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MARGEN INDUSTRIAL SERVICES

PHASE I ARCHAEOLOGICAL AND CULTURAL HERITAGE IMPACT ASSESSMENT SPECIALIST REPORT FOR THE PROPOSED +-900m 22kV LINE IN GRIEKWASTAD AREA WITHIN SIYANCUMA LOCAL MUNICIPALITY OF PIXLEY KA SEME DISTRICT IN NORTHERN CAPE PROVINCE.

June, 2019

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DECLARATION

ABILITY TO CONDUCT THE PROJECT

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), and the International Council of Archaeozoology (ICAZ). He has more than ten years' experience in heritage management, having worked for different CRM organisations and government heritage authorities. As a CRM specialist, Munyadziwa has completed well over five hundred Archaeological Impact Assessments (AIA) for developmental projects situated in all 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.

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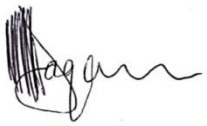

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EXECUTIVE SUMMARY

Vhubvo Consultancy Cc has been commissioned by Margen to conduct the Cultural Heritage Impact Assessment (HIA) Study for the proposed +-900m 22kV line in Griekwastad Area, Pixley Ka Seme District Municipality within Northern Cape Province. The aim of the survey was to investigate 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 Sports development facilities, 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). The findings of this study have been informed by desktop study and field survey. The desktop study was undertaken through SAHRIS for previous Cultural Heritage Impact Assessments conducted in the region of the proposed development, and also for researches that have been carried out in the wider area over the past years.

Background and Need of the Project

According to the Span Plan for the project, the 958m 22kv powerline is critically required to power an MTN Tower for network currently powered by diesel engines which are more expensive to run.

Receiving Environment

The proposed development is located in an undisturbed area, which is concentrated by small shrubs and consistent outcrop. The area at large is known to possess archaeological resources, dating to the Stone Age.

Impact statement

The construction of the proposed powerline has potential to disturb archaeological remains although limited. It is important to note that all categories of heritage resource, with the possible exception of movable objects, are generally known to occur in the wider area of the proposed development. The presence of the powerline will have a moderate-low visual impact on pass-by motorists, and this impact will last for the lifespan of this proposed development. However, this is not addressed in this report in detail.

Restrictions and Assumptions

The investigation has been influenced by the unpredictability of buried archaeological remains (absence of evidence does not mean evidence of absence) and the difficulty in establishing intangible heritage values. It should be remembered that archaeological deposits (including graves and traces of mining heritage) usually occur below the ground level. Should artefacts or skeletal material be revealed at the site during construction, such activities should be halted immediately, and a competent heritage practitioner, SAHRA or PHRA must be notified in order for an investigation and evaluation of the find(s) to take place (see NHRA (Act No. 25 of 1999), Section 36 (6). Recommendations contained in this document do not exempt the developer from complying with any national, provincial and municipal legislation or other regulatory

requirements, including any protection or management or general provision in terms of the NHRA. Vhubvo assumes no responsibility for compliance with conditions that may be required by SAHRA in terms of this report.

Site-Location Model

Archaeologists who do research in the region generally accept a site-location model proposed by Maggs (1980). The model suggests that inland sites will be found in locations which bear the following:

- Limited to below an altitude of 1000 m asl;
- Situated on riverside or streamside locations, on deep alkaline colluvial soils; and
- In areas appropriate for dry-farming (with sufficient summer rainfall).

Background study

In 1801 William Anderson and Cornelius Kramer, of the London Missionary Society, established a station among the Griqua at Leeuwenkuil. The site proved to be too arid for cultivation, and in about 1805 they moved the station to another spring further up the valley and called it Klaarwater. Their second choice was little better than their first, and for many years a lack of water prevented any further development. The name of the settlement was changed later to Griquatown or Griekwastad in Afrikaans. From 1813 - 17 July 1871, the town and its surrounding area functioned as Waterboer's Land. Waterboer himself lived in a "palace", which in reality was a house with six rooms. A monument for Waterboer was later erected near the town's hospital.

