

DIGES GROUP CC

**PHASE I ARCHAEOLOGICAL AND CULTURAL HERITAGE IMPACT
ASSESSMENT SPECIALIST REPORT FOR THE PROPOSED
CONSTRUCTION OF THE \pm 4,5 KM 132KV LETHABO POWERLINE
WITHIN METSIMAHOLO LOCAL MUNICIPALITY OF FEZILE DABI
DISTRICT MUNICIPALITY, FREE STATE PROVINCE**

March, 2023



©COPYRIGHT

This Phase 1 Archaeological and Heritage Impact Assessment Report contains intellectual information that is protected by copyright in favour of *Vhubvo Consultancy Cc*. Thus, it may not be reproduced or edited without the prior written consent of *Vhubvo Consultancy Cc*; it has been exclusively prepared for *DIGES Group CC*.



DECLARATION

ABILITY TO CONDUCT THE PROJECT

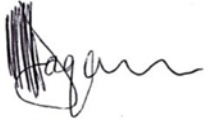
Alvord Nhundu is a professional archaeologist. He completed his Bachelor of Science with Honours degree in archaeology with the University of the Witwatersrand (Wits) and Masters in Archaeology with the University of Pretoria (UP). His research interest lies in old and new world archaeology, palaeoenvironmental and climatology, archaeological theory, Later Stone Age, rock art, hunter-gatherers, hunter-gatherer interactions, several aspects of Southern African Iron Age and Indigenous archaeologies. Alvord is an accredited Cultural Resource Management (CRM) member of the Association of southern African Professional Archaeologists (ASAPA #338) with Director Status in Stone Age and Iron Age archaeology, and Field Supervisor Status in Rock Art. He is also affiliated to Society of South Africanist Archaeologists (SAfA) and the International Council of Archaeozoology (ICAZ). He has been practising CRM for more than 10 years, and has completed over 100 Archaeological Impact Assessments (AIA) for developmental projects in the Limpopo, Mpumalanga, North-West, Eastern Cape, Free State and KwaZulu Natal provinces of South Africa. The projects include establishment and upgrade of power substations, road construction, and establishment and expansion of mines. He has also conducted the relocation of graves. His detailed CV is available on request.

Munyadziwa Magoma is a professional archaeologist, having obtained his BA degree in Archaeology and Anthropology at University of South Africa (UNISA), an Honours degree at the University of Venda (UNIVEN), and a Master's degree at the University of Pretoria (UP). He is an accredited Cultural Resource Management (CRM) member of the Association for southern African Professional Archaeologists (ASAPA) and Amafa aKwaZulu-Natali. Munyadziwa is further affiliated to the South African Archaeological Society (SAAS), the Society of Africanist Archaeologists (SAfA), Historical Association of South Africa (HESA); Anthropology Southern Africa (ASnA); International Association for Impact Assessment (IAIAsa); International Council on Monuments and Sites (ICOMOS) and the International Council of Archaeozoology (ICAZ). He has more than fifteen years' experience in heritage management, having worked for different CRM organisations and government heritage authorities. As a CRM specialist, Munyadziwa has completed well over 2000 hundred Archaeological Impact Assessments (AIA) for developmental projects situated in several provinces of the Republic of South Africa. The AIAs projects he has been involved with are diverse, and include the establishment of major substation, upgrade and establishment of roads, establishment and extension of mines. In addition, he has also conducted Heritage Impact Assessments (HIAs) for the alteration to heritage buildings and the relocation of graves. His detailed CV is available on request.

We declare that this report has been prepared independently of any influence as may be specified by all relevant departments, institutions and organisations. We act as the independent specialists in this application, and will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant. We declare that there are no circumstances that may compromise our objectivity in performing such work. We vow to comply with all relevant Acts, Regulations and applicable legislation.



AUTHOR AND CONTACT DETAILS:



Munyadziwa Magoma
Cell: 082 535 6855
Tel: 011 312 2878
E-mail: info@vhubvo.co.za



Alvord Nhundu



ACKNOWLEDGEMENTS

The author and the team of Vhubvo Consultancy Cc would like to acknowledge community members, DIGES Group CC, and Eskom officials for their assistance in relation to the conduction of this project, also Google Earth and Wikipedia.



EXECUTIVE SUMMARY

Introduction

Vhubvo Consultancy Cc has been appointed by Diges Group CC to conduct a Phase I Cultural Heritage Impact Assessment (HIA) Study for the proposed construction of +/-4,5 km Lethabo 132kV powerline between the proposed Lethabo PV plant and the existing RWB Lethabo substation. The proposed development is within the Metsimaholo Local Municipality of Fezile Dabi District Municipality in Free State Province. The study was conducted with the main objective of investigating the availability of archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structures of historical significance that may be affected by the proposed construction. Further, the study aims to recommend a preferred alternative and advise on mitigation measures should any sites be impacted. These mitigations will, in turn, assist the developer in making decisions on the most appropriate option (s) in line with the National Heritage Resources Act, 1999 (Act 25 of 1999).

To reach a defensible recommendation, both a desktop study and a field survey were conducted. The desktop study was undertaken through the South African Heritage Resources Information System (SAHRIS) for previous Archaeological Impact Assessments conducted in the region of the proposed development, and also for research that has been carried out in the wider area over recent years. The field survey was conducted to validate any assumptions made during the desktop study.

Background and Need of the Project

As part of the Eskom Holdings SOC Ltd (Eskom)'s drive to improve electricity availability and reliability, the aim of the project is to incorporate more renewable energy sources into the grid. The Eskom Generation Division intends to establish a 75MW solar photovoltaic (PV) power plant near the Lethabo Power station. The PV Plant will be connected to the Eskom grid via various grid infrastructures inclusive of a 132kV power line and additional 88kV bay, with busbar extension and control plant extension at the existing Rand water Board (RWB) Lethabo substation. The proposed development therefore entails the construction of a:

- \pm 4.5 KM 132kV power line from the Solar PV Power Plant to the existing RWB;
- 1 \times additional 88kV bay inclusive of busbar extension and control plant extension at the existing RWB Lethabo substation.



Methodology and Approach

The study method refers to the SAHRA Policy Guidelines for impact assessment, 2012. As part of this impact assessment; the following processes were followed:

- Literature Review: To understand the background archaeology of the area, a background study was undertaken and relevant institutions were consulted. These studies entail the review of archaeological and heritage impact assessment studies that have been conducted around the proposed area through SAHRIS. In addition, E-journal platforms such as J-stor, Google Scholars and History Resource Centre were searched. The University of Pretoria's Library collection was also utilised;
- The field survey was conducted on the 7th of February 2023 by an archaeologist from Vhubvo. The study constituted about 4,5 km in length.
- The final step involved the recording and documentation of relevant archaeological resources, as well as the assessment of resources in terms of the heritage impact assessment criteria and report writing, as well as mapping and useful recommendations.

The applicable maps, tables, and figures, are included as stipulated in the NHRA (Act No 25 of 1999), the National Environmental Management Act (NEMA) (Act No 107 of 1998) and the Minerals and Petroleum Resources Development Act (MPRDA) (Act No. 28 of 2002).

Impact Statement

The assessment undertaken for the two alternative corridors indicated that the significance of impacts anticipated is low as the area has already been disturbed. In addition, it must be noted that the linear nature of the proposed project will cause minimal impact on the ground, i.e., tower positions can be moved to avoid direct impacts on any identified heritage resources. The probability of locating any important archaeological remains dating to the Stone or Iron Age during the construction of the project is rated as low. Similarly, no grave sites are expected since the area is disturbed. However, chance finds cannot be ruled out.

Restrictions and Assumptions

Some of the portions of the proposed alternatives are encroached by grass which makes it difficult to survey and or observe the surface, however, the survey was deemed successful and the area was thoroughly investigated. Nevertheless, as with any survey, archaeological materials may be under the surface and therefore unidentifiable to the surveyor until they are exposed once construction commences. As a result, should any archaeological/ or grave site be observed during the



construction stage, a heritage specialist monitoring the development must immediately be notified and no further disturbance may be made until the heritage specialist has been able to assess the finding. It is the responsibility of the contractor to protect the site from publicity (i.e., media) until all assessments are made.

