

Phase 1 Cultural Heritage Impact Assessment:

**THE PROPOSED DEVELOPMENT OF THE MOGALAKWENA MINI  
WATER SCHEME PIPELINE, WATERBERG DISTRICT  
MUNICIPALITY, LIMPOPO PROVINCE**

**Prepared for:**

Lidwala Consulting Engineers (SA) (Pty) Ltd (Ms M Mochesane)

- Postal Address: PostNet Suite 328, Private Bag X21, Bryanston 20121; Tel. 011 793 5486; e-mail: MMochesane@lidwala.com

**Prepared by:**

J A van Schalkwyk (D Litt et Phil),

- Heritage Consultant: ASAPA Registration No.: 164 - Principal Investigator: Iron Age, Colonial Period, Industrial Heritage.
- Postal Address: 62 Coetzer Avenue, Monument Park, 0181; Tel: 076 790 6777; E-mail: jvschalkwyk@mweb.co.za

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**Declaration:**

I, J.A. van Schalkwyk, declare that:

- I am suitably qualified and accredited to act as independent specialist in this application.
- I do not have any financial or personal interest in the proposed development, nor its developers or any of their subsidiaries, apart from the provision of heritage assessment and management services, for which a fair numeration is charged.
- The work was conducted in an objective manner and any circumstances that might have compromised this have been reported.



J A van Schalkwyk  
Heritage Consultant  
July 2017



## EXECUTIVE SUMMARY

### Phase 1 Cultural Heritage Impact Assessment:

## THE PROPOSED DEVELOPMENT OF THE MOGALAKWENA MINI WATER SCHEME PIPELINE, WATERBERG DISTRICT MUNICIPALITY, LIMPOPO PROVINCE

The villages of Dipitchi, Ramoseseane, Buffelshoek and Kgopeng in the Waterberg District Municipality in Limpopo Province are currently supplied by a cluster of independent systems which draws their water from boreholes using pumps that are mechanically powered by electric or diesel combustion engines. This system has become dysfunctional due to lack of maintenance as well as increased demand and it has been recommended that it should be upgraded.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by *Lidwala Consulting Engineers* to conduct a cultural heritage assessment to determine if the proposed development of the water pipeline would have an impact on any sites, features or objects of cultural heritage significance.

The villages of Dipitchi, Ramoseseane, Buffelshoek and Kgopeng in the Waterberg District Municipality in Limpopo Province are currently supplied by a cluster of independent systems which draws their water from boreholes using pumps that are mechanically powered by electric or diesel combustion engines. This system has become dysfunctional due to lack of maintenance as well as increased demand and it has been recommended that it should be upgraded.

The cultural landscape qualities of the region essentially consist of a rural setup. In this the human occupation is made up of a pre-colonial element consisting of Stone Age as well as a later Iron Age occupation. This was followed much later by a colonial (farmer) component. A much smaller component is an urban one, which is rapidly expanding at present due to population increases and as well as people moving to economic centres in search of work.

### Identified heritage sites

#### 8.3.1 *Stone Age*

- (8.3.1.1): Scattered surface occurrences of Middle Stone Age stone tools and flakes were identified in a few areas across the pipeline route, but no habitation or tool processing areas were identified. The material used for the artefacts is felsite, which is known to occur in the Waterberg and seems to have been the material of choice for MSA people in this region.
  - This feature has Low local significance – Grade IV-C

#### 8.3.3 *Historic period*

- (8.3.3.1): Two graves. One is marked only with a stone cairn; the second have a headstone indicating that R.M. Ramaru (22/07/1930-19/05/1983) was buried here.
  - High/Medium local significance – Grade IV-A
- (8.3.3.2): A single grave located inside the road reserve. The headstone indicated that M J Mahlanya, born in June 1930, was buried here.
  - High/Medium local significance – Grade IV-A

- A single grave marked only by means of packed stones. This feature can probably be linked to the homestead feature located a few metres to the south (see No. 8.3.3.4 below).
  - High/Medium local significance – Grade IV-A
- (8.3.3.4): The remains of an old homestead structure, at present consisting only of the foundations and a few scraps of artefacts, e.g. broken glass, ceramics and pieces of metal. Due to its proximity, this feature can in all probability be linked to the single grave described above (No. 8.3.3.3).
  - Low significance – Grade IV-C
- (8.3.3.5): Remains of a few homestead structures were identified on the farm Rhenostertrap 719LR. All of them occur at the foot of a ridge and well away from the road reserve. The sites are made up of remains of house foundations, broken pottery, field clearing cairns and a possible grave.
  - These features have Low local significance – Grade IV-C

### Impact assessment

Impact analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development:

- (8.3.1.1): Scattered surface occurrences of Middle Stone Age stone tools and flakes were identified in a few areas along the pipeline route.
  - Impact = None - the significance weighting for the impact on the identified sites is rated as **low**.
    - Mitigation: None required.
- (8.3.3.1): Two graves.
  - Impact = None: the significance weighting for the impact on the identified sites is rated as **low**.
    - Mitigation: Avoid site, maintain buffer zone of 5 metres demarcated with danger tape.
- (8.3.3.2): A single grave located inside the road reserve.
  - Impact = Possible: the significance weighting for the impact on the identified sites is rated as **medium**.
    - Mitigation: Avoid site, maintain buffer zone of 5 metres demarcated with danger tape.
- (8.3.3.3): A single grave marked only by means of packed stones. This feature can probably be linked to the homestead feature located a few metres to the south (see No. 8.3.3.4 below)
  - Impact = Possible: the significance weighting for the impact on the identified sites is rated as **medium**.
    - Mitigation: Avoid site, maintain buffer zone of 5 metres demarcated with danger tape.
- (8.3.3.4): The remains of an old homestead structure. Due to its proximity, this feature can in all probability be linked to the single grave described above (No. 8.3.3.3).
  - Impact = Possible: the significance weighting for the impact on the identified sites is rated as **medium**.
    - Mitigation: Avoid site, maintain buffer zone of 5 metres demarcated with danger tape.
- (8.3.3.5): Remains of a few homestead structures were identified on the farm Rhenostertrap 719LR.

- Impact = Possible: the significance weighting for the impact on the identified sites is rated as **low**.
  - Mitigation: Avoid area.

Heritage sites	Significance of impact	Mitigation measures
Mogalakwena Water Pipeline: Construction Phase		
Without mitigation	Medium	n/a
With mitigation	Low	n/a
Mogalakwena Water Pipeline: Operation Phase		
Without mitigation	n/a	n/a
With mitigation	n/a	n/a

Reasoned opinion as to whether the proposed activity should be authorised:

- From a heritage point of view it is recommended that the proposed development be allowed to continue on acceptance of the proposed mitigation measures.

Conditions for inclusion in the environmental authorisation:

- Should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.



J A van Schalkwyk  
Heritage Consultant  
July 2017

<b>TECHNICAL SUMMARY</b>
--------------------------

<b>Project description</b>	
Description	Development of a water reticulation scheme
Project name	Mogalakwena Mini Scheme

<b>Applicant</b>
-

<b>Environmental assessors</b>
Lidwala
Ms M Mochesane

<b>Property details</b>																			
Province	Limpopo																		
Magisterial district	Mokerong 2																		
District municipality	Waterberg																		
Topo-cadastral map	2328DA, 2328DB																		
Farm name	Raadsliid 718LR, Rhenoster Trap 719LR, Buffel Hoek 722LR, Eerste Geluk 741LR																		
Closest town	Polokwane																		
Coordinates	End points (approximately)																		
	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>No</th> <th>Latitude</th> <th>Longitude</th> <th>No</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-23.66996</td> <td>28.63532</td> <td>2</td> <td>-23.70634</td> <td>28.71667</td> </tr> <tr> <td>3</td> <td>-23.72355</td> <td>28.71535</td> <td>4</td> <td>-23.68919</td> <td>28.75711</td> </tr> </tbody> </table>	No	Latitude	Longitude	No	Latitude	Longitude	1	-23.66996	28.63532	2	-23.70634	28.71667	3	-23.72355	28.71535	4	-23.68919	28.75711
No	Latitude	Longitude	No	Latitude	Longitude														
1	-23.66996	28.63532	2	-23.70634	28.71667														
3	-23.72355	28.71535	4	-23.68919	28.75711														

<b>Development criteria in terms of Section 38(1) of the NHR Act</b>	Yes/No
Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length	Yes
Construction of bridge or similar structure exceeding 50m in length	No
Development exceeding 5000 sq m	No
Development involving three or more existing erven or subdivisions	No
Development involving three or more erven or divisions that have been consolidated within past five years	No
Rezoning of site exceeding 10 000 sq m	No
Any other development category, public open space, squares, parks, recreation grounds	No

<b>Land use</b>	
Previous land use	Farming (grazing)
Current land use	Farming (grazing)

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## GLOSSARY OF TERMS AND ABBREVIATIONS

### TERMS

**Stone Age:** The first and longest part of human history is the Stone Age, which began with the appearance of early humans between 3-2 million years ago. Stone Age people were hunters, gatherers and scavengers who did not live in permanently settled communities. Their stone tools preserve well and are found in most places in South Africa and elsewhere.

Early Stone Age	2 000 000 - 150 000 Before Present
Middle Stone Age	150 000 - 30 000 BP
Later Stone Age	30 000 - until c. AD 200

**Iron Age:** Period covering the last 1800 years, when new people brought a new way of life to southern Africa. They established settled villages, cultivated domestic crops such as sorghum, millet and beans, and they herded cattle as well as sheep and goats. As they produced their own iron tools, archaeologists call this the Iron Age.