Survey findings

The Archaeological and Cultural Heritage Phase I Impact Assessment for the proposed +-900m 22kV has identified no significant impacts to archaeological resources that will need to be mitigated prior construction. However, scatters of stone tools where noted in the vicinity of the project area.

Recommendations

Although, archaeological objects were observed in the surrounding area, the proposed powerline development may proceed as planned subject to the following recommendations:

The client is reminded that should any archaeological material be unearthed accidentally during the course of construction, SAHRA MUST be alerted immediately and construction activities be stopped within a radius of at least 10m of such indicator. The area should then be demarcated by a danger tape. Accordingly, a professional archaeologist should be contacted immediately. In the meantime, 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 mandatory to report any incident of human remains encountered to the South African Police Services, SAHRA staff member and professional archaeologist. Any measure to cover up the

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

Should construction work commence for this project

The construction team should be inducted on the significance of the possible archaeological material that may be encountered during subsurface construction work. It should be noted that it is the duty of the developer to induct field worker about archaeology, and steps that should be taken in the case of exposing 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 limited site recognition training for the types of archaeological sites that may occur in the construction areas. Below are some of the indicators of 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);
- Packed stones which might be uncounted underground, and might indicate a grave or collapse stone walling.

The developer should take note that, only the route demarcated for the powerline were surveyed, and that the construction team should construct within such an area. Any attempt to alter beyond the surveyed area, will be illegal, and SAHRA might take legal steps against the developer;

Conclusions

A thorough background study and survey of the proposed development route was conducted and findings were recorded in line with SAHRA guidelines. In accordance with the recommendations above, there are no major archaeological reasons why the proposed development should not be allowed to proceed. Thus, it is recommended that the proposed development proceed on condition that the recommendation indicated above are adhered to.

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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
PHRA	Provincial Heritage Resources Authority
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 artifacts, 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, palaeolontological 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. This include intangible resources such 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 and present 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 artifact, structures, organic and environmental remains, as residues of past human activity.

1. Introduction

At the request of Margen Industrial Services, Vhubvo Consultancy Cc conducted an Archaeological and Cultural Heritage Phase I Assessment Study for the proposed +-900m 22kV line in Griekwastad Area within Siyancuma Local Municipality of Pixley Ka Seme District Municipality in Northern Cape Province. The survey was conducted in accordance with the SAHRA Minimum Standards for the Archaeology and Palaeontology. The minimum standards clearly specify the required contents of the report of this nature. The study aim 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, 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).

2. Sites location and description

The proposed development is located at Griekwastad area on an undisturbed area, which is concentrated by small shrubs and consistent outcrop. The area at large is known to possess archaeological resources, dating to the Stone Age. The locality map provided indicates the proposed study area.

Summary of Project Location Details

Province:	Northern Cape
Local Municipality:	Siyancuma
District Municipality:	Pixley Ka Seme
Proposed development:	Powerline

