

**Cultural heritage impact assessment report for the
DEVELOPMENT OF THE PROPOSED LEHATING 132KV POWER LINE AND
SUBSTATION, NORTH WEST OF HOTAZEL, NORTHERN CAPE PROVINCE**

CULTURAL HERITAGE IMPACT ASSESSMENT REPORT FOR THE DEVELOPMENT OF THE PROPOSED LEHATING 132KV POWER LINE AND SUBSTATION, NORTH WEST OF HOTAZEL, NORTHERN CAPE PROVINCE

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Declaration:

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



J A van Schalkwyk (D Litt et Phil)
Heritage Consultant
April 2016

EXECUTIVE SUMMARY

CULTURAL HERITAGE IMPACT ASSESSMENT REPORT FOR THE DEVELOPMENT OF THE PROPOSED LEHATING 132KV POWER LINE AND SUBSTATION, NORTH WEST OF HOTAZEL, NORTHERN CAPE PROVINCE

Eskom proposes the construction of the new Lehating 132kV distribution substation and the new 14km Single Circuit Chickadee power line between the new Lehating Substation and the existing Klipkop Substation north west of Hotazel in Northern Cape Province. The proposed new Lehating Substation will be situated approximately 14km north of the existing Klipkop Substation.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by Jeffares & Green (Pty) Ltd to conduct a Cultural Heritage Impact Assessment (HIA) to determine if the construction of the proposed power line would have an impact on any sites, features or objects of cultural heritage significance.

The cultural landscape qualities of the study area, as well as the larger region, essentially consist of a single component. This is a sparsely populated rural area in which the human occupation is made up of a limited (known) pre-colonial element (Stone Age) as well as a much later colonial (farmer) component. It was only with the development of drilling rigs that sub-surface water sources could be accessed, allowing people to settle more permanently in the region.

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

- Stone tools were identified in a number of areas. Only two of these are located inside the power line corridors. It consists mostly of flakes, with a few formal tools, all of fine-grained material such as agates and quartz.
 - These sites are located inside the power line corridor, close to the area where the substation is to be developed. It is therefore likely that the construction of the power line substation would have an impact on them.
 - It is recommended that a qualified Stone Age archaeologist do a surface collection on the sites and that this material is then deposited in a national repository.
- Two farmsteads consisting of a main house and a number of outbuildings and farming related features were identified. It does not exhibit any remarkable construction features or stylistic characteristics.
 - Although these sites are located inside the power line corridor, it is unlikely that the construction of the power line would have an impact on them as it is clearly visible, still in use and fenced off.
 - No mitigation is required
- Two different burial sites were identified to be located either inside or in close proximity of the power line corridors.
 - The sites plot on the edge of the western power line corridor or just inside it. It would therefore be possible to avoid it and retain it in its original location.
 - The burial sites should be avoided by leaving buffer area of at least 10m on all sides. The sites should also be fenced off with danger tape during deconstruction of the power line. If that is not possible, the graves must be relocated after the proper procedure has been followed – see Appendix 3 for a basic outline of the procedures to follow.

Based on the above, it is safe to say that Alternative 3, inclusive of Deviation 3A and 3B, would be the preferred choice for the corridor to be developed in, although the Alternative 1, on the western side, can also be used, on condition of acceptance of the proposed mitigation measures.

We also recommend that if archaeological sites or graves are exposed during development activities, it should immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

A handwritten signature in black ink, appearing to read 'J A van Schalkwyk'. The signature is written in a cursive style with a large initial 'J' and 'A'.

J A van Schalkwyk
Heritage Consultant
April 2016

TECHNICAL SUMMARY

Property details						
Province	Northern Cape					
Magisterial district	Kuruman					
District municipality	Kgalagadi					
Topo-cadastral map	2722BB					
Closest town	Hotazel					
Farm name & no.	Lehating 225, Wessels 227, Santoy 230, Belgarvia 264, Nchwaning 267					
Portions/Holdings	-					
Coordinates	End points (approximate)					
	No	Latitude	Longitude	No	Latitude	Longitude
	1	S 27.13674	E 22.84426	2	S 27.03877	E 22.85438

Development criteria in terms of Section 38(1) of the NHR Act	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	Yes
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

Development	
Description	Construction of a electricity power line and substation
Project name	Lehating 132kV power line and Lehating Substation

Land use	
Previous land use	Agriculture
Current land use	Agriculture/Industrial

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GLOSSARY OF TERMS AND ABBREVIATIONS

TERMS

Study area: Refers to the entire study area as indicated by the client in the accompanying Fig. 1 - 2.

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
Late Iron Age	AD 1300 - AD 1830

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

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

CULTURAL HERITAGE IMPACT ASSESSMENT REPORT FOR THE DEVELOPMENT OF THE PROPOSED LEHATING 132KV POWER LINE AND SUBSTATION, NORTH WEST OF HOTAZEL, NORTHERN CAPE PROVINCE

1. INTRODUCTION

Eskom proposes the construction of the new Lehating 132kV distribution substation and the new 14km Single Circuit Chickadee power line between the new Lehating Substation and the existing Klipkop Substation north west of Hotazel in Northern Cape Province. The proposed new Lehating Substation will be situated approximately 14km north of the existing Klipkop Substation.

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 Jeffares & Green (Pty) Ltd to conduct a Cultural Heritage Impact Assessment (HIA) to determine if the construction of the proposed power line and substation would have an impact on any sites, features or objects of cultural heritage significance.

This HIA 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) and is intended for submission to the South African Heritage Resources Agency (SAHRA).

2. TERMS OF REFERENCE

This report does not deal with development projects outside of or even adjacent to the study area as is presented in Section 5 of this report. The same holds true for heritage sites, except in a generalised sense where it is used to create an overview of the heritage potential in the larger region.

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 it is planned to develop the power line and substation.

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 Assumptions and Limitations

The investigation has been influenced by the following factors:

- It is assumed that the description of the proposed project, provided by the client (Jeffares & Green 2015), 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. HERITAGE RESOURCES

3.1 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).

3.2 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 1). This allowed some form of control over the application of similar values for similar identified sites.

4. STUDY APPROACH AND METHODOLOGY

4.1 Extent of the Study

This survey and impact assessment covers the area presented in Section 5 and as illustrated in Figure 2.

4.2 Methodology

4.2.1.1 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 reference in Section 10 below.

- It turned out that the larger region, including the study area, has been subjected to a large number of heritage impact assessments (Küsel, van der Ryst, & Küsel 2009; Fourie 2013a, 2013b; Van Schalkwyk 2010; Van Vollenhoven 2012). This is fortunate as areas that were not accessible during the site visit were covered by these surveys. It also presented the possibility of verifying the assessments made by previous researchers and align own observations with theirs.

4.2.1.2 Data bases

The *Heritage Atlas Database*, 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.

4.2.1.3 Other sources

Aerial photographs and topocadastral and other maps were also studied - see the list of references in Section 10 below.

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

4.2.2 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 Jeffares & Green (Pty) Ltd by means of maps. The area was visited on 19 and 20 July 2015 – see Fig. 1 below.