Early Iron Age	AD 200 - AD 900
Middle Iron Age	AD 900 - AD 1300
Later Iron Age	AD 1300 - AD 1830

**Historical Period:** Since the arrival of the white settlers - c. AD 1840 - in this part of the country.

**Cumulative impacts:** "Cumulative Impact", in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities.

**Mitigation,** means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

### ABBREVIATIONS

ADRC	Archaeological Data Recording Centre
ASAPA	Association of Southern African Professional Archaeologists
CS-G	Chief Surveyor-General
EIA	Early Iron Age
ESA	Early Stone Age
LIA	Late Iron Age
LSA	Later Stone Age
HIA	Heritage Impact Assessment
MSA	Middle Stone Age
NASA	National Archives of South Africa
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Agency
SAHRA	South African Heritage Resources Agency



**Phase 1 Cultural Heritage Impact Assessment:****THE PROPOSED DEVELOPMENT OF THE MOGALAKWENA MINI WATER SCHEME PIPELINE, WATERBERG DISTRICT MUNICIPALITY, LIMPOPO PROVINCE****1. INTRODUCTION**

The villages of Dipitchi, Ramoseseane, Buffelshoek and Kgopeng in the Waterberg District Municipality in Limpopo Province are currently supplied by a cluster of independent systems which draws their water from boreholes using pumps that are mechanically powered by electric or diesel combustion engines. This system has become dysfunctional due to lack of maintenance as well as increased demand and it has been recommended that it should be upgraded.

South Africa's heritage resources, also described as the 'national estate', comprise a wide range of sites, features, objects and beliefs. However, according to Section 27(18) of the National Heritage Resources Act (NHRA), No. 25 of 1999, no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by *Lidwala Consulting Engineers* to conduct a cultural heritage assessment to determine if the proposed development of the water pipeline would have an impact on any sites, features or objects of cultural heritage significance.

This report forms part of the Environmental Impact Assessment (EIA) as required by the EIA Regulations in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended and is intended for submission to the South African Heritage Resources Agency (SAHRA).

**2. TERMS OF REFERENCE**

The aim of a full HIA investigation is to provide an informed heritage-related opinion about the proposed development by an appropriate heritage specialist. The objectives are to identify heritage resources (involving site inspections, existing heritage data and additional heritage specialists if necessary); assess their significances; assess alternatives in order to promote heritage conservation issues; and to assess the acceptability of the proposed development from a heritage perspective.

The result of this investigation is a heritage impact assessment report indicating the presence/ absence of heritage resources and how to manage them in the context of the proposed development.

Depending on SAHRA's acceptance of this report, the developer will receive permission to proceed with the proposed development, on condition of successful implementation of proposed mitigation measures.

**2.1 Scope of work**

The aim of this study is to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where the pipeline is to be developed. This includes:

- Conducting a desk-top investigation of the area;
- A visit to the proposed development site,

The objectives were to:

- Identify possible archaeological, cultural and historic sites within the proposed development areas;
- Evaluate the potential impacts of construction, operation and maintenance of the proposed development on archaeological, cultural and historical resources;
- Recommend mitigation measures to ameliorate any negative impacts on areas of archaeological, cultural or historical importance.

## 2.2 Limitations

The investigation has been influenced by the following factors:

- It is assumed that the description of the proposed project, provided by the client, is accurate.
- No subsurface investigation (i.e. excavations or sampling) were undertaken, since a permit from SAHRA is required for such activities.
- It is assumed that the public consultation process undertaken as part of the Environmental Impact Assessment (EIA) is sufficient and that it does not have to be repeated as part of the heritage impact assessment.
- The unpredictability of buried archaeological remains.
- This report does not consider the palaeontological potential of the site.

## 3. LEGISLATIVE FRAMEWORK

The HIA is governed by national legislation and standards and International Best Practise. These include:

- South African Legislation
  - National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) – see Appendix 4 for more detail on this Act
  - Mineral and Petroleum Resources Development Act, 2002 (Act No. 22 of 2002) (MPRDA);
  - National Environmental Management Act 1998 (Act No. 107 of 1998) (NEMA); and
  - National Water Act, 1998 (Act No. 36 of 1998) (NWA).
- Standards and Regulations
  - South African Heritage Resources Agency (SAHRA) Minimum Standards;
  - Association of Southern African Professional Archaeologists (ASAPA) Constitution and Code of Ethics;
  - Anthropological Association of Southern Africa Constitution and Code of Ethics.
- International Best Practise and Guidelines
  - ICOMOS Standards (Guidance on Heritage Impact Assessments for Cultural World Heritage Properties); and
  - The UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage (1972).

## 4. HERITAGE RESOURCES

### 4.1 The National Estate

The NHRA (No. 25 of 1999) defines the heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations that must be considered part of the national estate to include:

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, including-
  - ancestral graves;
  - royal graves and graves of traditional leaders;
  - graves of victims of conflict;
  - graves of individuals designated by the Minister by notice in the Gazette;
  - historical graves and cemeteries; and
  - other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- sites of significance relating to the history of slavery in South Africa;
- movable objects, including-
  - objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
  - objects to which oral traditions are attached or which are associated with living heritage;
  - ethnographic art and objects;
  - military objects;
  - objects of decorative or fine art;
  - objects of scientific or technological interest; and
  - books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

### 4.2 Cultural significance

In the NHRA, Section 2 (vi), it is stated that “cultural significance” means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This is determined in relation to a site or feature’s uniqueness, condition of preservation and research potential.

According to Section 3(3) of the NHRA, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of

- its importance in the community, or pattern of South Africa's history;
- its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;

- its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- sites of significance relating to the history of slavery in South Africa.

A matrix was developed whereby the above criteria were applied for the determination of the significance of each identified site (see Appendix 3). This allowed some form of control over the application of similar values for similar identified sites.

## 5. STUDY APPROACH AND METHODOLOGY

### 5.1 Extent of the Study

This survey and impact assessment covers the area as presented in Section 7 below and illustrated in Figure 2 & 3.

### 5.2 Methodology

#### 5.2.1.1 Survey of the literature

A survey of the relevant literature was conducted with the aim of reviewing the previous research done and determining the potential of the area. In this regard, various anthropological, archaeological and historical sources were consulted – see list of references in Section 11.

- Information on events, sites and features in the larger region were obtained from these sources.

#### 5.2.1.2 Data bases

The *Heritage Atlas Database*, various SAHRA databases, the *Environmental Potential Atlas*, the *Chief Surveyor General* and the *National Archives of South Africa* were consulted.

- Database surveys produced a number of sites located in the larger region of the proposed development.

#### 5.2.1.3 Other sources

Aerial photographs and topocadastral and other maps were also studied - see the list of references below.

- Information of a very general nature were obtained from these sources

#### 5.2.1.4 Interviews

Local people were interviewed regarding the possibility of graves and other features of cultural heritage significance occurring in the study area.

- From these interviews it was determined that the area is used largely for agricultural purposes (grazing and crop fields).

*The results of the above investigation are summarised in Table 1 below – see list of references in Section 11.*

**Table 1: Pre-Feasibility Assessment**

Category	Period	Probability	Reference
Early hominin	Pliocene – Lower Pleistocene		
	Early hominin	None	
Stone Age	Lower Pleistocene – Holocene		
	Early Stone Age	None	
	Middle Stone Age	None	Mason (1969); Thackeray (1992)
	Later Stone Age	Low	Mason (1969); Van der Ryst (2006); Van Schalkwyk (1985)
	Rock Art	Medium	Eastwood <i>et al</i> (1999); Mason (1969); Van der Ryst (2006); Van Schalkwyk <i>et al</i> (2004)
Iron Age	Holocene		
	Early Iron Age	Low	Van Schalkwyk (1998, 2004)
	Middle Iron Age	None	
	Later Iron Age	Low	Hall (1985); Huffman (2007); Küsel (2005)
Colonial period	Holocene		
	Contact period	Low	Jackson (n.d, c. 1969); Küsel (2005)
	Recent history	Low	Jackson (n.d, c. 1969); Küsel (2005); Van Schalkwyk (2012)
	Industrial heritage	Low	Van Schalkwyk (2012)

### 5.2.2 Field survey

The field survey was done according to generally accepted archaeological practices, and was aimed at locating all possible sites, objects and structures. The area that had to be investigated was identified by *Lidwala Consulting Engineers* by means of maps and .kml files indicating the development area. This was loaded onto an Asus device and used in Google Earth during the field survey to access the areas.

The site was visited on 10 July 2017. The site was investigated by following the route of the proposed pipeline as well as walking transects across the pump station areas – see Fig. 1 below.

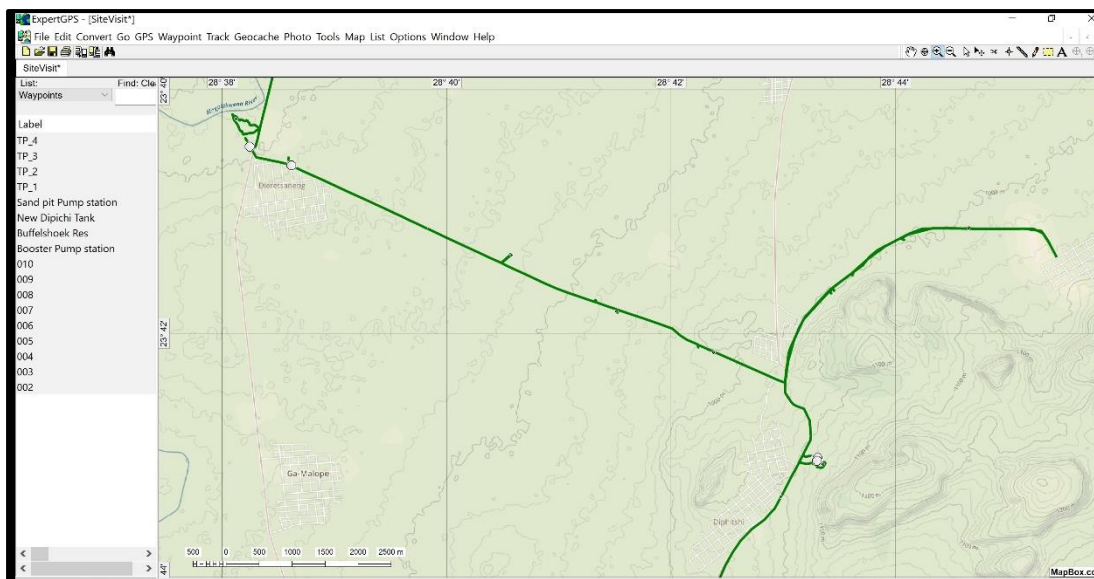


Fig. 1. Map indicating the track log (green) of the field survey.