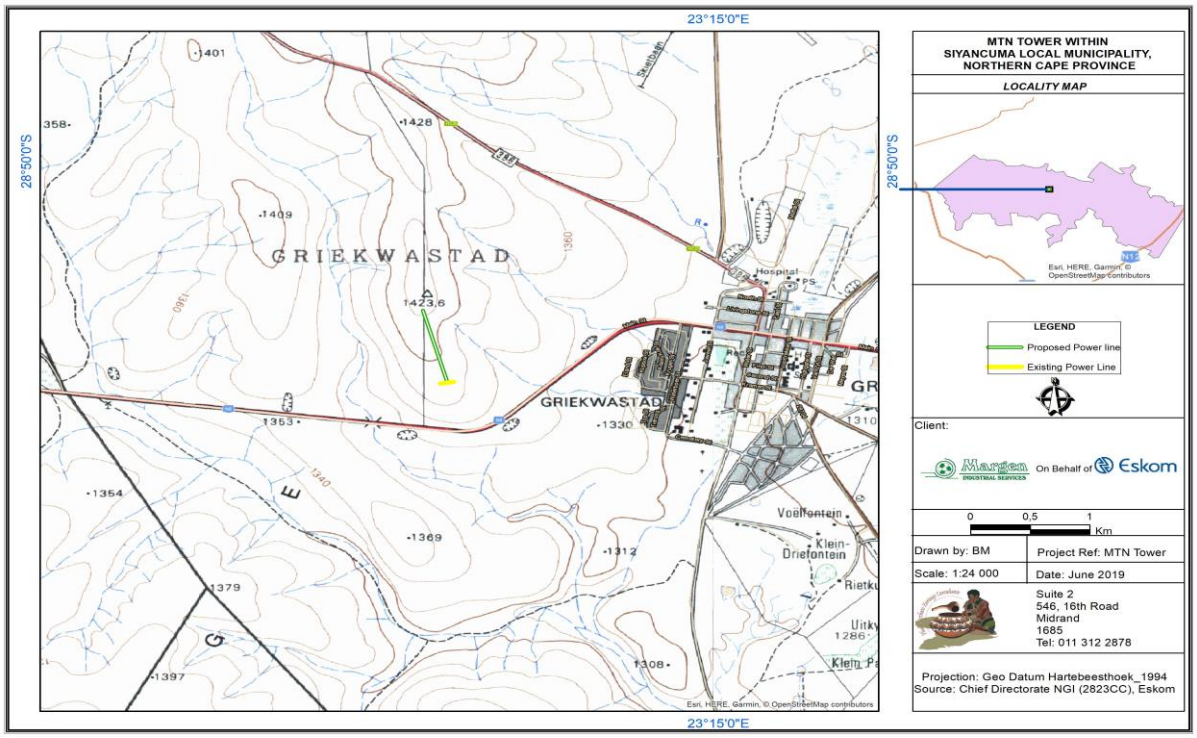

Figure 1: View of the topographical map showing the proposed development.

Figure 2: An overview of the southern section of the area proposed for the powerline, with the southern MTN tower on the other side.

Figure 3: View of one of the area on the off-set of the proposed development – where scatters of stone tools were noted.

Figure 4: View of the north eastern section of the area proposed for development overlooking Griekwastad.

Figure 5: View of the northern section of the area proposed for development, with the northern MTN tower visible.

3. Nature of the proposed project

According to the Span Plan for the project, the 958m 22kv powerline is critically required to power an MTN Tower for network currently powered by diesel engines which are more expensive to run.

4. Purpose of the Cultural Heritage Study

The purpose of this Archaeological and Cultural Heritage study was to entirely 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 Powerline, 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 maybe affected by the proposed Powerline;
- Providing recommendations on how best to appropriately safeguard identified heritage sites. Mitigation is an important aspect of any development on areas where heritage sites have been identified.

5. Methodology and Approach

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), consultations with the developer and appointed consultants, 3), completion of a field survey and 4), analysis of the acquired data, leading to the production of this report.

Physical survey

The field survey lasted two days of the 02nd of June 2019. An archaeologist from Vhubvo conducted the survey.

Documentation

The general project area was documented. This documentation included taking photographs using cameras a 10.1 mega-pixel Sony Cybershort Digital Camera. Plotting of finds was done by a Garmin etrex Venture HC.

Restrictions and Assumptions

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

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 (No. 107 of 1998); Mineral Amendment Act (No 103 of 1993); Tourism Act (No. 72 of 1993); Cultural Institution Act (No. 119 of 1998), and the National Heritage Resources Act (Act 25 of 1999).

Section 38 (1) of the National Heritage Resources Act requires that where relevant, an Impact Assessment is undertaken in 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 SAHRAor 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 theproposed 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 livingheritage
(c) Historical settlements and townscapes
(d) Landscapes and natural features 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)
(h) 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 andrare geological specimens
(ii) objects to which oral traditions are attached or which are associated withliving 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).

Section 3 of the National Heritage Resources Act (No. 25 of 1999) also distinguishes nine criteria for places and objects to qualify as 'part of the national estate if they have cultural significance or other special value …' These criteria are the following:

(a) Its importance in the community, or pattern of South Africa's history
(b) Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage
(c) Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage
(d) Its importance in demonstrating the principal characteristics of a particular classof South Africa's natural or cultural places or objects
(e) Its importance in exhibiting particular aesthetic characteristics valued by acommunity or cultural group
(f) Its importance in demonstrating a high degree of creative or technicalachievement at particular period
(g) Its strong or special association with a particular community or cultural group forsocial, cultural or spiritual reasons
(h) 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
(i) Sites of significance relating to the history of slavery in South Africa.