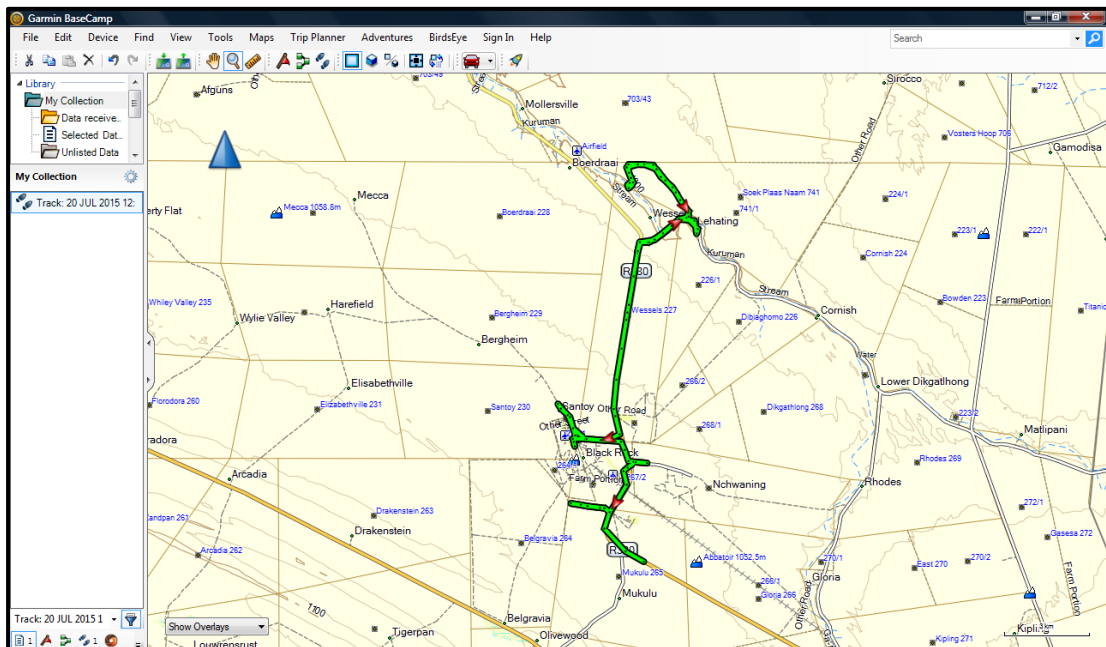


Fig. 1. Map indicating the track log of the field survey.

The *.kml* files indicating the power line alternatives and substation location, as supplied by Jeffares and Green, was loaded onto a Nexus 7 tablet. This was used, in Google Earth,

during the field survey to identify the study area. During the field survey, the consultant was accompanied by the land owner, Mr R van Schalkwyk, who grew up on the farm. He confirmed the study area as well as the absence of features such as rock shelters and graves.

Overall the archaeological visibility was good, due to the fact that during winter time the vegetation is down.

4.2.3 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).

5. PROJECT LOCATION AND DESCRIPTION

5.1 Site location and description

The development is to take place between the existing Klipkop Substation at Black Rock Mine and northwards to the new proposed Lehating Substation in the Kgalagadi District Municipality of Northern Cape Province. For more information please see the Technical Summary presented above (p. iii).

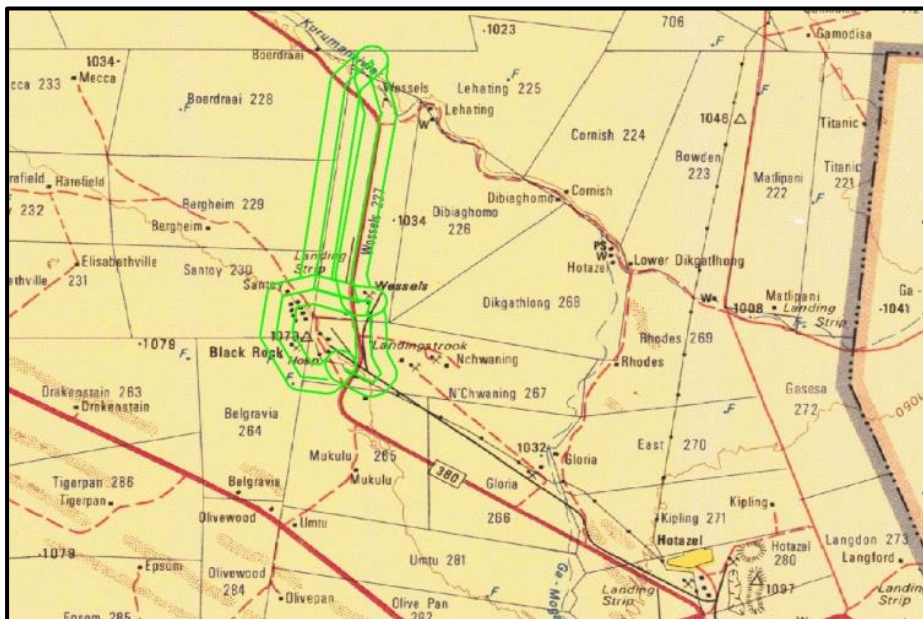


Fig. 2. Location of the study area in regional context.
(Map 2722: Chief Surveyor-General)

5.2 Development proposal

The project involves the construction of the new Lehating 132kV distribution substation and the proposed construction of a new 14km Single Circuit Chickadee power line between the new Lehating Substation and the existing Klipkop Substation. The Klipkop substation is situated at the Blackrock Mine, situated 12km North West of Hotazel. The proposed new Lehating Substation will be situated approximately 14km north of the existing Klipkop Substation. A new mine, the Lehating mine, is proposed on the site where the new Lehating Substation will be constructed. The Lehating mine approached Eskom to construct a substation to supply power to the new mine. At this early stage a 1km x 1km study area will be investigated for the construction of the proposed Lehating Substation, and three (3) alternative line study corridors will be investigated. The line study corridors are 1km in width. Eskom has also included the construction of loop-in lines between the existing Wessels substation and the proposed new Klipkop-Lehating power line.