During the site visit, the archaeological visibility was much limited by the dense vegetation cover found over most of the area – see images in Fig. 2 below.



Fig. 2. The dense and thorny vegetation encountered in sections of the pipeline route.

### 5.2.3 Documentation

All sites, objects and structures that are identified are documented according to the general minimum standards accepted by the archaeological profession. Coordinates of individual localities are determined by means of the *Global Positioning System* (GPS) and plotted on a map. This information is added to the description in order to facilitate the identification of each locality.

The track log and identified sites were recorded by means of a Garmin Oregon 550 handheld GPS device. Photographic recording was done by means of a Canon EOS 550D digital camera.

Map datum used: Hartebeeshoek 94 (WGS84).

## 6. SITE SIGNIFICANCE AND ASSESSMENT

### 6.1 Heritage assessment criteria and grading

The National Heritage Resources Act, Act no. 25 of 1999, stipulates the assessment criteria and grading of heritage sites. The following grading categories are distinguished in Section 7 of the Act:

**Table 2: Site Grading System.**

SAHRA Cultural Heritage Site Significance			
Field Rating	Grade	Significance	Recommended Mitigation
National Significance	Grade I	High significance	Conservation by SAHRA, national site nomination, mention any relevant international ranking. No alteration whatsoever without permit from SAHRA
Provincial Significance	Grade II	High significance	Conservation by provincial heritage authority, provincial site nomination. No alteration whatsoever without permit from provincial heritage authority.
Local Significance	Grade III-A	High significance	Conservation by local authority, no alteration whatsoever without permit from provincial heritage authority. Mitigation as part of development process not advised.
Local Significance	Grade III-B	High significance	Conservation by local authority, no external alteration without permit from provincial heritage authority. Could be mitigated and (part) retained as heritage register site.
Generally Protected A	Grade IV-A	High/medium significance	Conservation by local authority. Site should be mitigated before destruction. Destruction permit required from provincial heritage authority.
Generally Protected B	Grade IV-B	Medium significance	Conservation by local authority. Site should be recorded before destruction. Destruction permit required from provincial heritage authority.
Generally Protected C	Grade IV-C	Low significance	Conservation by local authority. Site has been sufficiently recorded in the Phase 1 HIA. It requires no further recording before destruction. Destruction permit required from provincial heritage authority.

The occurrence of sites with a Grade I significance will demand that the development activities be drastically altered in order to retain these sites in their original state. For Grade II, III and IV sites, the applicable of mitigation measures would allow the development activities to continue.

### 6.2 Methodology for the assessment of potential impacts

All impacts identified during the EIA stage of the study will be classified in terms of their significance. Issues were assessed in terms of the following criteria:

- The **nature**, a description of what causes the effect, what will be affected and how it will be affected;
- The physical **extent**, wherein it is indicated whether:
  - 1 - the impact will be limited to the site;
  - 2 - the impact will be limited to the local area;
  - 3 - the impact will be limited to the region;
  - 4 - the impact will be national; or
  - 5 - the impact will be international;
- The **duration**, wherein it is indicated whether the lifetime of the impact will be:
  - 1 - of a very short duration (0–1 years);
  - 2 - of a short duration (2-5 years);
  - 3 - medium-term (5–15 years);

- 4 - long term (> 15 years); or
- 5 - permanent;
- The **magnitude** of impact, quantified on a scale from 0-10, where a score is assigned:
  - 0 - small and will have no effect;
  - 2 - minor and will not result in an impact;
  - 4 - low and will cause a slight impact;
  - 6 - moderate and will result in processes continuing but in a modified way;
  - 8 – high, (processes are altered to the extent that they temporarily cease); or
  - 10 - very high and results in complete destruction of patterns and permanent cessation of processes;
- The **probability** of occurrence, which describes the likelihood of the impact actually occurring and is estimated on a scale where:
  - 1 - very improbable (probably will not happen);
  - 2 - improbable (some possibility, but low likelihood);
  - 3 - probable (distinct possibility);
  - 4 - highly probable (most likely); or
  - 5 - definite (impact will occur regardless of any prevention measures);
- The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high;
- The **status**, which is described as either positive, negative or neutral;
- The degree to which the impact can be reversed;
- The degree to which the impact may cause irreplaceable loss of resources; and
- The degree to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:

$$S = (E+D+M) \times P; \text{ where}$$

S = Significance weighting  
 E = Extent  
 D = Duration  
 M = Magnitude  
 P = Probability

The **significance weightings** for each potential impact are calculated as follows:

**Table 3: Significance Ranking**

Significance of impact					
Extent	Duration	Magnitude	Probability	Significance	Weight
-	-	-	-	-	-
Points	Significant Weighting	Discussion			
< 30 points	Low	Where this impact would not have a direct influence on the decision to develop in the area.			
31-60 points	Medium	Where the impact could influence the decision to develop in the area unless it is effectively mitigated.			
> 60 points	High	Where the impact must have an influence on the decision process to develop in the area.			

## 7. PROJECT DESCRIPTION

### 7.1 Site location

The project is located in the rural resettlement areas of Mogalakwena in the villages of Diretsaneng, Ramoseseane, Kgopeng, Dipitchi and Buffelshoek, 72km northwest of



Mokopane Town in Ward 2 of Mogalakwena Local Municipality. The villages fall within the northern settlements of Waterberg District municipality, Limpopo Province (Fig. 3). For more information, see the Technical Summary on p. iv above.

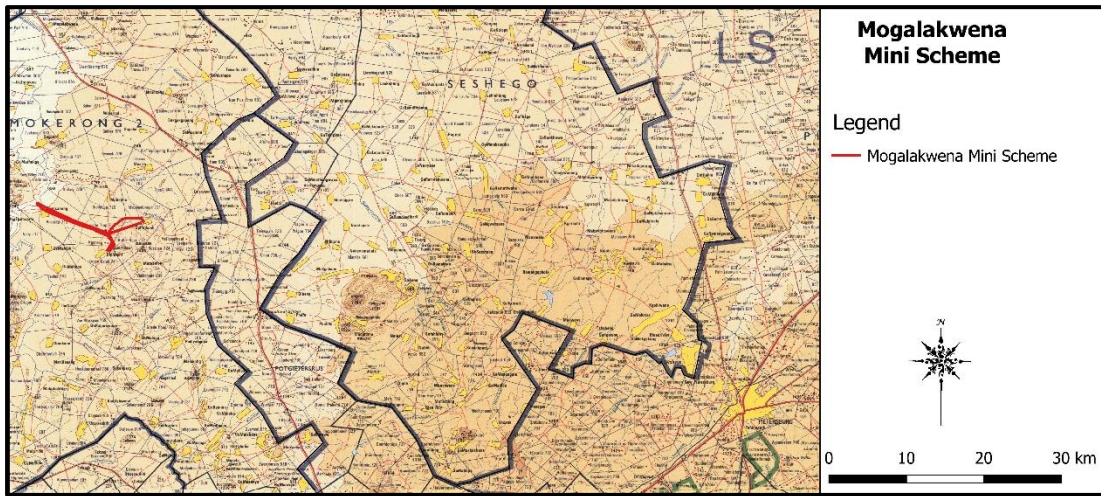


Fig. 3. Location of the study area in regional context.

## 7.2 Development proposal

The villages of Dipitchi, Ramoseseane, Buffelshoek and Kgopeng are currently supplied by a cluster of independent systems which draws their water from boreholes using pumps that are mechanically powered by electric or diesel combustion engines. For most of the villages, water from the boreholes is pumped into concrete reservoirs located in those villages. Most of these concrete reservoirs are old, the ones still functional have minor leaks whilst a few has been decommissioned. From the reservoirs the water gravitates directly to communal stand pipes within the village.



Fig. 4. Layout of the proposed development.  
(Image: Google Earth)

The new design philosophy, as set out in the Detailed Design Report compiled by Lidwala Consulting Engineers (25 April 2017), involves the following:

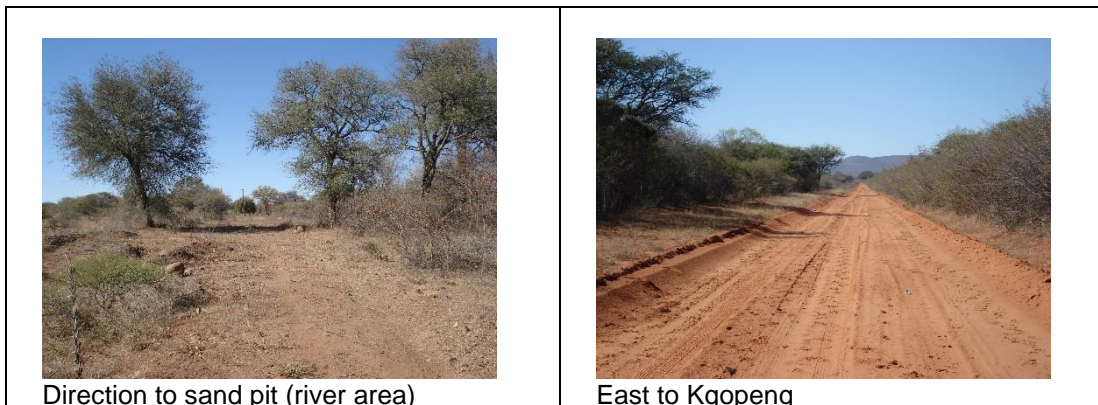
- Instead of the water from the sandpit being pumped directly to Kromkloof WTW, it will now be pumped to the Booster station and then pumped further to the new 450kl command elevated steel tank in Dipichi village.
- However, the new command storage in Dipichi will now serve 2 purposes.
  1. To supply water to directly to the reticulation networks of the villages of Buffelshoek, Dipichi, Ramoseseane and Kgopeng.
  2. The remainder of the water will be supplied directly to the Kromkloof WTW further south of these villages through gravity pipeline as per the masterplan.
- The new Dipichi command steel tank will still be strategically located to be used as storage tank for the potable water for all the 5 villages when water from Kromkloof becomes readily available.
- There will be no need for the construction of a new 150kl RC reservoir at Buffelshoek as had been planned to be constructed in year 2020.
- Pipeline P168 (see appendix 6) will be utilised initially as a pumping main from Kgopeng to Booster station. After the masterplan is commissioned, it will then be utilised as a gravity main from Dipichi command tank to Direstaneng village through the booster station reservoir.
- Gravity pipelines P171 (Dipichi tank to Buffelshoek village) and P84 (Dipichi tank to Dipichi village) will be utilised now and also after the commissioning of the masterplan.
- Current old concrete reservoirs will still be refurbished and their borehole isolated schemes retained and used as back up water for the villages, hence complementing the potable water from the WTW.

