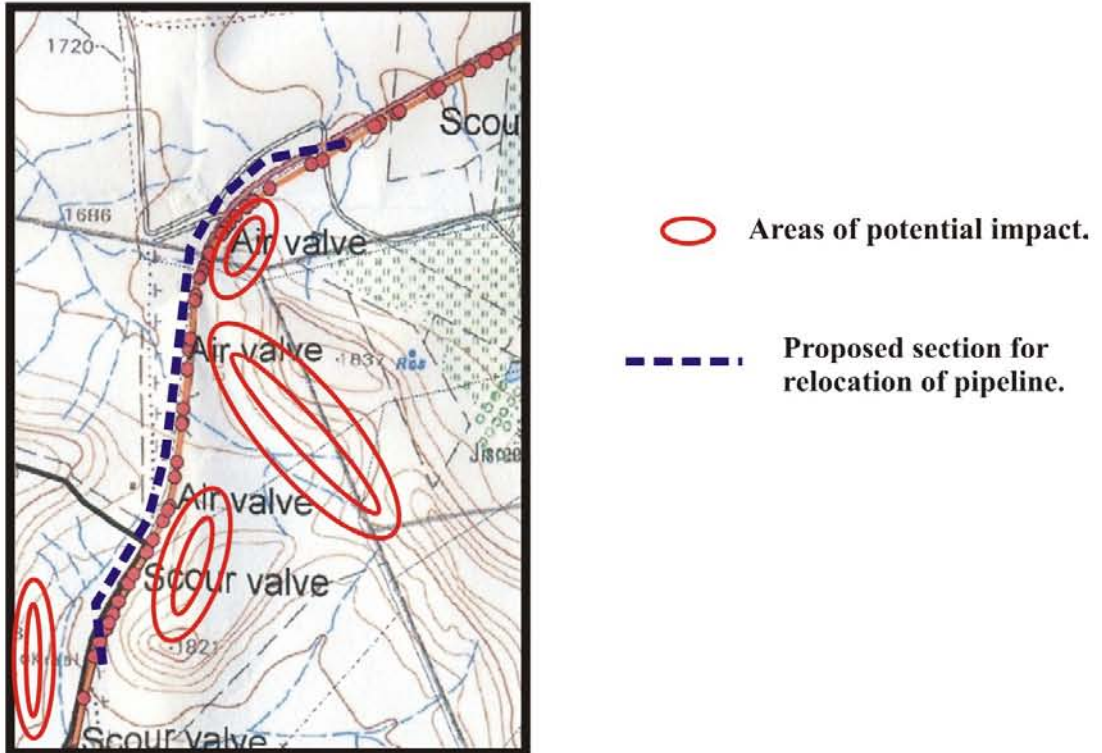


**Figure 7. Section 5. Sterkfontein Dam Nature Reserve (A). 19th century ruins of original farmstead (B). Sterkfontein Dam (C).**



**Figure 8. Highly mineralized fossil bone (A); pottery and associated, subfossilized bone fragments (B).**

## Section 2



**Figure 9.** It is recommended that the proposed position of the pipeline in Section 2 is shifted to the opposite side (western side) of the R712 to avoid potential archaeological impact. The recommended position is indicated by the blue dotted line.