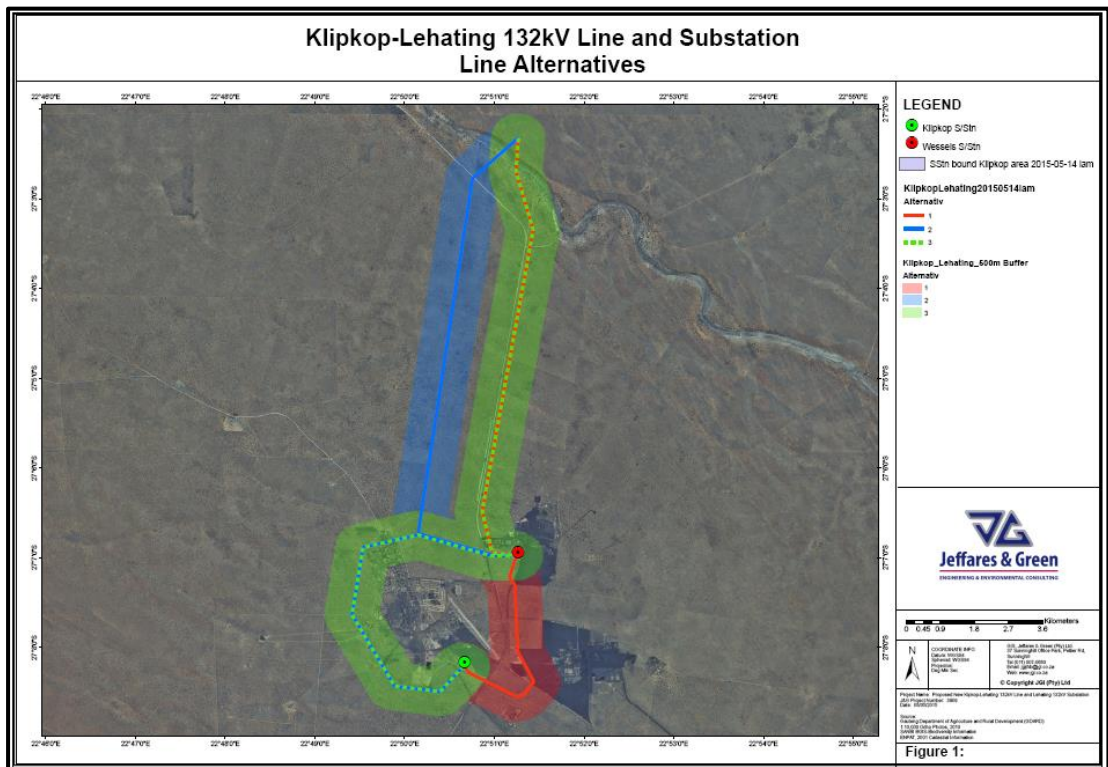


Fig. 3. Layout of the proposed develop.

After completion of the Draft Basic Assessment Report, Ntsimbintle mining indicated that the current centre line of corridor Alternative 3 will have an impact on their future mining activities. They have provided two deviation options. These two deviations follow the exact same centre line route as Alternative 3 and only deviates from the Alternative 3 line about 2km before the Lehating substation. The deviations are called 3A and 3B.

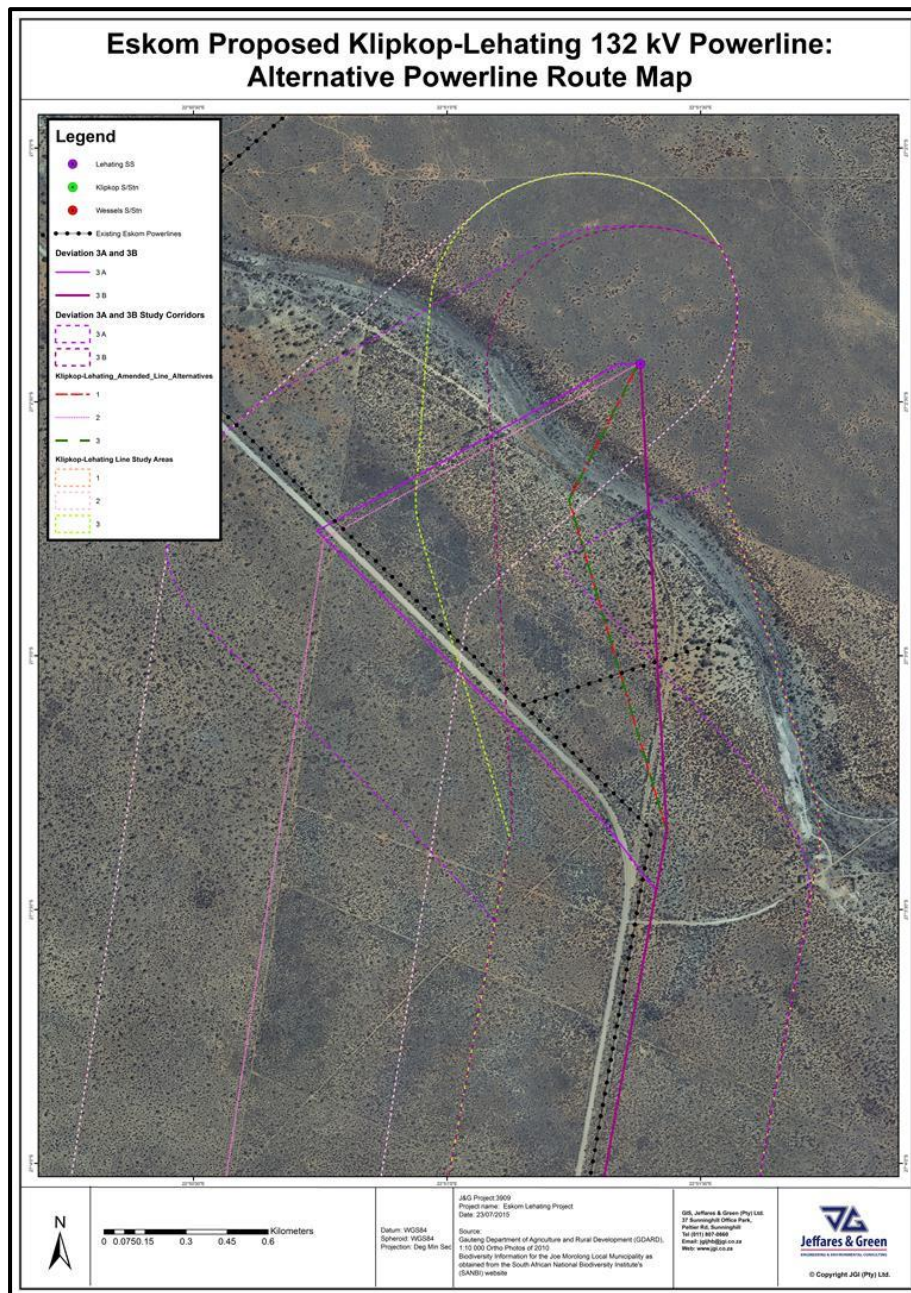


Fig. 4. Layout of the proposed Deviations.

6. DESCRIPTION OF THE AFFECTED ENVIRONMENT

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 1 for more information.

6.1 The environment

The geology of the area is made up of sand and the topography is described as plains. The original vegetation is classified as Kalahari Plains Thorn Bushveld. In some areas the proposed power line would follow exiting corridors or roads, and in other areas it would cross areas that can be described as “greenfields”.