Survey Findings and Recommendations

The main aim of the survey was to identify and evaluate potential heritage resources that would occur within the two alternative corridors, and to determine if there is any hamartia that may prevent the proposed construction from taking place in any of the proposed study areas, as well as recommend the preferred corridor and mitigation measures to be implemented during the project. The study area was investigated for sites of heritage significance that might be affected by the proposed construction. Archaeological sites dating to the Stone, Iron, and Historical Age are known to occur in the region of the study area, however, none of those were documented during the survey. Notwithstanding that, it should be taken into account that there was no subsurface inspection, as a result, it might be possible that specific aspects related to construction might have a direct disturbance on subsurface heritage resources, which in turn may result in irreplaceable loss of heritage resources. As aforesaid, two corridors are proposed. Corridor alternative one transverse adjacent to an existing powerline(s) and close to the road. As a result, there are no major heritage materials expected here. The second alternative deviates from the first and runs close to the first alternative meaning the area of the second alternative is equally disturbed.

The Phase I Archaeological and Cultural Heritage Impact Assessment for the proposed construction of the Powerline did not yield any heritage resources within the footprint of both corridors. Taking all the above information into account, **Corridor Alternative One** is the preferred alternative from a heritage impact perspective due to its proximity to the road and existing line. The client needs to note that, although no heritage resources were noted during the survey, archaeological material often occurs underground, as such should any archaeological material be unearthed accidentally during construction, SAHRA should be alerted immediately and construction activities should be stopped within a radius of at least 10m of the indicator/ finding. The area should then be demarcated by a danger tape. Accordingly, a professional archaeologist or SAHRA officer should be contacted immediately. It is the responsibility of the Environmental officer and the contractor to protect the site from publicity (i.e., media) until a mutual agreement is reached. It is also mandatory to report any incident of human remains encountered to the South African Police Services. Any measure to cover up the suspected archaeological material or to



collect any resources is illegal and punishable by law under Sections 35(4) and 36(3) of the National Heritage Resources Act, Act 25 of 1999. The developer should induct field workers about archaeology, and steps that should be taken in the case of exposing archaeological materials.

Pre-construction education and awareness training

Prior to construction, contractors should be trained on how to identify and protect archaeological remains that may be discovered during the project. The pre-construction training should include some aspects of site recognition for the types of archaeological sites that may occur in the construction areas. Below are some indicators of an archaeological site that may be found during construction:

- Flaked stone tools, bone tools and loose pieces of flaked stone;
- Ash and charcoal;
- Bones and shell fragments;
- Artefacts (e.g., beads or hearths); and
- Packed stones which might be uncounted underground, and might indicate a grave or collapse stone walling

Conclusions

A thorough background study and survey of the proposed development was conducted and findings were recorded in line with SAHRA guidelines. As per the recommendations above, the project may proceed subject to adherence of the above commendations.



TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	vi
ACRONYMS AND ABBREVIATIONS.....	xii
Glossary of Terms.....	xiii
1. Introduction	1
3. Sites Location and Description	1
4. Purpose of the Cultural Heritage Study	9
5. Methodology and Approach.....	9
6. Applicable Heritage Legislation.....	10
7. Degree of Significance	11
8. Discussion of (Pre-) History of the Study Area.....	22
9. Findings and Discussions	24
10. Recommendations.....	26
11. Conclusions.....	28
12. References.....	29
APPENDIX 1: SITE SIGNIFICANCE	31
APPENDIX II: CHANCE FIND PROCEDURE.....	32



List of Figures

Figure 1: Locality map of the study area.	3
Figure 2: An overview of the Google Earth map of the proposed development.	4
Figure 3: General site overview of the area near the RWB Lethabo substation.	5
Figure 4: An overview of the area proposed for powerlines.	5
Figure 5: View of portion of the site where the two lines dispersed.	6
Figure 6: View of the area proposed for alternative 1. Note existing powerline in the area.	6
Figure 7: View of the farms to be traversed by the corridors.	7
Figure 8: An overview of the landscape to be traversed by the corridor.	7
Figure 9: A section of the site covered by grass.	8
Figure 10: The powerline will pass through some of the areas with exotic trees.	8
Figure 11: View of EIA movements.	18

List of Tables

Table 1: Grading Systems for identified heritage resources in terms of the National Heritage Resources Act (Act 25 of 1999).	12
Table 2: Rating Systems.	13
Table 3: Anticipated Impact Rating.	26



ACRONYMS AND ABBREVIATIONS

AIA	Archaeological Impact Assessment
EMP	Environmental Management Plan
HIA	Heritage Impact Assessment
LIA	Late Iron Age
MIA	Middle Iron Age
EIA	Early Iron Age
HMP	Heritage Management Plan
LSA	Late Stone Age
MSA	Middle Stone Age
ESA	Early Stone Age
NASA	National Archives of South Africa
NHRA	National Heritage Resources Act
SAHRA	South African Heritage Resources Agency



Glossary of Terms

The following terms used in this Archaeology are defined in the National Heritage Resources Act [NHRA], Act Nr. 25 of 1999, South African Heritage Resources Agency [SAHRA] Policies as well as the Australia ICOMOS Charter (*Burra Charter*):

Archaeological Material: remains resulting from human activities, which are in a state of disuse and are in, or on, land and which are older than 100 years, including artefacts, human and hominid remains, and artificial features and structures.

Artefact: Any movable object that has been used modified or manufactured by humans.

Conservation: All the processes of looking after a site/heritage place or landscape including maintenance, preservation, restoration, reconstruction and adaptation.

Cultural Heritage Resources: refers to physical cultural properties such as archaeological sites, palaeontological sites, historic and prehistorical places, buildings, structures and material remains, cultural sites such as places of rituals, burial sites or graves and their associated materials, geological or natural features of cultural importance or scientific significance. These include intangible resources such as religion practices, ritual ceremonies, oral histories, memories indigenous knowledge.

Cultural landscape: “the combined works of nature and man” and demonstrate “the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both internal and external”.

Cultural Resources Management (CRM): the conservation of cultural heritage resources, management, and sustainable utilization for present and for the future generations

Cultural Significance: is the aesthetic, historical, scientific, and social value for past, present and future generations.



Chance Finds: means Archaeological artefacts, features, structures or historical cultural remains such as human burials that are found accidentally in context previously not identified during cultural heritage scoping, screening and assessment studies. Such finds are usually found during earth moving activities such as water pipeline trench excavations.

Compatible use: means a use, which respects the cultural significance of a place. Such a use involves no, or minimal, impact on cultural significance.

Conservation means all the processes of looking after a place so as to retain its cultural significance.

Expansion: means the modification, extension, alteration or upgrading of a facility, structure or infrastructure at which an activity takes place in such a manner that the capacity of the facility or the footprint of the activity is increased.

Grave: A place of interment (variably referred to as burial), including the contents, headstone or other marker of such a place, and any other structure on or associated with such place.

Heritage impact assessment (HIA): Refers to the process of identifying, predicting and assessing the potential positive and negative cultural, social, economic and biophysical impacts of any proposed project, plan, programme or policy which requires authorisation of permission by law and which may significantly affect the cultural and natural heritage resources. The HIA includes recommendations for appropriate mitigation measures for minimising or avoiding negative impacts, measures enhancing the positive aspects of the proposal and heritage management and monitoring measures.

Historic Material: remains resulting from human activities, which are younger than 100 years, but no longer in use, including artifacts, human remains and artificial features and structures.

Impact: the positive or negative effects on human well-being and/or on the environment.

In situ material: means material culture and surrounding deposits in their original location and context, for instance archaeological remains that have not been disturbed.



Interested and affected parties Individuals: communities or groups, other than the proponent or the authorities, whose interests may be positively or negatively affected by the proposal or activity and/ or who are concerned with a proposal or activity and its consequences.

Interpretation: means all the ways of presenting the cultural significance of a place.

Late Iron Age: this period is associated with the development of complex societies and state systems in southern Africa.

Material culture means buildings, structure, features, tools and other artefacts that constitute the remains from past societies.

Mitigate: The implementation of practical measures to reduce adverse impacts or enhance beneficial impacts of an action.

Place: means site, area, land, landscape, building or other work, group of buildings or other works, and may include components, contents, spaces and views.

Protected area: means those protected areas contemplated in section 9 of the NEMPAA and the core area of a biosphere reserve and shall include their buffers.

Public participation process: A process of involving the public in order to identify issues and concerns and obtain feedback on options and impacts associated with a proposed project, programme or development. Public Participation Process in terms of NEMA refers to: a process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to specific matters.

Setting: means the area around a place, which may include the visual catchment.

Significance: can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e., intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e., level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgments and science-based criteria (i.e., biophysical, physical cultural, social and economic).



Site: a spatial cluster of artefacts, structures, and organic and environmental remains, as residues of past human activity.