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 isolder 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 orotherwise disturb any grave or burial ground older than 60 yearswhich is situated outside formal cemetery administered by a localauthority; or*
- *bring onto or use at a burial ground or grave any excavationequipment, or any equipment which assists in detection or recovery ofmetals.*

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 for the region.

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 as Phase 2 of the project.

High

- This is a 'do not touch' situation, alternative 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 a

permit has been issued by the appropriate heritage authority. The following table is used to grade heritage resources.

Table 1: Rating and evaluating criteria of impact assessment

NATURE		
Including a brief description of the impact of the heritage parameter being assessed in the context of the project. This criterion includes a brief written statement of the heritage aspect being impacted upon by a particular action or activity.		
TOPOGRAPHICAL EXTENT		
This is defined as the area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment of a project in terms of further defining the determined.		
1	Site	The impact will only affect site.
2	Local/district	Will affect the local area or district.
3	Province/region	Will affect the entire province or region.
4	International and National	Will affect the entire country.
PROBABILITY		
This describes the chance of occurrence of an impact		
1	Unlikely	The chance of the impact occurring is extremely low (Less than 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between 50% to 75% chance of occurrence).

4	Definite	Impact will certainly occur (Greater than 75% chance of occurrence).
REVERSIBILITY		
This describes the degree to which an impact on a heritage parameter can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES		
This describes the degree to which heritage resources will be irreplaceably lost as a result of proposed activity		
1	No loss of resource	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resource	The impact will result insignificant loss of resources.
4	Complete loss of resource	The impact is result in a complete loss of all resources.

DURATION		
This describes the duration of the impact on the heritage parameter. Duration indicates the lifetime of a result of the proposed activity.		
1	Short term	The impact and its effects will either disappear with mitigation or will be mitigated through natural process in span shorter than the construction phase (0-1 years), or the impact and its effects will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0-2 years).
2	Medium term	The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2-10 years).
3	Long term	The impact and its effects will continue or last for entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (10-50 years).
4	Permanent	The only class of the impact that will non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered transient (Indefinite).

CUMULATIVE EFFECT		
This describes the cumulative effect of the impacts on the heritage parameter. A cumulative effect/impact is an effect, which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from similar or diverse activities as a result of the project activity in question.		
1	Negligible Cumulative Impact	The impact would result in negligible to no cumulative effects.
2	Low Cumulative Impact	The impact would result in insignificant cumulative effects
3	Medium Cumulative Impact	The impact would result in minor cumulative effects
4	High Cumulative Impact	The impact would result in significant cumulative effects.
MAGNITUDE		
Describes the severity of an impact.		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/ component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).

3	High	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very High	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired (system collapsed).Rehabilitation and remediation often impossible .If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.

Table 2: Grading systems for identified heritage resources in terms of 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

8. History of the Area

Introduction

South Africa has one of the longest sequences of human development in the world. The prehistory and history of South Africa span the entire known life span of human on earth. It is thus difficult to determine exactly where to begin, a possible choice could be the development of genus Homo millions of years ago. South African scientists have been actively involved in the study of human origins since 1925 when Raymond Dart identified the Taung child as an infant halfway between apes and humans. Dart called the remains Australopithecus africanus, southern ape-man, and his work ultimately changed the focus of human evolution from Europe and Asia to Africa, and it is now widely accepted that humankind originated in Africa (Robbins et al. 1998). In many ways this discovery marked the birth of palaeoanthropology as a discipline. Nonetheless, the earliest form of culture known in South Africa is the Stone Age. These prehistoric period during which humans widely used stone for tool-making, stone tools were made from a variety of different sorts of stone. For example, flint and chert were shaped for use as cutting tools and weapons, while basalt and sandstone were used for ground stone. Stone Age can be divided into Early, Middle and Late, it is argued that there are two transitional period. Noteworthy that the time frame used for Stone Age period is an approximate and differ from researcher to researcher (see Korsman & Meyer 1999, Mitchell 2002, Robbins et al. 1998)