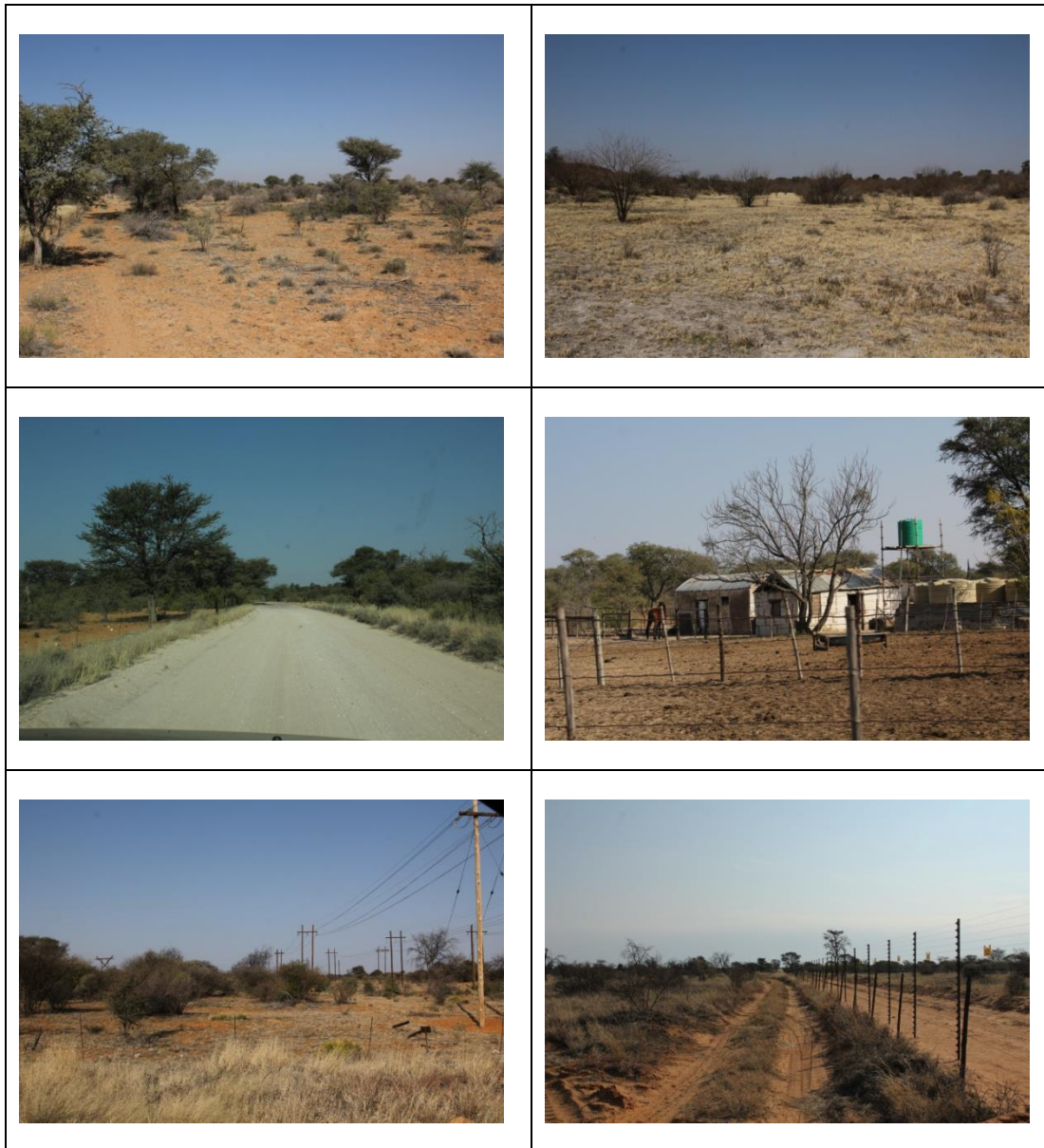


Fig. 5. Views over the study area.

6.2 Overview of the region

The cultural landscape qualities of the study area, as well as the larger region, essentially consist of a single component. This is a sparsely populated rural area in which the human occupation is made up of a limited (known) pre-colonial element (Stone Age) as well as a much later colonial (farmer) component. It was only with the development of drilling rigs that

sub-surface water sources could be accessed, allowing people to settle more permanently in the region.

6.2.1 Stone Age

Surveys in the area have revealed that the archaeological record is temporarily confined to the Middle and Later Stone Age and is spatially concentrated around the riverine edges (Fourie 2013a; Hutten & Hutten 2013).

However, more to the south in the region of Kathu, occupation of the region already took place during the Early Stone Age (e.g. Beaumont & Morris 1990; Dreyer 2007).

Less obvious in its presence are the Later Stone Age sites, some of which are indicated by Beaumont & Vogel (1984). They equate these sites, some which occur in the larger region, with Cape Coastal pottery associated with amorphous LSA (herders) or Wilton (hunter-gatherers) in the period 100 BC to AD 1900.

6.2.2 Iron Age

Early Iron Age occupation did not take place in the region and seems as if the earliest people to have settled here were those of Tswana-speaking origin (Tlhaping and Tlharo) that settled mostly to the north and a bit to the west of Kuruman. However, they continued spreading westward and by the late 18th century some groups occupied the Langeberg region. With the annexation of the Tswana areas by the British in 1885, the area became known as British Betchuana Land. A number of reserves were set up for these people to stay in. In 1895 the Tswana-speakers rose up in resistance to the British authority as represented by the government of the Cape Colony. They were quickly subjected and their land was taken away, divided up into farms and given out to white farmers to settle on (Snyman 1986).

6.2.3 Historic period

Many early explorers, hunters, traders and missionaries travelled through the area on their way to Kuruman on what was to become known as the "missionary road". Anderson, Burchell, Harris, Holub, Lichtenstein and Moffat are but a few of the better-known names to pass through here.

In 1902 Olifantshoek got its first permanent inhabitant, Edward Finnis and in 1903 Michael Colley opened a shop. The slow growth of Olifantshoek can be attributed to the fact that for many years Deben (Dibeng) was the main seat of the church in the region and local people preferred to go there.

Although prospecting for minerals, especially diamonds occurred in the area and some knowledge was available on the iron deposits, it was only during the 1940s that the extent of the iron and manganese deposits were established. This was followed by the establishment of towns such as Sishen (1952) and Kathu in 1972.

As already indicated, the larger region as well as the study area has been sparsely populated and has largely been used for cattle farming.

6.3 Identified sites

The following sites, features and objects of cultural significance were identified in the study area (Fig. 6):