1. Introduction

DIGES Group CC requested Vhubvo Consultancy Cc to conduct an Archaeological and Cultural Heritage Impact Assessment study for the proposed \pm 4.5 km 132kV powerline between the proposed Lethabo PV plant and the existing RWB Lethabo substation. The proposed development is within Metsimaholo Local Municipality of Fezile Dabi District Municipality in Free State Province. The study aims are to outline the archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the proposed development, recommend a preferred alternative corridor and advise on mitigation measures that should be implemented throughout the project's life cycle. The survey was conducted per the SAHRA Minimum Standards for Archaeology and Palaeontology which specify the required contents of reports of this nature.

2. Nature and Need of the Proposed Project

The proposed 132kV powerline which is approximately 4,5 km in length will be constructed between the proposed Lethabo PV plant and existing RWB Lethabo substation within the Sasolburg area of the Free State Province. The country is experiencing a power crisis with incessant load shedding. The development will help ESKOM to ease the power crisis. The PV plant will be connected to the ESKOM grid via various grid infrastructure inclusive of the following:

- New \pm 4.5 132kV line;
- 1 \times additional 132kv bay, inclusive of bulbar extension and control plant extension and control plant extension at the existing Rand Water Board (RWB) Lethabo substation.

3. Sites Location and Description

The proposed development is of a 132kV powerline which is \pm 4, 5 km in length. It will run from the proposed Lethabo PV plant to the existing RWB Lethabo substation. The proposed development is within Metsimaholo Local Municipality of Fezile Dabi District Municipality in Free State Province. The land surface is fairly flat and topographically featureless. Both corridors are 100m wide, and they overlap from the RWB Lethabo substation and then deviate into separate directions at the bend point where corridor A and corridor B (See Figure 1) become distinct. The project area is within the jurisdiction of Metsimaholo Local Municipality of Fezile Dabi District Municipality adjacent to the provincial boundary between Gauteng and the Free State Province. The powerline and associated infrastructure will occur on the following farms (i) remainder portion of Blankfontein No.9, (ii) Brankfontein No. 1849 (iii) Remainder portion of Lethabo



power station No. 1814. The area falls in quaternary catchment C22F of Vaal Water Management Area and is within a 20km radius of Sasolburg and Vanderbijlpark. Prominent land uses within the servitude and its surroundings are mining, electricity generation and agricultural activities. The geology of the area is mainly the Main Karoo Basin which consists of a retro-arc foreland basin filled with lithological succession ranging in age from the late Carboniferous to the middle Jurassic. The basin fill sequence wedges out northwards over the adjacent Kaapvaal craton (Johnson et al. 2006). The vegetation cover of the area consists of Central Free State Grassland veld types (Mucina & Rutherford 2006).

Summary of Project Location Details

Province: Free State

District: Fezile Dabi

Local: Metsimaholo

Proposed development: Eskom 132kV +/-4.5 KM Transmission powerline



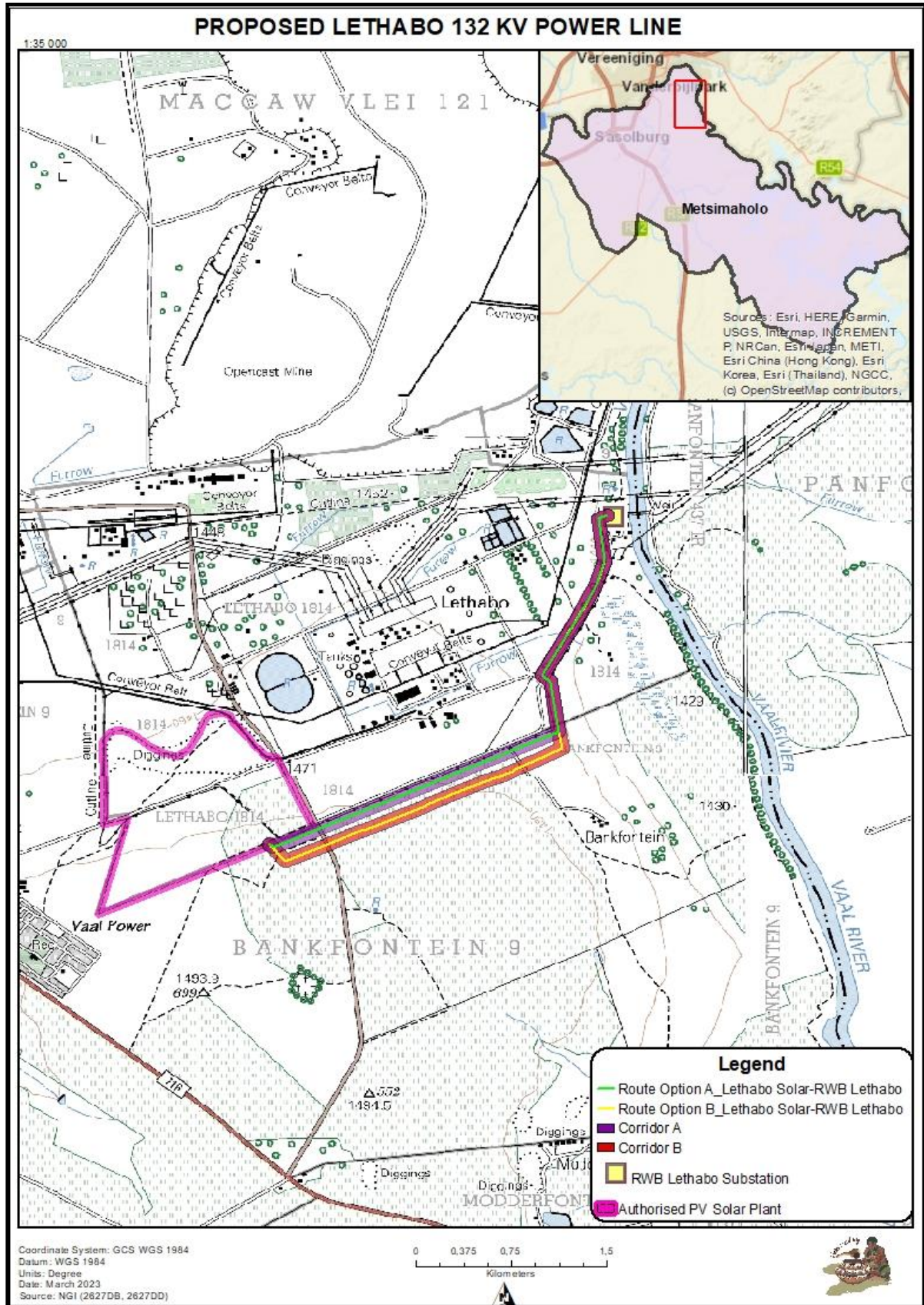


Figure 1: Locality map of the study area.