## 8. DESCRIPTION OF THE AFFECTED ENVIRONMENT

### 8.1 Site description

The geology of the study area is made up of sand. The original vegetation is classified as Mixed Bushveld, changing to Waterberg Moist Mountain Highveld west of the study area but has been impacted on due to having been used as agricultural fields. The topography is described as lowlands, changing to mountains to the west of the study area.

The areas in which the pipeline development will take place is in or adjacent to the various district (unpaved) roads, linking the different communities to each other. The areas adjacent to the roads are used either for grazing (green fields) or in small sections as agricultural fields (Fig. 5). Similarly, the areas where the pump stations and reservoirs are to be developed, are either in grazing areas or old agricultural fields (Fig. 6).



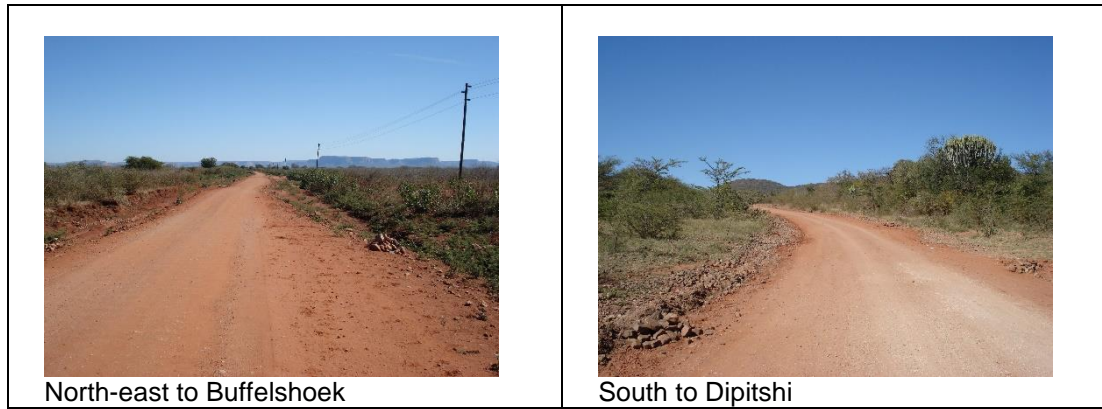


Fig. 5. Views over the study area – linear development.

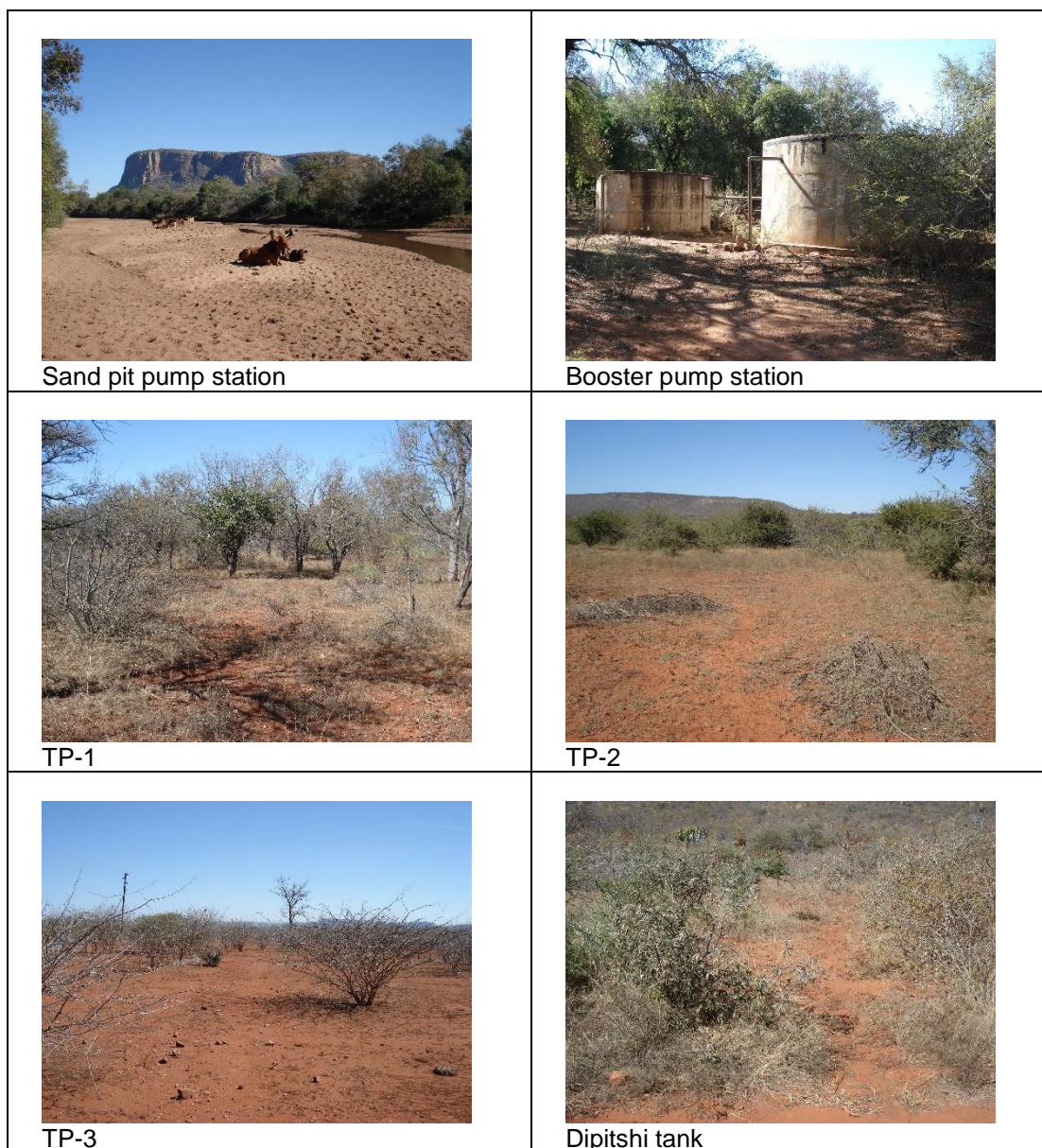


Fig. 6. Views over the study area – site development areas.

## 8.2 Overview of the region

The aim of this section is to present an overview of the history of the larger region in order to eventually determine the significance of heritage sites identified in the study area, within the context of their historic, aesthetic, scientific and social value, rarity and representivity – see Section 3.2 and Appendix 3 for more information.

The cultural landscape qualities of the region essentially consist of a rural setup. In this the human occupation is made up of a pre-colonial element consisting of Stone Age as well as a later Iron Age occupation. This was followed much later by a colonial (farmer) component. A much smaller component is an urban one, which is rapidly expanding at present due to population increases and as well as people moving to economic centres in search of work.

### 8.2.1 Stone Age

Occupation of the larger region has taken place since the Early Stone Age time. Various such sites occur in the larger region, and some were excavated by Prof Revil Mason (1968).

However, it was largely during the Middle Stone Age (MSA) times (c. 150 000 – 30 000 BP), when human activities increased. People became more mobile, occupying areas formerly avoided (Thakeray 1992). The MSA is a technological stage characterized by flakes and flake-blades with faceted platforms, produced from prepared cores, as distinct from the core tool-based ESA technology. Open sites were still preferred near watercourses. These people were adept at exploiting the huge herds of animals that passed through the area, on their seasonal migration. In the larger region, Mason (1969) has identified a variant of the MSA that became known as the Pietersburg Culture.

Late Stone Age (LSA) people had even more advanced technology than the MSA people and therefore succeeded in occupying even more diverse habitats. Also, for the first time we now get evidence of people's activities derived from material other than stone tools. Ostrich eggshell beads, ground bone arrowheads, small bored stones and wood fragments with incised markings are traditionally linked with the LSA. The LSA people have also left us with a rich legacy of rock art, which is an expression of their complex social and spiritual beliefs. Many sites containing rock art are known from surrounding areas, such as the Waterberg (Mason 1969, Van der Ryst 2006) and more to the north (Eastwood *et al* 1999; Van Schalkwyk *et al* 2004).

Interaction between the autochthonous hunter-gatherers and early migrating farming communities that established themselves in the region ultimately resulted in the emergence a subordinate class of mixed descent referred to as *Vaalpense* or *Katteea*, which today exists only as few place names (Van Schalkwyk 1985).

### 8.2.2 Iron Age

Iron Age people started to settle in southern Africa c. AD 300, with one of the oldest known sites at Broederstroom south of Hartebeespoort Dam dating to AD 470. Having only had cereals (sorghum, millet) that need summer rainfall, Early Iron Age (EIA) people did not move outside this rainfall zone, and neither did they occupy the central interior highveld area. Because of their specific technology and economy, Iron Age people preferred to settle on the alluvial soils near rivers for agricultural purposes, but also for firewood and water.