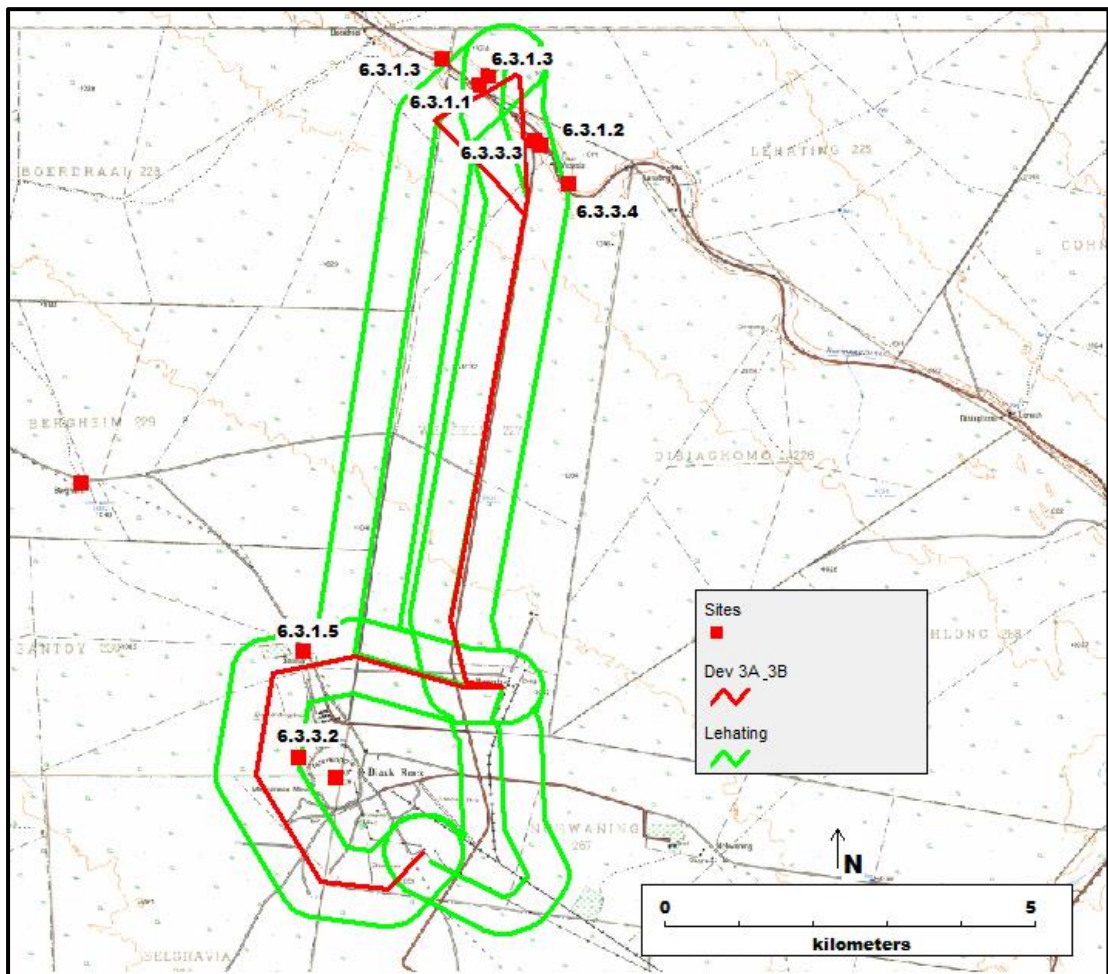


Fig. 6. Layout of the study area indicating the identified sites.
(The sites to be impacted on are indicated by numbered codes)

6.3.1 Stone Age

The following sites, features and objects dating to the Stone Age has been identified in the study area.

Location	No. 6.3.1.1	Lehating 225	S 27.04017, E 22.85356
Description			
Small area (5 x 5 m) where LSA material is eroding out. It consists mostly of flakes, with a few formal tools, all of fine-grained material such as agates and quartz.			

Significance of site/feature	Low on a regional level – Grade III
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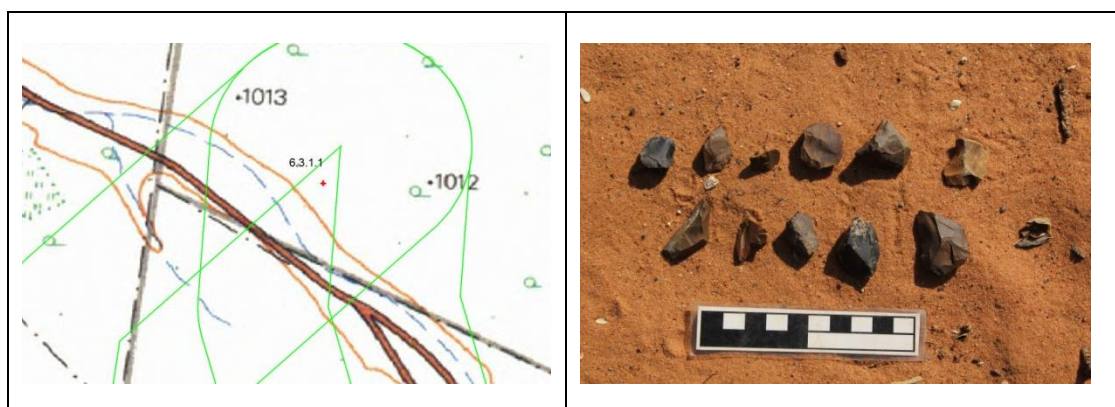
Impact assessment
This site is located inside the power line corridor, close to the area where the substation is to be developed. It is therefore likely that the construction of the power line substation would have an impact on it.

Significance of impact					
Extent	Duration	Magnitude	Probability	Significance	Weight
2	5	6	4	52	Medium

Mitigation
It is recommended that a qualified Stone Age archaeologist do a surface collection on the site and that this material is then deposited in a national repository.

Requirements
SAHRA permit

References
-



Location	No. 6.3.1.2	Lehating 225	S 27.04171, E 22.85356
Description			
Small area (10 x 10m) where LSA material is eroding out. It consists mostly of flakes, with a few formal tools, all of fine-grained material such as agates and quartz.			

Significance of site/feature	Low on a regional level – Grade III
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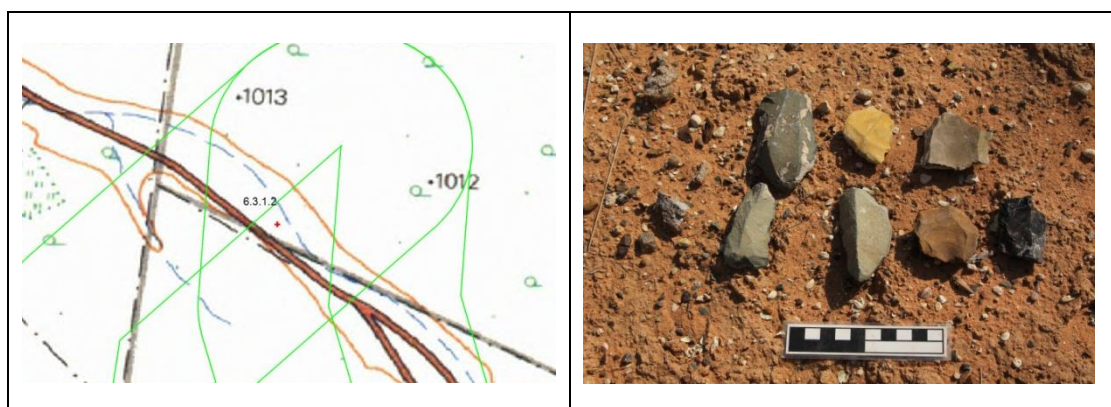
Impact assessment
This site is located inside the power line corridor, close to the area where the substation is to be developed. It is therefore likely that the construction of the power line substation would have an impact on it.

Significance of impact					
Extent	Duration	Magnitude	Probability	Significance	Weight
2	5	6	4	52	Medium

Mitigation
It is recommended that a qualified Stone Age archaeologist do a surface collection on the site and that this material is then deposited in a national repository.