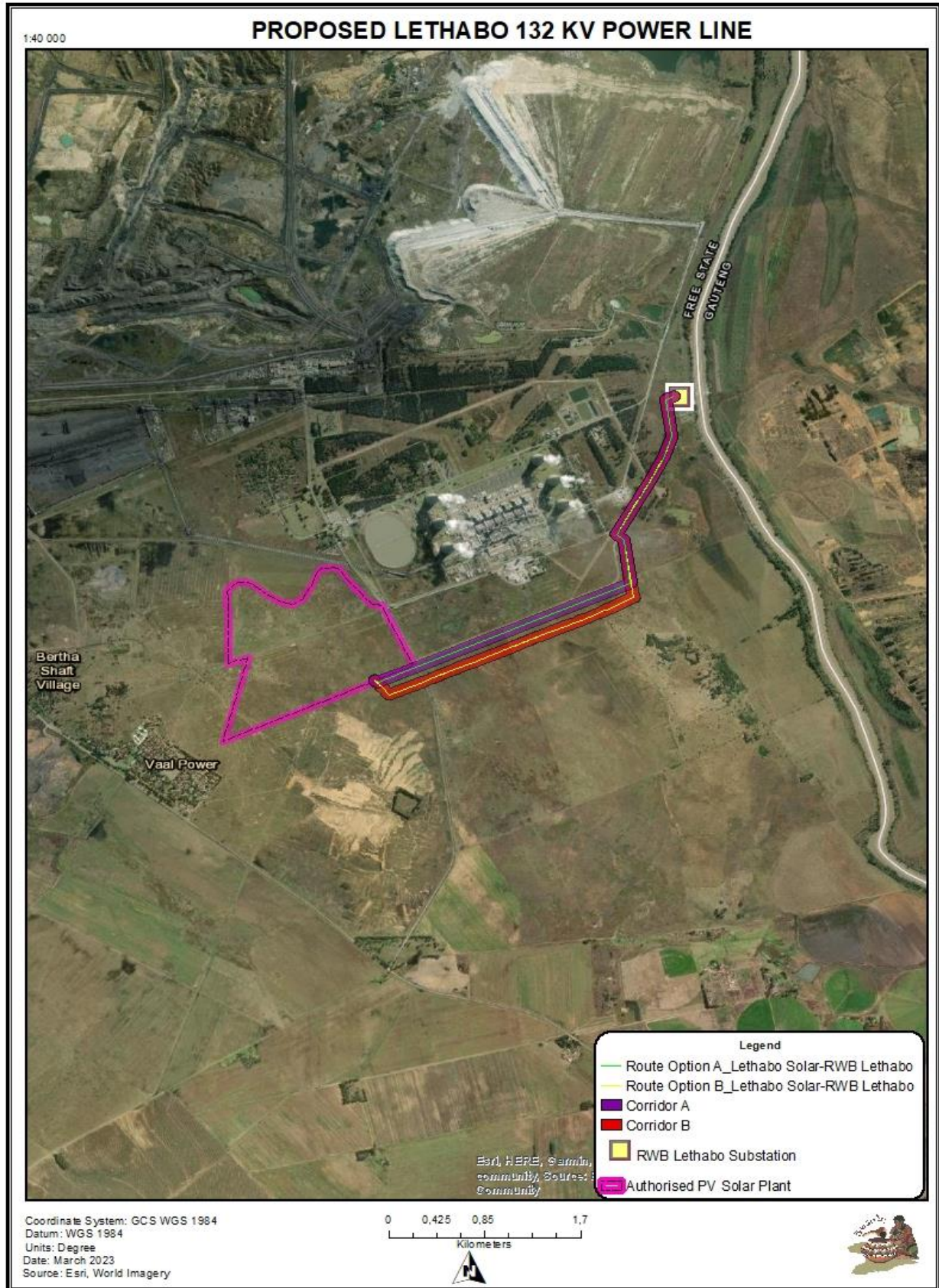


Figure 2: An overview of the Google Earth map of the proposed development.





Figure 3: General site overview of the area near the RWB Lethabo substation.



Figure 4: An overview of the area proposed for powerlines.





Figure 5: View of portion of the site where the two lines dispersed.



Figure 6: View of the area proposed for alternative 1. Note existing powerline in the area.





Figure 7: View of the farms to be traversed by the corridors.



Figure 8: An overview of the landscape to be traversed by the corridor.





Figure 9: A section of the site covered by grass.



Figure 2: The powerline will pass through some of the areas with exotic trees.



4. Purpose of the Cultural Heritage Study

The purpose of this Archaeological and Cultural Heritage study is to identify and document archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the proposed construction of the \pm 4.5 132kV powerline and these will, in turn, assist the developer in ensuring proper conservation measure in line with the National Heritage Resource Act, 1999 (Act 25 of 1999). Impact assessments highlight many issues facing sites in terms of their management, conservation, monitoring and maintenance, and the environment in and around the site. Therefore, this study involves the following:

- Identification and recording of heritage resources that may be affected by the proposed construction;
- Recommending the preferred corridor from an archaeological perspective.
- Providing recommendations on how best to appropriately safeguard identified heritage sites and chance findings.

5. Methodology and Approach

5.1 Background study introduction

The methodological approach is informed by the 2012 SAHRA Policy Guidelines for impact assessment. As part of this study, the following tasks were conducted:

- 1) Literature review;
- 2) Field survey; and
- 3) Report compilation taking into account the information gained during the desktop study and field survey.

5.1.1 Literature Review

The desktop study was undertaken through SAHRIS for previous Cultural Heritage Impact Assessments conducted in the region of the proposed development, and also for research that has been carried out in the area over the past years, as well as historical aerial maps located in the Deeds Office. This literature was used to screen the proposed area and to understand the baseline of heritage sensitivities.

5.1.2 Physical survey

The field survey was undertaken by a consultant from Vhubvo.



5.1.3 Documentation

The general project area was documented by taking photographs using a 14.1 mega-pixel Sony Cybershort Digital Camera. Recording of finds was done by a Garmin etrex Venture HC.

5.2 Restrictions and Assumptions

As with any survey, archaeological materials may be under the surface and therefore unidentifiable to the surveyor until they are exposed during construction. As a result, if any archaeological/ or gravesite is observed during construction, a heritage specialist must be notified immediately.

6. Applicable Heritage Legislation

Several legislations provide the legal basis for the protection and preservation of both cultural and natural resources. These include the National Environment Management Act (Act No. 107 of 1998); Mineral Amendment Act (Act No 103 of 1993); Tourism Act (Act No. 72 of 1993); Cultural Institution Act (Act No. 119 of 1998), and the National Heritage Resources Act (Act No. 25 of 1999). Section 38 (1) of the National Heritage Resources Act requires that where relevant, an Impact Assessment is undertaken in the case where a listed activity is triggered. Such activities include:

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- (b) the construction of a bridge or similar structure exceeding 50 m in length; and
- (c) any development or other activity which will change the character of an area of land, or water -
 - (i) exceeding 5 000 m² in extent;
 - (ii) involving three or more existing erven or subdivisions thereof; or
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a Provincial Heritage Resources Authority;
- (d) the re-zoning of a site exceeding 10 000 m² in extent; or
- (e) any other category of development provided for in regulations by SAHRA or a Provincial Heritage Resources Authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

Section 3 of the National Heritage Resources Act (25 of 1999) lists a wide range of national resources protected under the act as they are deemed to be national estate. When conducting a Heritage Impact Assessment (HIA) the following heritage resources have to be identified:

- (a) Places, buildings, structures and equipment of cultural significance
- (b) Places to which oral traditions are attached or which are associated with living heritage
- (c) Historical settlements and townscapes
- (d) Landscapes and natural features of formation of cultural significance
- (e) Geological sites of scientific or cultural importance
- (f) Archaeological and paleontological sites
- (g) Graves and burial grounds including-
 - (i) ancestral graves



- (ii) royal graves and graves of traditional leaders
 - (iii) graves of victims of conflict
 - (iv) graves of individuals designated by the Minister by notice in the Gazette
 - (v) historical graves and cemeteries; and
 - (vi) other human remains which are not covered by in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983)
- (b) Sites of significance relating to the history of slavery in South Africa
- (i) moveable objects, including -
 - (i) objects recovered from the soil or waters of South Africa, including archaeological and paleontological objects and material, meteorites and rare geological specimens
 - (ii) objects to which oral traditions are attached or which are associated with living heritage
 - (iii) ethnographic art and objects
 - (iv) military objects
 - (v) objects of decorative or fine art
 - (vi) objects of scientific or technological interest; and
 - (vii) 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 of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

Other sections of the Act with a direct relevance to the AIA are the following:

Section 34(1) No person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

Section 35(4) No person may, without a permit issued by the responsible heritage resources authority:

- destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite

Section 36 (3) No person may, without a permit issued by SAHRA or a provincial heritage resources authority:

- 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 formal cemetery administered by a local authority; or
- bring onto or use at a burial ground or grave any excavation equipment, or any equipment which assists in detection or recovery of metals.

7. Degree of Significance

This category requires a broad, but detailed knowledge of the various disciplines that might be involved. Large sites, for example, may not be very important, but a small site, on the other hand, may have great significance, as it is unique to the region. The following table is used to grade heritage resources.



Table 1: Grading Systems for identified heritage resources in terms of the National Heritage Resources Act (Act 25 of 1999).

Level	Significance	Possible action
National (Grade I)	Site of National Value	Nominated to be declared by SAHRA
Provincial (Grade II)	Site of Provincial Value	Nominated to be declared by PHRA
Local Grade (IIIA)	Site of High Value Locally	Retained as heritage
Local Grade (IIIB)	Site of High Value Locally	Mitigated and part retained as heritage
General Protected Area A	Site of High to Medium	Mitigation necessary before destruction
General Protected Area B	Medium Value	Recording before destruction
General Protected Area C	Low Value	No action required before destruction

Significance rating of sites

(i) High

(ii) Medium

(iii) Low

This category relates to the actual artefact or site in terms of its actual value as it is found today, and refers more specifically to the condition that the item is in. For example, an archaeological site may be the only one of its kind in the region, thus its regional significance is high, but there is heavy erosion of the greater part of the site, therefore its significance rating would be medium to low. Generally speaking, the following are guidelines for the nature of the mitigation that must take place in Phase 2 of the project.