The closest known Early Iron Age sites occur to the south in the Waterberg region (Huffman 1990) and to the north in the Blouberg/Makgabeng area (Van Schalkwyk 1998, 2004).

The occupation of the larger geographical area (including the study area) did not start much before the 1500s – see Section 8.3.4 below. By the 16th century things changed, with the climate becoming warmer and wetter, creating condition that allowed Late Iron Age (LIA) farmers to occupy areas previously unsuitable, for example the Witwatersrand and the treeless plains of the Free State.

This wet period came to a sudden end sometime between 1800 and 1820 by a major drought lasting 3 to 5 years. The drought must have caused an agricultural collapse on a large, subcontinent scale.

This was also a period of great military tension. Military pressure from Zululand spilled onto the highveld by at least 1821. Various marauding groups of displaced Sotho-Tswana moved across the plateau in the 1820s. Mzilikazi raided the plateau extensively between 1825 and 1837. The White settlers trekked into this area in the 1830s.

These uncertain times played out in the mountainous regions of the Waterberg, Blouberg and Soutpansberg to the north and east, supplying areas where groups of people could shelter from danger, hiding in caves and developing fortified villages. Here they developed unique sets of material expressions that helped them to cope with these troubled times (Van Schalkwyk 1995).

### 8.2.3 Historic period

White settlers moved into the area during the first half of the 19<sup>th</sup> century. They were largely self-sufficient, basing their survival on cattle/sheep farming and hunting. Few towns were established and it remained an undeveloped area, with farming the most dominant economic activity. The Berlin Mission Society established a mission station, Makapanspoort, in the 1860 on the western outskirts of Mokopane (Potgietersrust). Other stations followed, e.g. Thutlwane and Malokong, both established in 1867. During the Anglo-Boer War, a number of skirmishes occurred in the larger area, especially to the southwest in the Waterberg region.

### 8.2.4 Ethno-history

The following is a summary compiled from Van Warmelo (1944), De Beer (1986) and Jackson (n.d.).

The study area is located in the area of the Northern Transvaal Ndebele, consisting of the tribes of Kekana, Langa, Letwaba, Maraba and Seleka. The Kekana, Langa and Seleka can all be found in the Mokerong magisterial district, whereas the others live not only in Mokerong, but also in the Seshego and Thabamooop magisterial districts.

The Transvaal Ndebele is usually divided into two groups, southern and northern, but claim a similar origin in the region of north western Natal. From here they moved, during the early 1600s, in two streams to the former Transvaal province. The first group, under chief Musi, settled in the vicinity of Pretoria, and over time subdivided into the Manala, Ndzundza, Hwaduba and Mathombeni. Of this latter group, one section eventually settled to the south west of Mokopane (Potgietersrust). A junior branch of this group came to be known as the Kekana of Mokopane and, in 1854, was responsible for the murder of a group of white Trekkers at Moorddrift. The punitive expedition against them had to dislodge them from the Makapansgat caves where they took refuge

The second group, under the leadership of Masebe I, after following a long and circuitous route, eventually settled at Fothane Hill in the Mokerong district. Similar to the Southern Ndebele, some subdivision took place over time. The Seleka section first settled near Rustenburg and, after a sojourn in Botswana, moved back to the Mokerong district in 1899. The Langa is also known as the Mapela, after one of their leaders, who died c. 1826 and was buried at Fothane Hill. They are also referred to as the бага Mankopane, with reference to one of their earlier leaders, who was also in 1854 responsible for the death of a number white Trekkers at what was to become known as Moordkoppie. Later, as a result of a dispute over

succession, the tribe broke into two, the Langa of Mapela and a more junior branch, the Langa of Bakenberg.

The Letwaba and Maraba share similar histories, and after long wanderings, settled, as different smaller tribes, in the region of Mokopane. Some of the groups are the Mašašane, the Letwaba of Eland and the Nkidikitlana. The Maraba sections are the Sekgopetšana and the Mapangula.

From the map in Fig. 7 below it can be seen that most of these villages were very small and that very little development existed in the region.

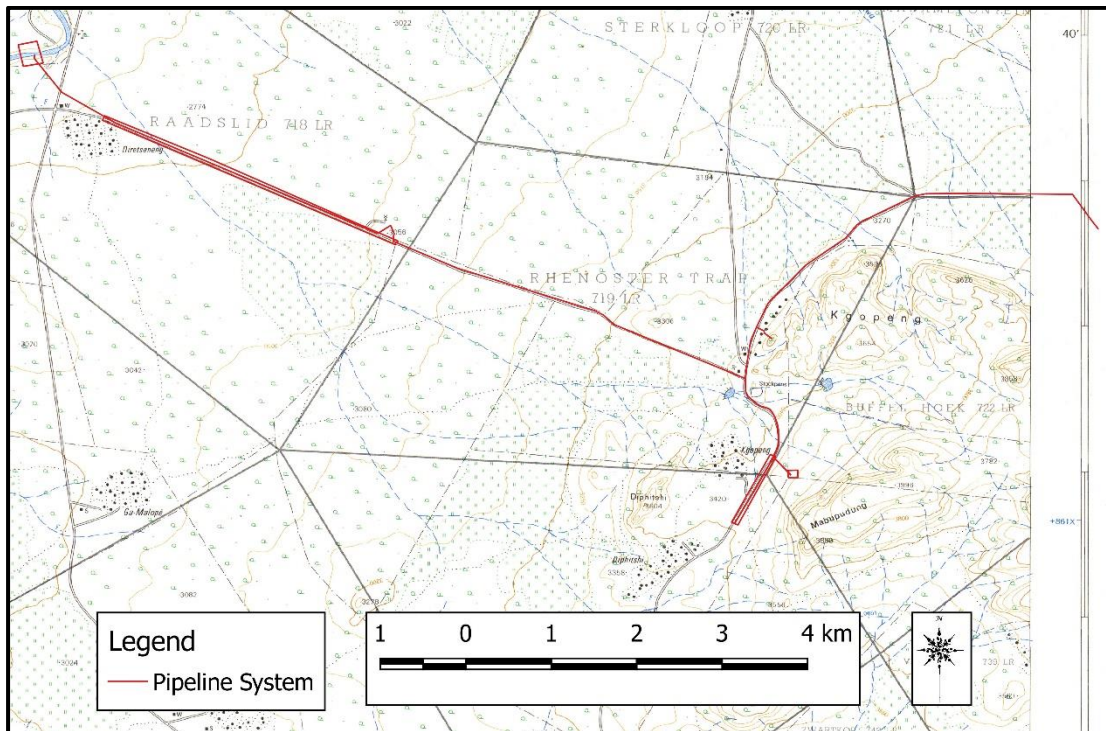


Fig. 7. The study area as indicated on the 1970 version of the topocadastral map. (Map 2328DA, 2328DB: Chief Surveyor-General)

### 8.3 Identified sites

The following sites, features and objects of cultural significance were identified in the study area – see Appendix 6 for a discussion of each individual site.

In terms of Section 7 of the NHRA, all the sites currently known or which are expected to occur in the study area are evaluated to have a grading as identified in the table below.

#### 8.3.1 Stone Age

- (8.3.1.1): Scattered surface occurrences of Middle Stone Age stone tools and flakes were identified in a few areas across the pipeline route, but no habitation or tool processing areas were identified. The material used for the artefacts is felsite, which is known to occur in the Waterberg and seems to have been the material of choice for MSA people in this region.
  - This feature has Low local significance – Grade IV-C

### 8.3.2 Iron Age

- No sites, features or objects dating to the Iron Age were identified in the study area.

### 8.3.3 Historic period

- (8.3.3.1): Two graves. One is marked only with a stone cairn; the second have a headstone indicating that R.M. Ramaru (22/07/1930-19/05/1983) was buried here.
  - High/Medium local significance – Grade IV-A
- (8.3.3.2): A single grave located inside the road reserve. The headstone indicated that M J Mahlanya, born in June 1930, was buried here.
  - High/Medium local significance – Grade IV-A
- A single grave marked only by means of packed stones. This feature can probably be linked to the homestead feature located a few metres to the south (see No. 8.3.3.4 below).
  - High/Medium local significance – Grade IV-A
- (8.3.3.4): The remains of an old homestead structure, at present consisting only of the foundations and a few scraps of artefacts, e.g. broken glass, ceramics and pieces of metal. Due to its proximity, this feature can in all probability be linked to the single grave described above (No. 8.3.3.3).
  - Low significance – Grade IV-C
- (8.3.3.5): Remains of a few homestead structures were identified on the farm Rhenostertrap 719LR. All of them occur at the foot of a ridge and well away from the road reserve. The sites are made up of remains of house foundations, broken pottery, field clearing cairns and a possible grave.
  - These features have Low local significance – Grade IV-C

**Table 4. Summary of Identified Heritage Resources in the Study Area.**

IDENTIFIED HERITAGE RESOURCES			
NHRA category	Number	Significance	Impact rating
<i>Formal protections (NHRA)</i>			
National heritage site (Section 27)	None	-	-
Provincial heritage site (Section 27)	None	-	-
Provisional protection (Section 29)	None	-	-
Listed in heritage register (Section 30)	None	-	-
<i>General protections (NHRA)</i>			
Structures older than 60 years (Section 34)	8.3.3.4	Grade IV-C	Medium
	8.3.3.5	Grade IV-C	Low
Archaeological site or material (Section 35)	None		
Palaeontological site or material (Section 35)	None	-	-
Graves or burial grounds (Section 36)	8.3.3.1	Grade IV-A	Low
	8.3.3.2	Grade IV-A	Medium
	8.3.3.3	Grade IV-A	Medium
Public monuments or memorials (Section 37)	None	-	-
<i>Other</i>			
Any other heritage resources (describe)	None	-	-