Requirements
SAHRA permit

References
-



Location	No. 6.3.1.3	S 27.04907, E 22.85774
Description		
Small area where LSA material is eroding out. It consists mostly of flakes, with a few formal tools, all of fine-grained material such as agates and quartz.		

Significance of site/feature	Low on a regional level – Grade III
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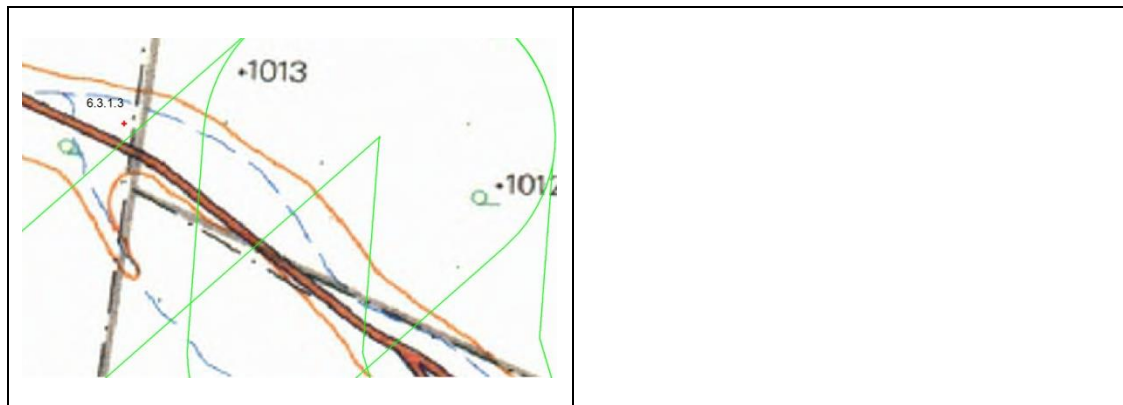
Impact assessment
This site is located just outside the power line corridor and therefore it is highly unlikely that it would be impacted on by the proposed development.

Significance of impact					
Extent	Duration	Magnitude	Probability	Significance	Weight
2	5	6	2	26	Low

Mitigation
None

Requirements
None

References
Hutten & Hutten 2013



Location	No. 6.3.1.4		
Description			
Small area where LSA material is eroding out. It consists mostly of flakes, with a few formal tools, all of fine-grained material such as agates and quartz.			

Significance of site/feature	Low on a regional level – Grade III
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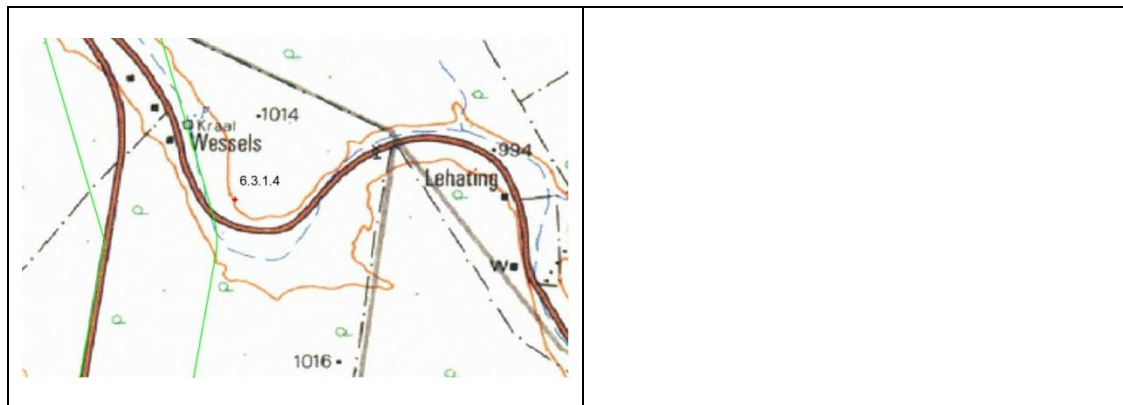
Impact assessment
This site is located just outside the power line corridor and therefore it is highly unlikely that it would be impacted on by the proposed development.

Significance of impact					
Extent	Duration	Magnitude	Probability	Significance	Weight
2	5	6	2	26	Low

Mitigation
None

Requirements
None

References
Hutten & Hutten 2013



6.3.2 *Iron Age*

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

6.3.3 Historic period

- The following sites, features and objects dating to the historic period has been identified in the study area.

Location	No. 6.3.3.1	Santoy 230	S 27.12464, E 22.82942
Description			
A large burial place with c. 60 graves. Apparently, most of the graves are of Black mine workers that died while working at the mine. All are marked with stone cairns, except one that has a date of 8/07/1974. Currently the site is fenced off.			

Significance of site/feature	High on a local level – Grade III
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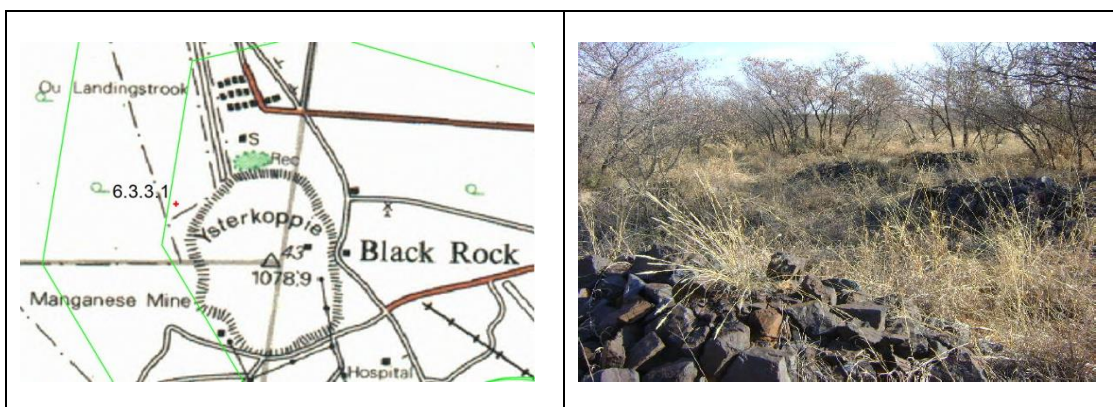
Impact assessment
The site plot on the edge of the power line corridor. It would therefore be possible to avoid it and retain it in its original location.

Significance of impact					
Extent	Duration	Magnitude	Probability	Significance	Weight
2	5	6	3	39	Medium

Mitigation
The burial site should be avoided by leaving buffer area of at least 10m on all sides. The site should also be fenced off with danger tape during deconstruction of the power line. If that is not possible, the graves must be relocated after the proper procedure has been followed – see Appendix 3 for a basic outline of the procedure to follow.

Requirements
A valid permit for the relocation of the graves must be obtained from SAHRA, as well as other I & AP's such as the Dept. of Health, SAPS, etc.