High

- This is a 'do not touch' situation, alternatives must be sought for the project, examples would be natural and cultural landscapes like the Mapungubwe Cultural Landscape World Heritage Site, or the house in which John Langalibalele resided.
- Certain sites or features may be exceptionally important but do not warrant leaving entirely alone. In such cases, detailed mapping of the site and all its features is imperative, as is the collection of diagnostic artefactual material on the surface of the site. Extensive excavations must be done to retrieve as much information as possible before destruction. Such excavations might cover more than half the site and would be mandatory; it would



also be advisable to negotiate with the client to see what mutual agreement in writing could be reached, whereby part of the site is left for future research.

Medium

- Sites of medium significance require detailed mapping of all the features and the collection of diagnostic artefactual material from the surface of the site. A series of test trenches and test pits should be excavated to retrieve basic information before destruction.

Low

- These sites require minimum or no mitigation. Minimum mitigation recommended could be a collection of all surface materials and/ or detailed site mapping and documentation. No excavations would be considered to be necessary.

In all the above scenarios, permits will be required from the South African Heritage Resources Agency (SAHRA) or the appropriate PHRA as per the legislation (the National Heritage Resources Act, no. 25 of 1999). Destruction of any heritage site may only take place when the appropriate heritage authority has issued a permit. The following table is used to determine the rating system in the receiving environment.

Table 2: Rating Systems.

The status of the impact		
Status	Description	
Positive:	a benefit to the holistic environment	
Negative:	a cost to the holistic environment	
Neutral:	no cost or benefit	
The duration of the impact		
Score	Duration	Description
1	Short term	Immediate/ short term (less than 3 months)
2	Medium term	Construction or decommissioning period
3	Long term	For the life of the operation
5	Permanent	Permanent
The extent of the impact		
Score	Extent	Description
1	Footprint	Within the site boundary
2	Site	Affects immediate surrounding areas
3	Local	Local area / district (neighbouring properties, transport routes and adjacent towns) is affected
4	Regional	Extends to almost entire province or larger region
5	National	Affects the country.
The reversibility of the impact		
Score	Reversibility	Description
1	Completely reversible	Reverses with minimal rehabilitation & negligible residual affects
3	Reversible	Requires mitigation and rehabilitation to ensure reversibility



Proposed ± 4.5 km 132kV Lethabo Power line

5	Irreversible	Cannot be rehabilitated completely/rehabilitation not viable
The magnitude (severe or beneficial) of the impact		
Score	Severe/beneficial effect	Description
1	Zero	Natural and/or social functions and/or processes remain unaltered.
2	Very Low	Natural and/or social functions and/or processes are negligibly altered.
3	Low	Natural and/or social functions and/or processes are slightly altered and are reversible with time.
4	Moderate	Natural and/or social functions and/or processes are notably altered and are reversible with rehabilitation.
5	High	Natural and/or social functions and/or processes are permanently altered.
The probability of the impact		
Score	Rating	Description
1	Unlikely	The chance of this impact occurring is zero (0%).
2	Possible	May occur. The chances of this impact occurring is defined as 25%.
3	Probable	Likely to occur. The chances of this impact occurring is defined as 50%.
4	Highly Probable	The chances of this impact occurring is defined as 75%.
5	Definite	Will certainly occur. The chance of this impact occurring is defined as 100%.
The Consequence		= Magnitude + Extent + Duration + Reversibility.
The Significance		= Consequence x Probability.

Score	Significance
1 to 20	Low
21 to 40	Moderate to Low
41 to 60	Moderate
61 to 80	Moderate to high
81 to 100	High



7. Discussion of (Pre-) History of South Africa

South Africa possesses a rich archaeological record. It has one of the longest sequences of human development in the world. South African scientists have been actively involved in the search for human origins since 1925 when Raymond Dart identified the *Taung* child as an infant halfway between apes and humans. Dart named the remains *Australopithecus Africanus*, southern ape-man, and his work fundamentally changed the focus of human evolution from Europe and Asia to Africa, and it is now widely accepted that humanity originated from Africa, hence reference to Africa as the “cradle of humanity” (Robins et al.1998). In many ways, Dart’s discovery marked the birth of palaeoanthropology as a discipline. The archaeology of South Africa which fits well into the southern African periodisation is broadly divided into Stone Age, Iron Age and the Historical Period.

Stone Age

The Stone Age is the pre-historic period when humans widely used stone for tool making (Robins et al. 1998). As the early ancestors progressed physically, mentally and socially they developed stone tools. These tools are the earliest evidence of culture in southern Africa (Clark & Kuman 2000). The Stone Age began approximately 2.6 million years ago and ended around 20 000 years ago. It is divided into three phases namely the Early Stone Age, Middle Stone Age and Later Stone Age. It is argued that there are two transitional periods. Noteworthy that the time used for the Stone Age is approximate and it differs from one researcher to another (See Robins et al.1998; Korsman & Mayor 1999; Mitchell 2002).

Early Stone Age (ESA)

The Early Stone Age is dominated by two industries; the Oldowan and Acheulian. The Oldowan industry which was the earliest was developed by the earliest members of the genus *Homo*, such as *Homo habilis* around 2.6 million years ago. The Oldowan tools which are only found in Africa, and not anywhere else are mainly simple flakes which were struck from cobbles. The assemblage comprises tools such as cobble cores and pebble choppers. They were not task-specific tools, and one tool could be used for many functions (Wurz 2000). The Oldowan industry was completely replaced by the Acheulian around 1.7 million years ago. *Homo ergaster* was probably responsible for the manufacture of Acheulian tools in South Africa. Acheulian tools were longer with sharper edges which suggest they could be used for a variety of activities ranging from the butchering of animals, chopping wood, digging roots and cracking bones for marrow. The most diagnostic tools



of this period are the handaxes and the cleaver. In South Africa, Oldwans tools have been found at Sterkfontein (Brian 1985), and Kroomdrai (Clark 1993). Wonderwerk Cave (Chazan *et al.*, 2008). Sites that have yielded Acheulian tools in South Africa are Swartkraans, Kroomdri, and Sterkfontein.

Middle Stone Age (MSA)

The Middle Stone Age artefacts started appearing about 250 000 years ago and these replaced the larger handaxes and cleavers. In contrast to the ESA technique of removing flakes from a core, MSA tools were flakes to start with. There were of a predetermined size and shape and were made by preparing a core of suitable material and striking off the flake so that it was flaked according to a shape which the toolmaker desired. MSA people made a range of tools from both coarse and fine-grained rock types, sometimes rocks used for tool making were transported considerable distances, probably in bags or containers, as such tool assemblages from some MSA sites tend to lack some of the preliminary cores and contain predominantly finished products like flakes and retouched pieces. The stone toolkit of this period is dominated by elongated, parallel-sided blades as well as triangular flakes. Many MSA sites have evidence of control of fire, prior to this, rock shelters and caves would have been dangerous for human occupation due to predators (Deacon & Deacon 1999). Besides the introduction of fire, the widespread use of red ochre, probably as body paint, also shows that MSA behavior had become more human. The recent finds of decorated ochre at Blombos and decorated ostrich egg shells at Diepkloof also in the Cape further cements the point. Other sites that have yielded MSA tools in South Africa are Klassies River Mouth, Bloombos and Border Cave (Deacon & Deacon 1999).

Later Stone Age (LSA)

The Later Stone Age ranges from 20 000 to 2000 years ago. It is important to note that the transition from MSA to LSA did not occur simultaneously in southern Africa. It is described by Deacon (1984) as a period when man refined small blade tools conversely abandoning the MSA prepared-core technique. Anatomically speaking, as the brain gets bigger, tools became smaller and more efficient. Thus, refined artefacts such as thumbnails, convex-edge scrapers, crescents, and bladelets are associated with this period. Other tools of the period are hammers, adzes, bores, grooved stones, hafted tools, and points. The period also saw the introduction of poisoned arrows to enhance the effectiveness of bone points and this led to improved hunting (Walker & Thorp 1997). Faunal evidence suggests that LSA hunter-gatherers trapped and hunted zebras, impala, warthog and bovids of various sizes. They also diversified their protein diet by gathering tortoises,



marine resources, and land snails (*Achatina*) in large quantities. In addition to bow-hunting and marine sources collection, human behaviour was recognisably modern in many ways; uniquely traits such as rock art and purposefully burial with ornaments were common practices (Villa *et al.*2012). Rock art in form of paintings and engravings is an important signature of this period. Examples of LSA sites in South Africa are Cottage Cave and Nelson Bay Cave.