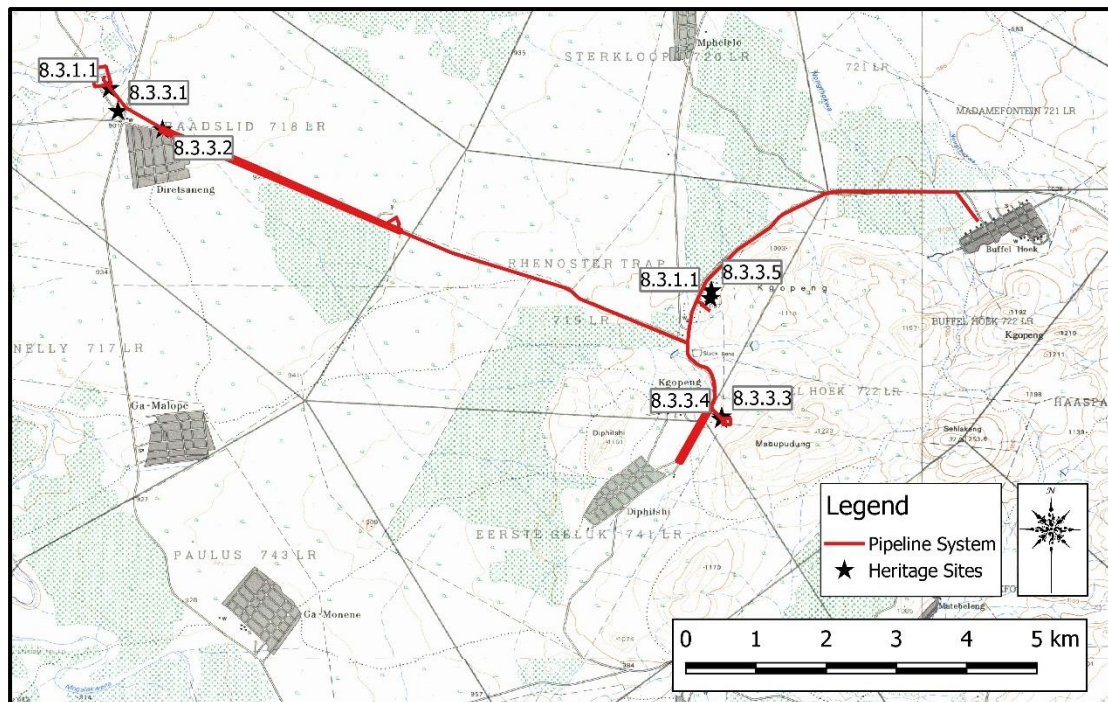


Fig. 8. Location of the identified sites.  
(Map 2328DA, 2328DB: Chief Surveyor-General)

#### 8.4 Impact assessment

Heritage impacts are categorised as:

- Direct or physical impacts, implying alteration or destruction of heritage features within the project boundaries;
- Indirect impacts, e.g. restriction of access or visual intrusion concerning the broader environment;
- Cumulative impacts that are combinations of the above.

Impacts can be managed through one or a combination of the following measures:

- Mitigation
- Avoidance
- Compensation
- Enhancement (positive impacts)
- Rehabilitation
- Interpretation
- Memorialisation

Sources of risk were considered with regards to development activities defined in Section 2(viii) of the NHRA that may be triggered and are summarised in Table 5 below. These issues formed the basis of the impact assessment described. The potential risks are discussed according to the various phases of the project below.



**Table 5. Potential Risk Sources.**

	Activity	Description	Risk
Issue 1	Removal of Vegetation	Vegetation removal for site preparation and the installation of required infrastructure, e.g. access roads and water pipelines.	The identified risk is damage or changes to resources that are generally protected in terms of Sections 27, 28, 31, 32, 34, 35, 36 and 37 of the NHRA that may occur in the proposed project area.
Issue 2	Construction of required infrastructure, e.g. access roads, water pipelines	Construction machinery and vehicles will be utilised to construct the required infrastructure, e.g. access roads and water pipelines.	The identified risk is damage or changes to resources that are generally protected in terms of Sections 27, 28, 31, 32, 34, 35, 36 and 37 of the NHRA that may occur in the proposed project area.

Impact analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development and is presented in Appendix 7 and summarised in Table 6 below:

Impact assessment:

- (8.3.1.1): Scattered surface occurrences of Middle Stone Age stone tools and flakes were identified in a few areas along the pipeline route.
  - Impact = None - the significance weighting for the impact on the identified sites is rated as **low**.
    - Mitigation: None required.
- (8.3.3.1): Two graves.
  - Impact = None: the significance weighting for the impact on the identified sites is rated as **low**.
    - Mitigation: Avoid site, maintain buffer zone of 5 metres demarcated with danger tape.
- (8.3.3.2): A single grave located inside the road reserve.
  - Impact = Possible: the significance weighting for the impact on the identified sites is rated as **medium**.
    - Mitigation: Avoid site, maintain buffer zone of 5 metres demarcated with danger tape.
- (8.3.3.3): A single grave marked only by means of packed stones. This feature can probably be linked to the homestead feature located a few metres to the south (see No. 8.3.3.4 below)
  - Impact = Possible: the significance weighting for the impact on the identified sites is rated as **medium**.
    - Mitigation: Avoid site, maintain buffer zone of 5 metres demarcated with danger tape.
- (8.3.3.4): The remains of an old homestead structure. Due to its proximity, this feature can in all probability be linked to the single grave described above (No. 8.3.3.3).
  - Impact = Possible: the significance weighting for the impact on the identified sites is rated as **medium**.
    - Mitigation: Avoid site, maintain buffer zone of 5 metres demarcated with danger tape.

**Table 6: Impacts on identified Heritage Sites**

Heritage sites	Significance of impact	Mitigation measures
<b>Mogalakwena Water Pipeline: Construction Phase</b>		
Without mitigation	Medium	n/a
With mitigation	Low	n/a
<b>Mogalakwena Water Pipeline: Operation Phase</b>		
Without mitigation	n/a	n/a
With mitigation	n/a	n/a

### 8.5 Alternatives considered

In terms of knowledge and understanding of the immediate heritage landscape, sites and features in the region, the potential sources of risk would be the same for any alternative located within a reasonable distance of the original development site.

## 9. MANAGEMENT MEASURES

Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and that are directly impacted by the proposed development can be excavated/recorded and a management plan can be developed for future action. Those sites that are not impacted on can be written into the management plan, whence they can be avoided or cared for in the future.

### 9.1 Objectives

- Protection of archaeological, historical and any other site or land considered being of cultural value within the project boundary against vandalism, destruction and theft.
- The preservation and appropriate management of new discoveries in accordance with the NHRA, should these be discovered during construction activities.

The following shall apply:

- Known sites should be clearly marked in order that they can be avoided during construction activities.
- The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.
- Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible;
- All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken;
- Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and
- Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1).

### 9.2 Control

In order to achieve this, the following should be in place:

- A person or entity, e.g. the Environmental Control Officer, should be tasked to take responsibility for the heritage sites and should be held accountable for any damage.
- Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer as identified above.
- In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.

## 10. RECOMMENDATIONS

The villages of Dipitchi, Ramoseseane, Buffelshoek and Kgopeng in the Waterberg District Municipality in Limpopo Province are currently supplied by a cluster of independent systems which draws their water from boreholes using pumps that are mechanically powered by electric or diesel combustion engines. This system has become dysfunctional due to lack of maintenance as well as increased demand and it has been recommended that it should be upgraded.

The cultural landscape qualities of the region essentially consist of a rural setup. In this the human occupation is made up of a pre-colonial element consisting of Stone Age as well as a later Iron Age occupation. This was followed much later by a colonial (farmer) component. A much smaller component is an urban one, which is rapidly expanding at present due to population increases and as well as people moving to economic centres in search of work.

### Identified heritage sites

#### 8.3.1 *Stone Age*

- (8.3.1.1): Scattered surface occurrences of Middle Stone Age stone tools and flakes were identified in a few areas across the pipeline route, but no habitation or tool processing areas were identified. The material used for the artefacts is felsite, which is known to occur in the Waterberg and seems to have been the material of choice for MSA people in this region.
  - This feature has Low local significance – Grade IV-C

#### 8.3.3 *Historic period*

- (8.3.3.1): Two graves. One is marked only with a stone cairn; the second have a headstone indicating that R.M. Ramaru (22/07/1930-19/05/1983) was buried here.
  - High/Medium local significance – Grade IV-A
- (8.3.3.2): A single grave located inside the road reserve. The headstone indicated that M J Mahlanya, born in June 1930, was buried here.
  - High/Medium local significance – Grade IV-A
- A single grave marked only by means of packed stones. This feature can probably be linked to the homestead feature located a few metres to the south (see No. 8.3.3.4 below).
  - High/Medium local significance – Grade IV-A
- (8.3.3.4): The remains of an old homestead structure, at present consisting only of the foundations and a few scraps of artefacts, e.g. broken glass, ceramics and pieces of

metal. Due to its proximity, this feature can in all probability be linked to the single grave described above (No. 8.3.3.3).

- Low significance – Grade IV-C
- (8.3.3.5): Remains of a few homestead structures were identified on the farm Rhenostertrap 719LR. All of them occur at the foot of a ridge and well away from the road reserve. The sites are made up of remains of house foundations, broken pottery, field clearing cairns and a possible grave.
  - These features have Low local significance – Grade IV-C

### Impact assessment

Impact analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development:

- (8.3.1.1): Scattered surface occurrences of Middle Stone Age stone tools and flakes were identified in a few areas along the pipeline route.
  - Impact = None - the significance weighting for the impact on the identified sites is rated as **low**.
    - Mitigation: None required.
- (8.3.3.1): Two graves.
  - Impact = None: the significance weighting for the impact on the identified sites is rated as **low**.
    - Mitigation: Avoid site, maintain buffer zone of 5 metres demarcated with danger tape.
- (8.3.3.2): A single grave located inside the road reserve.
  - Impact = Possible: the significance weighting for the impact on the identified sites is rated as **medium**.
    - Mitigation: Avoid site, maintain buffer zone of 5 metres demarcated with danger tape.
- (8.3.3.3): A single grave marked only by means of packed stones. This feature can probably be linked to the homestead feature located a few metres to the south (see No. 8.3.3.4 below)
  - Impact = Possible: the significance weighting for the impact on the identified sites is rated as **medium**.
    - Mitigation: Avoid site, maintain buffer zone of 5 metres demarcated with danger tape.
- (8.3.3.4): The remains of an old homestead structure. Due to its proximity, this feature can in all probability be linked to the single grave described above (No. 8.3.3.3).
  - Impact = Possible: the significance weighting for the impact on the identified sites is rated as **medium**.
    - Mitigation: Avoid site, maintain buffer zone of 5 metres demarcated with danger tape.
- (8.3.3.5): Remains of a few homestead structures were identified on the farm Rhenostertrap 719LR.
  - Impact = Possible: the significance weighting for the impact on the identified sites is rated as **low**.
    - Mitigation: Avoid area.