References
Küsel, van der Ryst, & Küsel 2009



Location	No. 6.3.3.2	Santoy 230	S 27.11200, E 22.82992
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Description
A farmstead consisting of a main house and a number of outbuildings and farming related features. It does not exhibit any remarkable construction features or stylistic characteristics. Although it is difficult to date this structure, it is anticipated that it must be 60 years old or very close to that.

Significance of site/feature	Low on a regional level – Grade III
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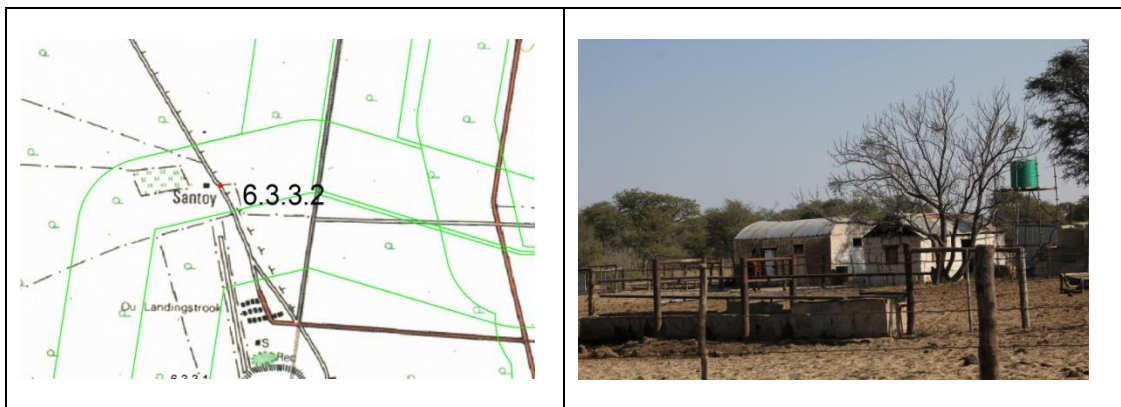
Impact assessment
Although this site is located inside the power line corridor, it is unlikely that the construction of the power line would have an impact on it as it is clearly visible, still in use and fenced off.

Significance of impact					
Extent	Duration	Magnitude	Probability	Significance	Weight
2	5	6	2	26	Low

Mitigation
None required

Requirements
None

References
See also van Vollenhoven 2012



Location	No. 6.3.3.3	Wessels 227	S 27.04963, E 22.85921
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Description
A farmstead consisting of a main house and a number of outbuildings and farming related features. It does not exhibit any remarkable construction features or stylistic characteristics. Although it is difficult to date this structure, it is anticipated that it must be 60 years old or very close to that.

Significance of site/feature	Low on a regional level – Grade III
-------------------------------------	-------------------------------------

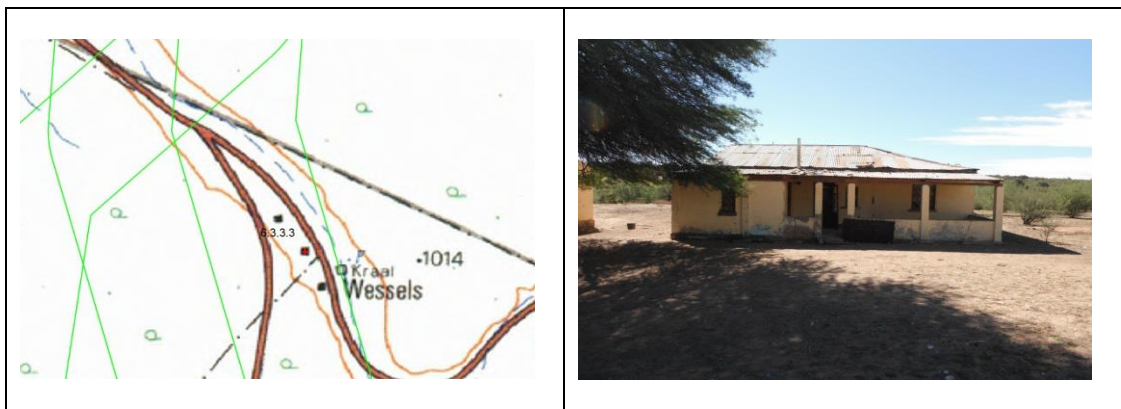
Impact assessment
Although this site is located inside the power line corridor, it is unlikely that the construction of the power line would have an impact on it as it is clearly visible, still in use and fenced off.

Significance of impact					
Extent	Duration	Magnitude	Probability	Significance	Weight
2	5	6	2	26	Low

Mitigation
None required

Requirements
None

References
Fourie (2013b)



Location	No. 6.3.3.4	Wessels 227	S 27.04907, E 22.85774
Description			
Informal burial place with three graves of the Lombard and Wiid families, dating to 1932. Currently the site is fenced off.			

Significance of site/feature	High on a local level – Grade III
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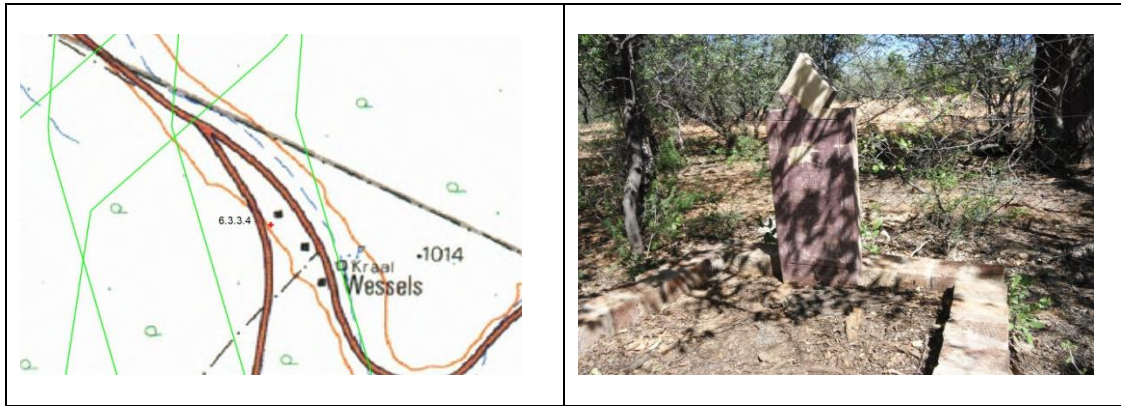
Impact assessment
Although this site is located inside the power line corridor, it is unlikely that the construction of the power line would have an impact on it as it is clearly visible and fenced off.

Significance of impact					
Extent	Duration	Magnitude	Probability	Significance	Weight
2	5	6	3	39	Medium

Mitigation
The burial site should be avoided by leaving buffer area of at least 10m on all sides. The site should also be fenced off with danger tape during deconstruction of the power line. If that is not possible, the graves must be relocated after the proper procedure has been followed – see Appendix 3 for a basic outline of the procedure to follow.

Requirements
A valid permit for the relocation of the graves must be obtained from SAHRA, as well as other I & AP's such as the Dept. of Health, SAPS, etc.