Iron Age

Iron Age is a period in human history when metal was mainly used to produce tools. The period marks the movement of farming communities into South Africa in the first millennium AD, or 2500 years ago (Mitchell 2002:259). The people were agro-pastoralists that settled in the vicinity of water. In terms of material culture, pottery is a dominant and critical component of an Iron Age assemblage. Iron Age archaeologists use pottery to identify the presence and chronology of different cultural groups on sites. Through the study of stylistic traditions related to vessel shape and decoration, the movement, interaction and lineage of cultural groups can be traced (Huffman 1989). Pottery seriation in conjunction with linguistic data has been used by researchers to trace the origin of these people who brought the Iron Age culture. Researchers have traced the origin of the Bantu people with their agro-pastoral to what is now the border of Nigeria and Cameroon. These people migrated eastward and southward breaking into two groups. According to Huffman (2007) there were two streams of Early Iron Age expansion in southern Africa, one referred to as the Urewe-Kwale tradition (or the eastern stream) and another one called the Kalundu tradition (or the western stream).



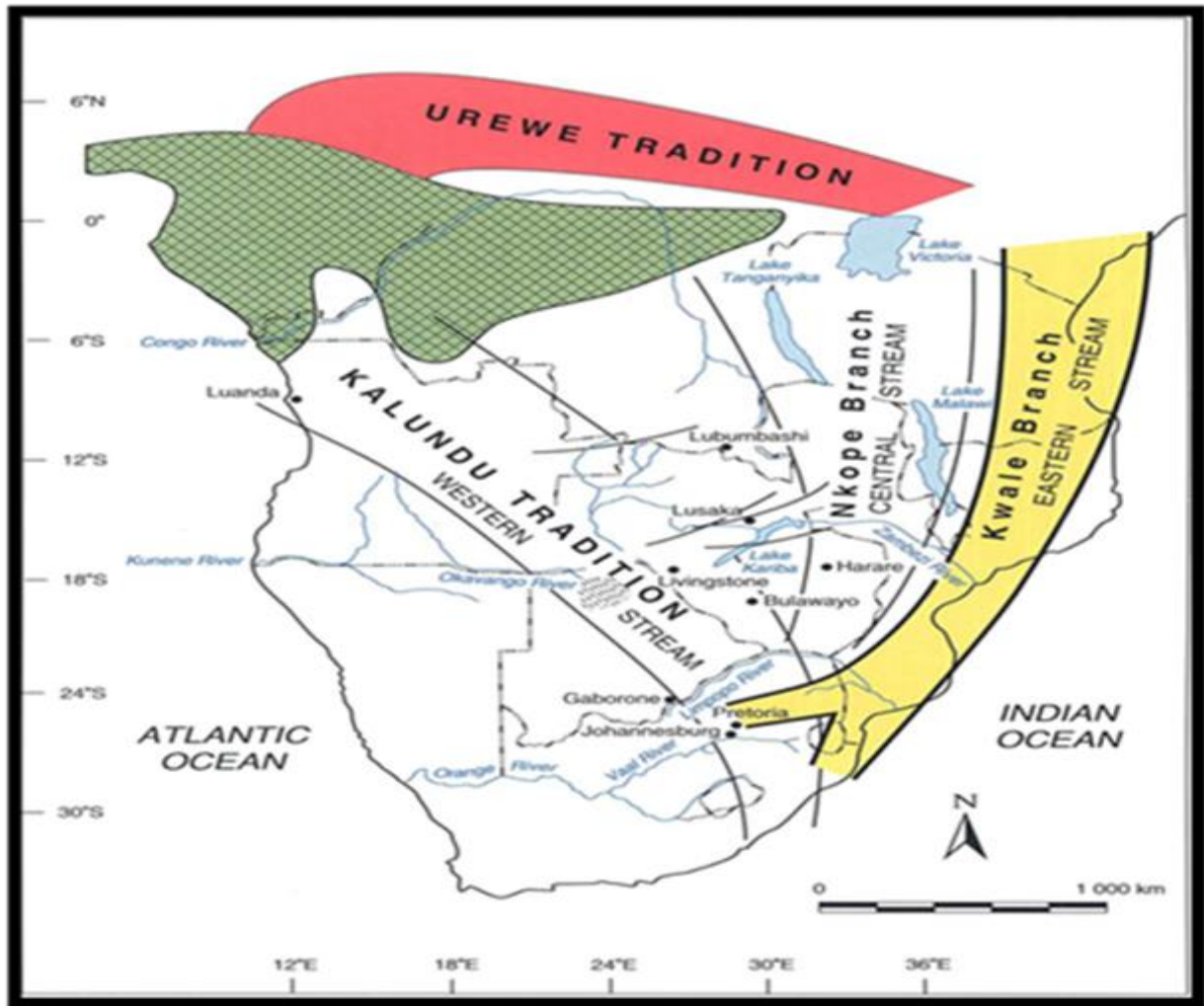


Figure 11: View of EIA movements.

Early Iron Age (EIA)

Early Iron Age dwelling were built-in low-lying areas, such as river valleys and the coastal plain, where forests and savannas facilitated shifting (slash and burn), they also cultivate grains such as cow peas, ground beans, sorghum and millets (Mitchell 2002). Early Iron Age pottery is characterized by large and prominent inverted rims, large neck areas and fine elaborate decorations. Unlike the broad and flat surface grinding stones of the Late Iron Age, the Early Iron Age grinding stones is deeper and more lenticular grooves. Well known EIA sites in South Africa include Happy Rest in the Limpopo Province, Lydenburg Heads in Mpumalanga, Broederstroom in North West, and Mzonjani in KwaZulu-Natal Province.

Middle Iron Age (MIA)

The Middle Iron Age stretches from AD900 to 1300 and marks the origins of Zimbabwe culture. It is marked by a change in emphasis from grain cultivation to cattle herding, however, the



importance of cattle cut across all three ages of the Iron Age period (Huffman 2007). In South Africa, a clear shift from the EIA to the MIA is apparent in the Shashe-Limpopo basin where it marks the origins of the Zimbabwe culture where it came with class distinction and sacred leadership (Huffman 2005, 2007). Middle Iron Age sites in the Shashe-Limpopo basin are Schroda, K2 and Mapungubwe.

Late Iron Age (LIA)

The Late Iron Age dates from AD1300 to 1840. Greater focus on economic growth and the increased importance of trade marks the beginning of the LIA. Specialisation in terms of natural resource exploitation and utilisation is a characteristic feature of this period. Iron slags tend to occur only in certain localities compared to earlier times. Also, Later Iron Age settlements were no longer located in river valleys but were built on higher ground where homesteads which in most instances were made of stone for building purposes would benefit from cooling breezes and good views most probably for strategic purposes. Pottery styles also underwent significant changes; maize was also introduced during this period (Maggs 1980).

Historical Period

The Historical period dates from 1600. It deals with Europe's infiltration, settlement, spread and domineering of European influence in southern Africa. Its segments are; Dutch settlement in the Western Cape, the troubled times of Zululand (Mfeqane/Difaqane), Voortrekkers, early missions, and the diamond rush. This period also witnessed or saw the compilation of early maps by missionaries, explorers and military personnel.

Bartolomeo Dias was the first European to sail around the southern point of Africa in 1486, he named it "The Cape of Good Hope", nine years later it was Vasco da Gama, however, these Portuguese seafarers were not seriously interested in southern Africa. Nevertheless, the history of southeast part will change forever on the 6th of April 1652. This is when the Dutch seafarer Jan van Riebeeck arrived in Table Bay with his three ships. His mission was not to establish a full-fledged colony at the Cape but to establish a supply station on behalf of the Dutch East India Company (DEIC); however, it committed itself when it granted nine company servants' freedom in 1657 to establish private farms in the Rondebosch area below the eastern slopes of Table Mountain. One of the reasons why the Dutch settled at the Cape was to access the herds of cattle kept by the Khoi-Khoi, this was first achieved by friendly trade, however it was not long before land disputes erupted after Free Burghers began to encroach on traditional communal grazing



lands. By the early 1700's the Dutch colonists have prevailed (Bergh 1999). These new white settlers will influence the context and content of South Africa's culture forever, starting with the development of Cape Town into an urban centre, however it took many years for it to equal the size of the Mapungubwe Kingdom which was attained five centuries earlier (it is also argued that Mapungubwe was during its peak more developed than other areas in Europe). These newcomers also introduced a new style of houses consisting of flat roofs and ornate pediments, slaves were also imported from other parts of Africa, i.e., Madagascar, India, and East Asia, these slaves who were used as labourers were skilled carpenters and bricklayers as such their skills played an invaluable role in speeding up the progress and development of the Cape. It is important to note that the intermingling between the slaves, Africans, and the European population marked the beginning of the coloured community.