Stone Age period

Although a long history of research on the Early Stone Age period of southern Africa has been conducted (Mason 1962, Sampson 1974, Klein 2000, Chazan 2003), it still remains a period were little is known about. These may be due to many factors which includes, though not limited to retrieval techniques used, reliance on secondary, at times unknown sources, and the fact that few fauna from this period has been analysed (Chazan 2003). According to Robbins et al. (1998) the Stone Age is the period in human history when stone was mainly used to produce tools. This period began approximately 2.5 million years ago and ended around 200 000 years ago. During this period human beings became the creators of culture and was basically hunters and gatherers, this era is identified by large stone artefacts.

The Middle Stone Age overlap with the EIA and possibly began around 100 000 to about 200 000 years ago and extends up to around 35 000 years ago. This period is marked by smaller tools than in ESA and characterized by the production of food and the introduction of domestication

of animals. Many MSA sites have evidence for control of fire, prior to this, rock shelters and caves would have been dangerous for human habitation due to predators. MSA people made a wide range of stone tools from both coarse- and fine-grained rock types. Sometimes the rocks used for tools were transported considerable distances, presumably in bags or other 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.

Microlithic Later Stone Age period began around 35 000 and extend to the later 1800 AD. According to Deacon (1984), LSA is a period when human being refined small blade tools, conversely abandoning the prepared-core technique. Thus, refined artefacts such as convex- edge scrapers, borers and segments are associated with this period. Moreover, large quantity of art and ornaments were made during this period. Prehistoric rock art in Northern Cape is found in the form of both paintings and engravings. Rock paintings and engravings are generally found on cave and shelter walls in the coastal regions and in mountain ranges along Postmansburg to Danielskuil (Boshier and Beaumont 1974).

Numerous cluster of Stone Age sites have been noted near and around Kathu (Beaumont 2007; Beaumont and Morris 1990; Beaumont and Vogel 2006; Kaplan 2008; Thackeray et al. 1981). However, it was in 2012, when a paper published in the Journal of Science about a site in Kathu, Kathu pan 1, that people took notice of the significance of the area. Jayne Wilkins and Michael Chazan reveal evidence of a 500 000 year-old stone points (excavated by Peter Beaumont in 1979-1982). They argued that this point represent the earliest stone-tipped spears yet found. Their conclusion, which was based partly on experimental comparison of use wear, is taken to indicate that human ancestors used stone-tipped weapons for hunting 200 000 years earlier than previously thought. This site is approximately 30km north-west of the proposed site, and is one of the eleven sites in the Kathu Pan which were excavated by Peter Beaumont between 1978 and 1990. The pan is a shallow depression with internal drainage and high water table, covering an area of about 0.3km. Most of them are filled in sinkholes that formed within calcretes of the Tertiary-aged Kalahari Group. Kathu Pan 1 preserves the longest lithostratigraphic and archaeological sequence of the sites, documenting a history of human occupation at the pan through the ESA, MSA, and LSA.

Several other sites dating to the Stone Age are known to exist around the larger geographical area of the proposed prospecting of manganese and iron ore. The most well-known of all is Wonderwerk Cave in the Kuruman Hills, this site which is about 50km east of the

proposed area, and constitutes a very large cave, extends for almost 140m into the base of a low foothill on the eastern flank of the Kuruman Hills. Wonderwerk Cave has been the subject of a number of archaeological investigations since the first published description by Malan and Wells in 1943 (Thackeray et al. 1981). Another site Blinkklipkop (Tsantsabane), this site is about 35km south of the proposed area, and it appears that activities at the site began 1200 B.P. Lithic artefacts, including crudely worked scrapers and miscellaneous pieces were found in the site, this site was marred by debate in the 1970 and 1980, with faunal material analysed and reanalysed, with contradictory results. Not far away from Blinkklipkop, there is another site, Doornfontein, dates to the same time range as Blinkklipkop. Results of excavations at the Blinkklipkop speculate that mining began some time before A.D. 800. The mining was probably conducted by Khoi and San people before the seventeenth century. Also, the Tswana people appear to have utilised the area. The excavations also provide evidence for the presence of domestic animals and pottery in the Northern Cape Province by A.D. 800.