Heritage sites	Significance of impact	Mitigation measures
Mogalakwena Water Pipeline: Construction Phase		
Without mitigation	Medium	n/a
With mitigation	Low	n/a

Mogalakwena Water Pipeline: Operation Phase		
Without mitigation	n/a	n/a
With mitigation	n/a	n/a

Reasoned opinion as to whether the proposed activity should be authorised:

- From a heritage point of view it is recommended that the proposed development be allowed to continue on acceptance of the proposed mitigation measures.

Conditions for inclusion in the environmental authorisation:

- Should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

## 11. REFERENCES

### 11.1 Data bases

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Environmental Potential Atlas, Department of Environmental Affairs and Tourism.  
Heritage Atlas Database, Pretoria  
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SAHRIS Database

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Van Warmelo, N.J. 1944. *The Ndebele of J. Kekana*. Ethnological Publications No. 18. Pretoria: Government Printer.

### **11.3 Maps and aerial photographs**

1: 50 000 Topocadastral maps

Google Earth

**APPENDIX 1. INDEMNITY AND TERMS OF USE OF THIS REPORT**

The findings, results, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information. The report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken and the author reserve the right to modify aspects of the report including the recommendations if and when new information may become available from ongoing research or further work in this field, or pertaining to this investigation.

Although all possible care is taken to identify all sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the study. The author of this report will not be held liable for such oversights or for costs incurred as a result of such oversights.

Although the author exercises due care and diligence in rendering services and preparing documents, he accepts no liability and the client, by receiving this document, indemnifies the author against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by the author and by the use of the information contained in this document.

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**APPENDIX 2. SPECIALIST COMPETENCY**Johan (Johnny) van Schalkwyk

J A van Schalkwyk, D Litt et Phil, heritage consultant, has been working in the field of heritage management for more than 40 years. Originally based at the National Museum of Cultural History, Pretoria, he has actively done research in the fields of anthropology, archaeology, museology, tourism and impact assessment. This work was done in Limpopo Province, Gauteng, Mpumalanga, North West Province, Eastern Cape, Northern Cape, Botswana, Zimbabwe, Malawi, Lesotho and Swaziland. Based on this work, he has curated various exhibitions at different museums and has published more than 70 papers, most in scientifically accredited journals. During this period he has done more than 2000 impact assessments (archaeological, anthropological, historical and social) for various government departments and developers. Projects include environmental management frameworks, roads, pipeline-, and power line developments, dams, mining, water purification works, historical landscapes, refuse dumps and urban developments.

A complete *curriculum vitae* can be supplied on request.

### APPENDIX 3. CONVENTIONS USED TO ASSESS THE SIGNIFICANCE OF HERITAGE RESOURCES

A system for site grading was established by the NHRA and further developed by the South African Heritage Resources Agency (SAHRA 2007) and has been approved by ASAPA for use in southern Africa and was utilised during this assessment.

#### Significance

According to the NHRA, Section 2(vi) the **significance** of a heritage sites and artefacts is determined by it aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technical value in relation to the uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.

#### Matrix used for assessing the significance of each identified site/feature

1. SITE EVALUATION				
1.1 Historic value				
Is it important in the community, or pattern of history				
Does it have strong or special association with the life or work of a person, group or organisation of importance in history				
Does it have significance relating to the history of slavery				
1.2 Aesthetic value				
It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group				
1.3 Scientific value				
Does it have potential to yield information that will contribute to an understanding of natural or cultural heritage				
Is it important in demonstrating a high degree of creative or technical achievement at a particular period				
1.4 Social value				
Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons				
1.5 Rarity				
Does it possess uncommon, rare or endangered aspects of natural or cultural heritage				
1.6 Representivity				
Is it important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects				
Importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class				
Importance in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province, region or locality.				
2. Sphere of Significance		High	Medium	Low
International				
National				
Provincial				
Regional				
Local				
Specific community				
3. Field Register Rating				
1.	National/Grade 1: High significance - No alteration whatsoever without permit from SAHRA			
2.	Provincial/Grade 2: High significance - No alteration whatsoever without			

	permit from provincial heritage authority.	
3.	Local/Grade 3A: High significance - Mitigation as part of development process not advised.	
4.	Local/Grade 3B: High significance - Could be mitigated and (part) retained as heritage register site	
5.	Generally protected A: High/medium significance - Should be mitigated before destruction	
6.	Generally protected B: Medium significance - Should be recorded before destruction	
7.	Generally protected C: Low significance - Requires no further recording before destruction	

**APPENDIX 4. RELEVANT LEGISLATION**

All archaeological and palaeontological sites, and meteorites are protected by the National Heritage Resources Act (Act no 25 of 1999) as stated in Section 35:

(1) Subject to the provisions of section 8, the protection of archaeological and palaeontological sites and material and meteorites is the responsibility of a provincial heritage resources authority: Provided that the protection of any wreck in the territorial waters and the maritime cultural zone shall be the responsibility of SAHRA.

(2) Subject to the provisions of subsection (8)(a), all archaeological objects, palaeontological material and meteorites are the property of the State. The responsible heritage authority must, on behalf of the State, at its discretion ensure that such objects are lodged with a museum or other public institution that has a collection policy acceptable to the heritage resources authority and may in so doing establish such terms and conditions as it sees fit for the conservation of such objects.

(3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.

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

- (a) 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;
- (c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or
- (d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

In terms of cemeteries and graves the following (Section 36):

(1) Where it is not the responsibility of any other authority, SAHRA must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit.

(2) SAHRA must identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with the grave referred to in subsection (1), and must maintain such memorials.

(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.

(4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.

The National Heritage Resources Act (Act no 25 of 1999) stipulates the assessment criteria and grading of archaeological sites. The following categories are distinguished in Section 7 of the Act:

- **Grade I:** Heritage resources with qualities so exceptional that they are of special national significance;
- **Grade II:** Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region; and
- **Grade III:** Other heritage resources worthy of conservation, and which prescribes heritage resources assessment criteria, consistent with the criteria set out in section 3(3), which must be used by a heritage resources authority or a local authority to assess the intrinsic, comparative and contextual significance of a heritage resource and the relative benefits and costs of its protection, so that the appropriate level of grading of the resource and the consequent responsibility for its management may be allocated in terms of section 8.

Presenting archaeological sites as part of tourism attraction requires, in terms 44 of the Act, a Conservation Management Plan as well as a permit from SAHRA.

(1) Heritage resources authorities and local authorities must, wherever appropriate, co-ordinate and promote the presentation and use of places of cultural significance and heritage resources which form part of the national estate and for which they are responsible in terms of section 5 for public enjoyment, education, research and tourism, including-

- (a) the erection of explanatory plaques and interpretive facilities, including interpretive centres and visitor facilities;
- (b) the training and provision of guides;
- (c) the mounting of exhibitions;
- (d) the erection of memorials; and
- (e) any other means necessary for the effective presentation of the national estate.

(2) Where a heritage resource which is formally protected in terms of Part I of this Chapter is to be presented, the person wishing to undertake such presentation must, at least 60 days prior to the institution of interpretive measures or manufacture of associated material, consult with the heritage resources authority which is responsible for the protection of such heritage resource regarding the contents of interpretive material or programmes.

(3) A person may only erect a plaque or other permanent display or structure associated with such presentation in the vicinity of a place protected in terms of this Act in consultation with the heritage resources authority responsible for the protection of the place.

## APPENDIX 5. RELOCATION OF GRAVES

If the graves are younger than 60 years, an undertaker can be contracted to deal with the exhumation and reburial. This will include public participation, organising cemeteries, coffins, etc. They need permits and have their own requirements that must be adhered to.

If the graves are older than 60 years old or of undetermined age, an archaeologist must be in attendance to assist with the exhumation and documentation of the graves. This is a requirement by law.

Once it has been decided to relocate particular graves, the following steps should be taken:

- Notices of the intention to relocate the graves need to be put up at the burial site for a period of 60 days. This should contain information where communities and family members can contact the developer/archaeologist/public-relations officer/undertaker. All information pertaining to the identification of the graves needs to be documented for the application of a SAHRA permit. The notices need to be in at least 3 languages, English, and two other languages. This is a requirement by law.
- Notices of the intention needs to be placed in at least two local newspapers and have the same information as the above point. This is a requirement by law.
- Local radio stations can also be used to try contact family members. This is not required by law, but is helpful in trying to contact family members.
- During this time (60 days) a suitable cemetery need to be identified close to the development area or otherwise one specified by the family of the deceased.
- An open day for family members should be arranged after the period of 60 days so that they can gather to discuss the way forward, and to sort out any problems. The developer needs to take the families requirements into account. This is a requirement by law.
- Once the 60 days has passed and all the information from the family members have been received, a permit can be requested from SAHRA. This is a requirement by law.
- Once the permit has been received, the graves may be exhumed and relocated.
- All headstones must be relocated with the graves as well as any items found in the grave.