One of the most significant historical occurrences in the early history of South Africa was the Mfecane/Difaqane. Shaka was a shrewd king and he established a kingdom that became the strongest throughout the region in the 19th Century. During the Mfecane/Difaqane at the end of the 19th Century, communities who had settled in the KwaZulu-Natal were displaced and forced to move out by wars between the Zulu chiefdoms (Shillington 2013). Many generals were such as Mzilikazi, Soshangane were displaced as Zululand became a desert storm. Shaka's majesty rule came to end in 1828 when he was assassinated by his half-brothers, Dingane, and Mhlangana, with Dingane assuming the leadership (Laband 1995). The kingdom became weaker and Cape merchants moved into the region to colonise Natal, and also the Voortrekker who became dissatisfied with British rule, also moved into the area (McKenna 2011).

Over a span of three years starting in 1835, some 12,000 Voortrekkers (pioneers) left the Cape Colony and trekked into the interior by ox wagon. In time, these Voortrekkers who were escaping British policies started to build a unique identity and started calling themselves Afrikaners, they also developed a hybrid language, Afrikaans, which stemmed from high Dutch but incorporated strong French, Malay, German and Black influences. The Afrikaans - speaking descendants of these people would later simply be called "Boere" (boers or farmers) (Bergh 1999). From the 1820s European missionaries worked tirelessly to christianise indigenous communities and to in-culture them in a European way of life, whatever intention these missionaries have undermine African and contributed in displacing African tradition across South Africa. By the 1860s, African states began to weaken as Europeans were eager to exploit Africans as a source of labour and to acquire the fertile area, during this era most African leaders died, e.g.: Makapane (1854); Soshangane



(1858); Sekwate (1861); Mswati (1865); Mzilikazi (1868); Moshoeshoe (1870); Mpande (1872); Sekhukhune (1882) and Makhado (1895).

With the discovery of diamonds and gold in the 19th century, urbanisation started in South Africa. People came from all over the world to claim their stake in the diamond fields, these discoveries also made the British to realise that there was great wealth for the taking outside the Cape Colony, and with these discoveries South African black's view of life were further changed. Nevertheless, the 1902 Peace treaty in Vereeniging marked the end of Anglo/Boers war, this gave South African black people peace treaty as they hope for better opportunity after all the suppression and domination by the minority, unfortunately it turned out differently as it made no provisions as far as human rights for black people were concerned, actually the process of segregation increased in South Africa.



8. Discussion of (Pre-) History of the Study Area

Stone Age

The Free State is endowed with many Stone Age sites. Nine cave sites have yielded a lot of tools cutting across the cultural divide. The nine caves are De Hoop, Lelihoek, Mauermanshoek, Orange Springs, Rooikrans, Roosfontein, Rose Cottage, Tandjiesberg and Twyfelpoort (Wadley 1995; Lombard *et al.* 2012), however, most ESA and MSA tools have mostly been found in open sites. The earliest ESA industry is the Victoria West Stone industry which was first defined and recorded by Smith in 1915. These tools have been found along the Vaal River. Smith called this culture “Tortoise cores”, the idea being that he made a parallel to the tortoiseshell in which individual shells can be chipped off from a single shell making tools such as handaxes. Later the “Tortoise – Cores” was regarded as a cultural marker in the transition from the ESA to the MSA (Goodwin 1935).

The MSA is clearly marked by the appearance of the prepared core technique. The Florisband is the dominant culture (Benneman *et al.* 2011). Open air sites seem to have been preferred in the eastern Free State. Rose Cottage is the only cave site that have yielded MSA tools. The MSA tools are knives and scrapers, and the dominant raw material is opaline (Wadley 1995). Other raw materials in the MSA of eastern Free State are fine grain quartzite, quartz, chalcedony, silcrete and hornfels (Benneman *et al.* 2011).

The LSA of the wider study area is dominated by rock art. There are many paintings in the study region with faded paintings at Lelihoek shelter and De Hoop, and some well executed ones at Tandjiesbergshelter. Just like in any other region of the country, the rock art of the wider study area indicate a lot of contact between different cultural groups. At De Hoop cave there are poorly preserved paintings depicting Europeans, horses and elands (Wadley 1995).

In the study area, the Vaal gravels are known to contain Early and Middle Stone Age artefacts and rock engraving sites are on record around the study area. Despite the fact that the Vaal is a rich cultural landscape, mostly with regard to stone tools, no Stone Age tools were noted during the field survey.

Iron Age

In Free State the earliest known Iron Age settlement is OU1, between the modern towns of Vrede and Frankfurt, and is dated to AD 505. The other EIA site is OND2. When these Iron Age people



entered the region, local Khoisan people already possessed grass-tempered and grit-tempered pottery and domestic stock (Wadley 1995:578). There is no Middle Iron Age in the Free State. It is clear in the Limpopo where it is associated with the Zimbabwe culture (Huffman 2007). Other sites with well documented Iron Age artefacts include the Caledon River Valley known to have been occupied by the Fokeng group of the Sotho culture. Later this group migrated to settle in Matlaeeng, between Frankfurt and Vrede (Huffman 2007). In the wider study area, there is some rock art which is linked to the Iron Age by interaction; it is not directly executed by the San people. In the south eastern Orange Free State, for example cattle paintings are found with some Sotho shields which some researchers such as Binneman *et al.* (2011) argue could be referring to the time of trouble, *mfecane*. One interesting painting is of a man walking with hunting dogs (Wadley 1995). There is no record of Iron Age sites in the study area, and none were found during the survey.

Historical era

In the Free State the town of Bloemfontein, which is currently the provincial capital is one of the most significant interior towns that were established by the European settlers of the Dutch origin. This was after the Voortrekkers had trekked from the Cape colony to avoid British administration (Hall, 1993). The historical archaeology of the study region is rich in monuments, statues and memorials. There are also other buildings demonstrating various architectural styles and venacular. The footprints of the Anglo-Boer War are clearly visible in the wider study area. The study area is situated close to the boundary of Free State and Gauteng provinces, and in this area the Vaal River crossings at Viljoendrift is of historic importance. It is important both before and after the inauguration of the rail link between the former Transvaal and the Orange Free State and Cape Colony. It is also important as it is associated with the British's forceful entry in 1900 into the Transvaal during the second Anglo-Boer War.

No Historical cultural material were found during the survey.

Cultural Landscapes

Over the past twenty years a territorial approach to heritage has shifted emphasis from sites to the recognition of broad territorial attributes of heritage. Within the international discourse which has ensued, a genre of heritage called Cultural Landscapes has emerged. Article 47 of the Operational Guidelines for the Implementation of the World Heritage Convention (2005) defines Cultural Landscapes as:

Cultural landscapes are cultural properties that represent the —combined works of nature and of man" designated in Article 1 of the World Heritage Convention. They are illustrative of the



evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal.

9. Findings and Discussions

The main aim of the survey was to evaluate potential heritage resources that would occur within the two alternative corridors, and to determine if there is any hamartia that may prevent the proposed construction from taking place in any of the proposed study areas, as well as recommend the preferred corridor and mitigation measures to be implemented during the project. The study area was investigated for sites of heritage significance that might be affected by the proposed construction. Archaeological sites dating to the Stone, Iron, and Historical Age are known to occur in the region of the study area, however, none of those were documented during the survey. Notwithstanding that, it should be taken into account that there was no subsurface inspection, as a result, it might be possible that specific aspects related to construction might have a direct disturbance on subsurface heritage resources, which in turn may result in irreplaceable loss of heritage resources. As aforesaid, two corridors are proposed. Corridor alternative one transverse adjacent to another main powerline(s). As a result, there are no major heritage materials expected here. The second alternative is also close to the first alternative. Meaning the area of the second alternative is equally disturbed.

The Phase I Archaeological and Cultural Heritage Impact Assessment for the proposed construction of the Powerline did not yield any heritage resources within the footprint of both corridors.



9.1 Impact assessment

Below is a description of the proposed development impact ratings. These ratings are for archaeological and cultural heritage sites known to exist in the proposed area and include Stone and Iron Age, as well as Historical era materials. Note that these impacts are assessed as per Table 2 above:

Corridor Alternative 1 and 2

The two corridors traverse across similar environment as Corridor 2 deviates from corridor 1 and runs within a 300m radius. The corridors traverse across disturbed land that is characterised by an agricultural farm, vegetated area consisting of grass and the invasive species, eucalyptus, and are in close proximity to an existing powerline servitude and access road. As such the surface and subsurface objects that could have been present might have been destroyed when construction and agricultural activities commenced. The Grade II resources are more than 10km from the site hence the impact of the line on these resources will be insignificant. The table below shows the impact assessment for unearthing and destroying archaeological objects during the clearing of the servitude and excavation at tower positions.