References
Fourie 2013b



7. SITE SIGNIFICANCE AND ASSESSMENT

7.1 Heritage assessment criteria and grading

The NHRA 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, on a local authority level.

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 and Grade III sites, the application of mitigation measures would allow the development activities to continue.

7.2 Statement of significance

A matrix was developed whereby the above criteria, as set out in Sections 3(3) and 7 of the NHRA, No. 25 of 1999, were applied for each identified site (see Appendix 1). This allowed some form of control over the application of similar values for similar sites. Three categories of significance are recognized: low, medium and high.

- 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 Grade III significance.

Table 1. Summary of identified heritage resources in the study area.

Identified heritage resources	
<i>Category, according to NHRA</i>	<i>Identification/Description</i>
Formal protections (NHRA)	
National heritage site (Section 27)	None
Provincial heritage site (Section 27)	None
Provisional protection (Section 29)	None
Place listed in heritage register (Section 30)	None
General protections (NHRA)	
structures older than 60 years (Section 34)	Yes
archaeological site or material (Section 35)	Yes
palaeontological site or material (Section 35)	None
graves or burial grounds (Section 36)	Yes
public monuments or memorials (Section 37)	None
Other	
Any other heritage resources (describe)	None

7.3 Impact assessment

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

- Stone tools were identified in a number of areas. Only two of these are located inside the power line corridors. It consists mostly of flakes, with a few formal tools, all of fine-grained material such as agates and quartz.
 - These sites are located inside the power line corridor, close to the area where the substation is to be developed. It is therefore likely that the construction of the power line substation would have an impact on them.
 - It is recommended that a qualified Stone Age archaeologist do a surface collection on the sites and that this material is then deposited in a national repository.
- Two farmsteads consisting of a main house and a number of outbuildings and farming related features were identified. It does not exhibit any remarkable construction features or stylistic characteristics.
 - Although these sites are located inside the power line corridor, it is unlikely that the construction of the power line would have an impact on them as it is clearly visible, still in use and fenced off.
 - No mitigation is required
- Two different burial sites were identified to be located either inside or in close proximity of the power line corridors.
 - The sites plot on the edge of the western power line corridor or just inside it. It would therefore be possible to avoid it and retain it in its original location.
 - The burial sites should be avoided by leaving buffer area of at least 10m on all sides. The sites should also be fenced off with danger tape during deconstruction of the power line. If that is not possible, the graves must be relocated after the proper procedure has been followed – see Appendix 3 for a basic outline of the procedures to follow.

Based on the above, it is safe to say that Alternative 3, inclusive of Deviation 3A and 3B, would be the preferred choice for the corridor to be developed in, although the Alternative 1, on the western side, can also be used, on condition of acceptance of the proposed mitigation measures.

8. RECOMMENDED 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 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.

8.1 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.

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 work.
- 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 museum, preferably one at which an archaeologist is available, 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).

8.2 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 residents and their visitors 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.

9. RECOMMENDATIONS

The aim of this survey was to locate, identify, evaluate and document sites, objects and structures of cultural significance found within the area of the proposed development, to assess the significance thereof and to consider alternatives and plan for the mitigation of any adverse impacts.

The cultural landscape qualities of the study area, as well as the larger region, essentially consist of a single component. This is a sparsely populated rural area in which the human occupation is made up of a limited (known) pre-colonial element (Stone Age) as well as a much later colonial (farmer) component. It was only with the development of drilling rigs that sub-surface water sources could be accessed, allowing people to settle more permanently in the region.

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

- Stone tools were identified in a number of areas. Only two of these are located inside the power line corridors. It consists mostly of flakes, with a few formal tools, all of fine-grained material such as agates and quartz.
 - These sites are located inside the power line corridor, close to the area where the substation is to be developed. It is therefore likely that the construction of the power line substation would have an impact on them.
 - It is recommended that a qualified Stone Age archaeologist do a surface collection on the sites and that this material is then deposited in a national repository.
- Two farmsteads consisting of a main house and a number of outbuildings and farming related features were identified. It does not exhibit any remarkable construction features or stylistic characteristics.
 - Although these sites are located inside the power line corridor, it is unlikely that the construction of the power line would have an impact on them as it is clearly visible, still in use and fenced off.
 - No mitigation is required
- Two different burial sites were identified to be located either inside or in close proximity of the power line corridors.
 - The sites plot on the edge of the western power line corridor or just inside it. It would therefore be possible to avoid it and retain it in its original location.
 - The burial sites should be avoided by leaving buffer area of at least 10m on all sides. The sites should also be fenced off with danger tape during deconstruction of the power line. If that is not possible, the graves must be relocated after the proper procedure has been followed – see Appendix 3 for a basic outline of the procedures to follow.

Based on the above, it is safe to say that Alternative 3, inclusive of Deviation 3A and 3B, would be the preferred choice for the corridor to be developed in, although the Alternative 1, on the western side, can also be used, on condition of acceptance of the proposed mitigation measures.

We also recommend that if archaeological sites or graves are exposed during development activities, it should immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

10. ACKNOWLEDGMENTS

I would like to thank Dr U. Küsel for permission to use photographs from his 2009 report on the Black Rock mining area. I would also like to thank Mr W. Fourie for permission to use photographs from his 2013 report.

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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11.2 Literature

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Pelser, A. & van Vollenhoven, A.C. 2011. *A report on a heritage impact assessment (HIA) for a proposed new rail crossing over the Gamagara River for the Gloria Mine operations, Assmang Black Rock, on Gloria 266, North of Hotazel, Northern Cape*. Pretoria: Unpublished report.

Snyman, P.H.R. 1986. Die Langeberg-rebellie en die totstandkoming van Olifantshoek. *Contree* 20:16-26.

Van Schalkwyk, J.A. 2010. *Archaeological impact survey report for the proposed township development in Hotazel, Northern Cape Province*. Unpublished report 2010JvS028.

Van Vollenhoven, A.C. 2012. *A report on a heritage impact assessment for the proposed Main Street 778 (Pty) Ltd mining right application close to Hotazel, Northern Cape Province*. Pretoria: Unpublished report.

11.3 Maps and aerial photographs

1: 50 000 Topocadastral maps:
Google Earth

APPENDIX 1: 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 2: CONVENTIONS USED TO ASSESS THE SIGNIFICANCE HERITAGE RESOURCES

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. 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				
2. Aesthetic value				
It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group				
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				
4. Social value				
Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons				
5. Rarity				
Does it possess uncommon, rare or endangered aspects of natural or cultural heritage				
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.				
7. Sphere of Significance		High	Medium	Low
International				
National				
Provincial				
Regional				
Local				
Specific community				
8. Significance rating of feature				
1.	Low			
2.	Medium			
3.	High			

APPENDIX 3: 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:

Significance of impact					
Extent	Duration	Magnitude	Probability	Significance	Weight
-	-	-	-	-	-

The results of the assessment are presented as follows:

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

APPENDIX 4. 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 5. SPECIALIST COMPETENCYJohan (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 30 years. 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 60 papers, many 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, road-, pipeline-, and power line developments, dams, mining, water purification works, historical landscapes, refuse dumps and urban developments.