### Information needed for the SAHRA permit application

- The permit application needs to be done by an archaeologist.
- A map of the area where the graves have been located.
- A survey report of the area prepared by an archaeologist.
- All the information on the families that have identified graves.
- If graves have not been identified and there are no headstones to indicate the grave, these are then unknown graves and should be handled as if they are older than 60 years. This information also needs to be given to SAHRA.
- A letter from the landowner giving permission to the developer to exhume and relocate the graves.
- A letter from the new cemetery confirming that the graves will be reburied there.
- Details of the farm name and number, magisterial district and GPS coordinates of the gravesite.

**APPENDIX 6. INVENTORY OF IDENTIFIED CULTURAL HERITAGE SITES**

<p><b>No.:</b> 8.3.1.1</p> <p><b>Name:</b> Surface scatter: Middle Stone Age material</p> <p><b>NHRA Category:</b> Archaeological and Palaeontological sites.</p> <p><b>Farm:</b> Raadslid 718LR; Rhenostertrap 719LR</p> <p><b>Coordinates:</b> various</p>	
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<p><b>Description</b></p> <p>Scattered surface occurrences of Middle Stone Age stone tools and flakes were identified in a few areas across the pipeline route, but no habitation or tool processing areas were identified. Find spots are labelled as low-density scatters if they contain less than five tools or flakes per square metre – in this case less than 5 tools/flakes per 50m<sup>2</sup>. Such scatters also do not necessarily contain complete diagnostic or formal tools. The material used for the artefacts is felsite, which is known to occur in the Waterberg and seems to have been the material of choice for MSA people in this region.</p>
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<p><b>Significance of site/feature</b></p>	<p>This feature has Low local significance – Grade IV-C</p>
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<p><b>Impact assessment</b></p> <p>As all the material identified was found on the surface, it is not in its original context and as a result the possible impact of the pipeline development activities is viewed to be low.</p>
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<p><b>Significance of impact</b></p>					
Extent	Duration	Magnitude	Probability	Significance	Weight
1	5	4	2	20	Low

<p><b>Mitigation</b></p> <p>As the density of the artefact scatter is very low, no further action is required</p>
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<p><b>Requirements</b></p> <p>None</p>
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<p><b>References</b></p> <p>1: 50 000 topocadastral map:</p>
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<b>No.:</b> 8.3.3.1	
<b>Name:</b> Burial site <b>NHRA Category:</b> Graves, cemeteries and burial grounds <b>Farm:</b> Raadslid 718LR <b>Coordinates:</b> -23.67445, 28.63741	

**Description**  
 Two graves. One is marked only with a stone cairn; the second have a headstone indicating that R.M. Ramaru (22/07/1930-19/05/1983) was buried here.

**Significance of site/feature** | High/Medium local significance – Grade IV-A

**Impact assessment**  
 This feature is located approximately 120m from the proposed pipeline and it is therefore unlikely that it would directly be impacted on.

Significance of impact					
Extent	Duration	Magnitude	Probability	Significance	Weight
1	2	4	3	21	Low

**Mitigation**  
 It is recommended that this feature is retained and that it is fenced off with danger tape for the duration of work on the pipeline, with a buffer area of at least 5 m.

**Requirements**  
 None

**References**  
 1: 50 000 topocadastral map:





<b>No.:</b> 8.3.3.2	
<b>Name:</b> Burial site <b>NHRA Category:</b> Graves, cemeteries and burial grounds <b>Farm:</b> Raadslid 718LR <b>Coordinates:</b> -23.67701, 28.64362	

**Description**  
 A single grave located inside the road reserve. The headstone indicated that M J Mahlanya, born in June 1930, was buried here.

**Significance of site/feature** | High/Medium local significance – Grade IV-A

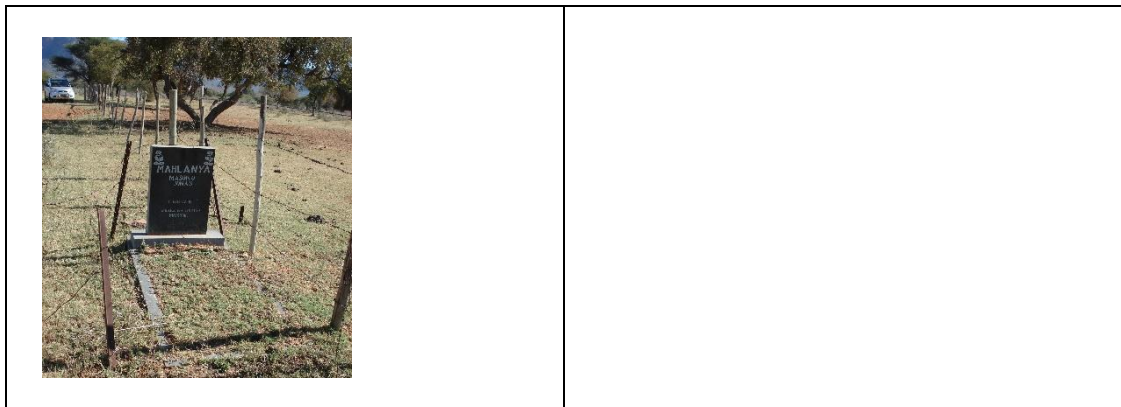
**Impact assessment**  
 This feature is located inside the proposed pipeline development area and would in all probability be impacted on by the proposed development.

Significance of impact					
Extent	Duration	Magnitude	Probability	Significance	Weight
1	5	6	4	48	Medium

**Mitigation**  
 It is recommended that this feature is retained and that it is fenced off with danger tape for the duration of work on the pipeline, with a buffer area of at least 5 metres. If that is not possible, the grave should be relocated after proper procedure has been followed – see Appendix 5.

**Requirements**  
 Various permits – see Appendix 5

**References**  
 1: 50 000 topocadastral map



<b>No.:</b> 8.3.3.3	
<b>Name:</b> Burial site <b>NHRA Category:</b> Graves, cemeteries and burial grounds <b>Farm:</b> Buffel Hoek 722LR <b>Coordinates:</b> -23.71709, 28.72176	

**Description**  
 A single grave marked only by means of packed stones. This feature can probably be linked to the homestead feature located a few metres to the south (see No. 8.3.3.4 below)

**Significance of site/feature** | High/Medium local significance – Grade IV-A

**Impact assessment**  
 According to current information, the proposed pipeline would pass in close proximity of this feature, in fact separating it from the identified homestead (see No. 8.3.3.4).

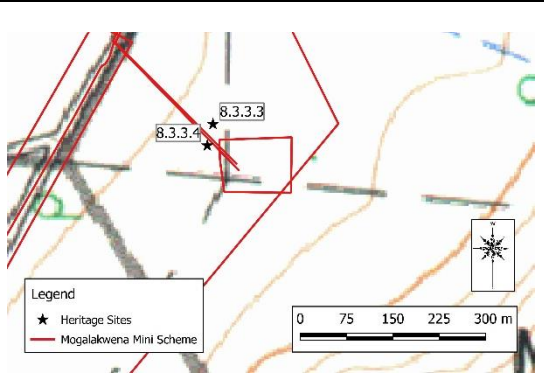
<b>Significance of impact</b>					
Extent	Duration	Magnitude	Probability	Significance	Weight
1	5	6	4	48	Medium

**Mitigation**  
 It is recommended that this feature is retained and that it is fenced off with danger tape for the duration of work on the pipeline, with a buffer area of at least 5 metres. The pipeline should be moved to the south or north in order to bypass this and the associated homestead feature.

**Requirements**  
 Various permits – see Appendix 5

**References**  
 1: 50 000 topocadastral map:



<b>No.:</b> 8.3.3.4	
<b>Name:</b> Homestead <b>NHRA Category:</b> Buildings, structures, places and equipment of cultural significance <b>Farm:</b> Buffel Hoek 722LR <b>Coordinates:</b> -23.71743, 28.72167	

<b>Feature No.:</b> T055/02	<b>Name:</b> Built structures	<b>Coordinates:</b> -29.38865, 27.41276
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<b>Description</b>
The remains of an old homestead structure, at present consisting only of the foundations and a few scraps of artefacts, e.g. broken glass, ceramics and pieces of metal. Unfortunately, this was not enough to be of help in dating of the feature. Due to its proximity, this feature can in all probability be linked to the single grave described above (No. 8.3.3.3).

<b>Significance of site/feature</b>	Low significance – Grade IV-C
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<b>Impact assessment</b>
According to current information, the proposed pipeline would pass in close proximity of this feature, in fact separating it from the identified homestead (see No. 8.3.3.3).

<b>Significance of impact</b>					
<b>Extent</b>	<b>Duration</b>	<b>Magnitude</b>	<b>Probability</b>	<b>Significance</b>	<b>Weight</b>
1	2	4	3	21	Low

<b>Mitigation</b>
It is recommended that this feature is retained and that it is fenced off with danger tape for the duration of work on the pipeline, with a buffer area of at least 5 metres. The pipeline should be moved to the south or north in order to bypass this and the associated grave.

<b>Requirements</b>
If this site cannot be avoided, it should be recorded (mapped and photographed) after which a permit for its destruction can be obtained from SAHRA

<b>References</b>
1: 50 000 topocadastral map



<b>No.:</b> 8.3.3.5	
<b>Name:</b> Historic period settlement <b>NHRA Category:</b> Archaeological and Palaeontological sites. <b>Farm:</b> Rhenostertrap 719LR <b>Coordinates:</b> various	

<b>Description</b> Remains of a few homestead structures were identified on the farm Rhenostertrap 719LR. All of them occur at the foot of a ridge and well away from the road reserve. The sites are made up of remains of house foundations, broken pottery, field clearing cairns and a possible grave.
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<b>Significance of site/feature</b>	This feature has Low local significance – Grade IV-C
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<b>Impact assessment</b> As all the material identified was found outside the road reserve, it is unlikely that the development of the water pipeline would have an impact on any of these features.
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<b>Significance of impact</b>					
Extent	Duration	Magnitude	Probability	Significance	Weight
1	5	3	3	27	Low

<b>Mitigation</b> It is recommended that these areas are avoided.
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<b>Requirements</b> None
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<b>References</b> 1: 50 000 topocadastral map:
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