Table 3: Anticipated Impact Rating.

Alternatives	Ratings
Nature	Negative
Extent	Footprint
Duration	Permanent
Magnitude	Moderate
Probability	Possible
Reversibility	Irreversible
Pre-mitigation significance	Low to Moderate
Post mitigation significance	Low

10. Recommendations

Taking all the above information into account, it is recommended that **Corridor Alternative One** is the preferred alternative from a heritage impact perspective as it is the closest to the existing powerline and access road. The client needs to note that, although no heritage resources were noted during the survey, archaeological material often occurs underground, as such should any



archaeological material be unearthed accidentally during construction, SAHRA should be alerted immediately and construction activities be stopped within a radius of at least 10m of the indicator. The area should then be demarcated by a danger tape. Accordingly, a professional archaeologist or SAHRA officer should be contacted immediately. It is the responsibility of the Environmental officer and the contractor to protect the site from publicity (i.e., media) until a mutual agreement is reached. It is also mandatory to report any incident of human remains encountered to the South African Police Services. Any measure to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law under Sections 35(4) and 36(3) of the National Heritage Resources Act, Act 25 of 1999. The developer should induct field workers about archaeology, and steps that should be taken in the case of exposing archaeological materials.

Pre-construction education and awareness training

Prior to construction, contractors should be given training on how to identify and protect archaeological remains that may be discovered during the project. The pre-construction training should include some site recognition training for the types of archaeological sites that may occur in the construction areas. Below are some indicators of an archaeological site that may be found during construction:

- Flaked stone tools, bone tools and loose pieces of flaked stone;
- Ash and charcoal;
- Bones and shell fragments;
- Artefacts (e.g., beads or hearths); and
- Packed stones which might be uncounted underground, and might indicate a grave or collapse stone walling.



11. Conclusions

A thorough background study and survey of the proposed development was conducted and findings were recorded in line with SAHRA guidelines. As per the recommendations above, there are no heritage reasons why the proposed development could not be allowed to proceed. It is recommended that the proposed development of the powerline proceed subject to the conditions given above.



12. References

- Chazen, M. *et al.*, 2008. Radiometric Dating of the Earlier Stone Age Sequence in Excavation I at Wonderwerk Cave, South Africa: Preliminary Results. *Journal of Human Evolution*, 55(1), pp. 1-11.
- Deacon, H.J. & Deacon, J. 1999. *Human beginnings in South Africa: uncovering the secrets of the Stone Age*. Cape Town: David Philip.
- Deacon, J. 1984. *Later Stone Age people and their descendants in southern Africa*. In Klein, R.G. (ed). *Southern Africa prehistory and palaeoenvironments*. Rotterdam: A.A. Balkema.
- Goodwin, A.J.H. 1926. The Victoria West Industry. In: Goodwin, A.J.H & van Riet Lowe, C (eds). *The South African Cultures of South Africa*. Annals of the South African Museum.
- Hall, M. 1993. The archaeology of colonial settlement in South Africa. *Annual Review of Anthropology* volume 22 (1993), pp 177-200.
- Huffman, T.N. 2007. *Handbook to the Iron Age: The Archaeology of Pre-Colonial Farming Societies in Southern Africa*. Scottsville: University of KwaZulu- Natal Press.
- Humphreys, A.J.B. 1991. On the distribution and dating of bifacial and tanged arrowheads in the interior of South Africa. *The South African Archaeological Bulletin*, 46 (153): 41-43.
- Korsman, S.A. & Meyer, A. 1999. *Die Steentydperkenrotskuns*. Bergh, J.S. (red.). *Geskiedenisatlas van Suid-Afrika. Die viernoordelike provinsies*. Pretoria: J.L. vanSchaik.
- Kuman, K. & Field, A. S., 2009. The Oldowan Industry from Sterkfontein caves, South Africa. In: *The Cutting Edge: New Approaches to the Archaeology of Human Origins*. s.l.:s.n., pp. 151-169.
- Kuman, K., Field, A. S. & Thackeray, J. F., 1997. Discovery of New Artefacts at Kromdraai. *South African Journal of Science*, 93(4), pp. 187-193.
- Lombard, M, Wadley, L, Deacon, J, Wurz, S, Parsons, I, Mohapi, M, Swart, J & Mitchel, P. 2012. South African and Lesotho Stone Age sequence updated. *South African Archaeological Bulletin* 67: 123-144.



Mitchell, P. 2002. *The Archaeology of Southern African*. Cambridge: Cambridge University Press.

National Heritage Resources Act (Act No 25 of 1999).

Savanna Environmental (Pty) Ltd. 2015. *Social Impact Assessment EIA report*. Proposed Lethabo Photovoltaic PV Solar energy facility, near Sasolburg, Free State Province. A report prepared for Eskom Holdings (SOC) Limited.

Segoboye A. 1998. *Early Farming Communities*. In: Lane, P, Reid, A and Segoboye A. 1998. (ed), *Pula Press and Botswana Society*, pp 101-114.

Van der Walt, J. 2015. *Heritage Impact Assessment of the Lethabo Solar PV Facility*, Free State Province. A report prepared for Savannah Environmental (Pty) Ltd.

Wadley, L. 1995. *Review of dated Stone Age sites recently excavated in the eastern Free State, South Africa*. *Journal of Science* volume 91, 574-579.

Websites visited: 08/03/2023

http://sagns.dac.gov.za/local_authorities.asp

<http://www.voortrekkermon.org.za/>



APPENDIX 1: SITE SIGNIFICANCE

The following guidelines for determining site *significance* were developed by SAHRA in 2003. 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.

(a) 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 organization of importance in history?
- Does it have significance relating to the history of slavery?

(b) Aesthetic value

- Is it important in exhibiting particular aesthetic characteristics valued by a community or cultural group?

(c) 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?

(d) Social value

- Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons?

(e) Rarity

- Does it possess uncommon, rare or endangered aspects of natural or cultural heritage?

(f) Representivity

- Is it important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects?
- What is the 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?
- Is it important 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?



APPENDIX II: CHANCE FIND PROCEDURE

Introduction

The purpose of this document is to provide Eskom and their contractors with the appropriate response guidelines (extracted and adapted from the National Heritage Resources Act (Act No. 25 of 1999) Regulations Reg No. 6820, GN: 548, taking into consideration international best practice based on World Bank, Equator Principles and the International Finance Corporation Performance Standards, 1972 UNESCO Convention on the Protection of World Cultural and Natural Heritage (World Heritage Convention), that should be implemented in the event of chance discovery of heritage resources. These guidelines or chance find procedures (CFPs) can be incorporated into Eskom's policies that may have relevance during construction and operational phases. The CFPs aim to avoid and/or reduce project risks that may result due to chance finds, whilst considering international best practice.

Purpose of ACFP

The aim of this Archaeological Chance Find Procedure (ACFP) are to protect previously unexposed heritage resources that are yet unknown although might be encountered during the project operation or construction phase. This document serves to provide best practices to manage accidental exposed heritage resource during the development. The procedures are given to the client/applicant/contracts in order to prevent and minimize negative impact on heritage resources encountered by accident. Thus, the heritage specialist(s) compiled this chance find document with a purpose to give instructions based on relevant and appropriate actions in line with the NHRA and best guidelines to protect the chance finds on the proposed site. In significant, the ACFP stand in place to promote the preservation of heritage resources and present mitigation measure to avoid disturbance on heritage resources.

ACFP for Heritage Resources

The following procedures must be followed when heritage resources are encountered during the operational or construction phase:

- All construction/clearance activities in the vicinity of the heritage resources found by accident on site must cease immediately to avoid further damage to the chance finds
- Immediately report the chance finds to the supervisor/site manager or if they are unavailable, report to the project Environmental Officer (EO) who will provide further instructions.



- Record (note taking, photograph with a scale, GPS coordinates) of all the chance find exposed during the activity.
- All remains are to be stabilised in situ.
- Secure (e.g., barricade) the area to prevent further disturbance on heritage resources.
- The EO must contact the qualified archaeologist registered with the association for Association for Southern African Professional Archaeologist (ASAPA) or South African Heritage Resources Agency (SAHRA).
- The project archaeologist will conduct the inspection and assess the significance of the chance finds under SAHRA guidelines, give recommendation and mitigation measures.