Additional Later Stone Age material and Middle Stone Age are known to exist from Lylyfeld, Demaneng, Mashwening, King, Rust and Vrede, Paling, Gloucester and Mount Huxley to the north. Rock engraving sites are known from Beeshoek and Bruce (Morris 2005). Black Rock and Gloria Mines near the town of Hotazel, revealed several sites with material dating to the Early to Later Stone Age (Kusel 2009; Pelser and Van Vollenhoven 2011).

Iron Age and Historical period

The Iron Age is the name given to the period of human history when metal was mainly used to produce artefacts. Recently, they have been a debate about the use of the name. Other archaeologist have argued that the word "Iron Age" is problematic and does not precisely explain the event of what happen in southern Africa, as such, the word farming communities has been proposed (Segobye 1998). Nonetheless, in South Africa this period can be divided into two phases. Early (200 - 1000 A.D) and Late Iron Age (1000 - 1850 A.D). Huffman (2007) has indicated that a Middle Iron Age (900 - 1300 A.D) should be included. According to Huffman (2007:361), until the 1960s and 1970s most archaeologists had not yet recognised a Middle Iron age. Instead they began the Late Iron Age at AD 1000. The Middle Iron Age (AD 900–1300) is characterised by extensive trade between the Limpopo Confluence and the East Coast of Africa. This has been debated, with other researchers, arguing that the period should be restricted to Shashe-Limpopo Confluence.

According to Schapera (1952:6) the Kgalagadi, who are believed to have originated somewhere in the vicinity of the Great-Lakes of East-Africa, were the first group of the Tswana to have encountered the San in Northern Cape and North West Province (Levitas 1983). However, Breutz (1989:1) argued that since from oral tradition it is stated that they originated from the area were "the sun stood on the other side", it means they lived north of the equator, which would probably be southern Sudan, and not Great Lakes, which is on the Equator. Levitas (1983:168) argued that the name Kalahari was derived from the Kgalakgari people.

The Rolong and Tlhaping group of the Tswana were the next to arrive, on arrival they absorbed the Kgalagadi and San people who were found in the area (Schapera 1652). The Tlhaping were referred to as Briqua (goat people) by the Khoi people, and they ate fish which is unusual among the Bantu-speaking people (Breutz 1989:11). Breutz (1989) and Levitas (1983) indicated that these groups arrived between 1200 and 1350. According to Maggs (1972), the area around the proposed area is associated with the Tlhaping group. Dithakong which was an important Batlhaping capital during the time of Chief Molehebangwe, is about 60km of the proposed area. The early traveller accounts refer to an impressively large town consisting of mud houses, traces of which have yet to be located archaeologically. However, stone walls dating to the Late Iron Age period has been documented. According to Maggs (1972:57), Dithakong is unique in the quality of the historical and ethnological information of the Tswana. This site appears to be the only area in which there is direct archaeological evidence for settlement in the form of stone walling.

During the past the Batswana settlements were not static. For example, the Batlhaping capital was first at Nokaneng around the year 1775. However, in 1801 it was at Dithakong on the Mashoweng River, and then at Kuruman. At around 1806 they returned to Dithakong but settled a short distance from the previous site. In 1812 people were contemplating returning to Nokaneng with an intermediate stop at Kuruman, where they re-established themselves in 1817. Thus in 1820 when Kuruman was the capital and comprised 25 wards, Dithakong was of similar size. Thus, the capital had moved three times in twenty years and suffered one major split which removed about half of its population. The reasons for these movements are not clear. This mobility presents a problem in the interpretation of the archaeological evidence and it helps to explain why many Iron Age sites have shallow accumulation of waste material (Maggs 1972). Nonetheless, in the 1920s, the capital of the Batlhaping was permanently moved to Kuruman, which is about 50km north-east of the proposed area.

In 1801 William Anderson and Cornelius Kramer, of the London Missionary Society, established a station among the Griqua at Leeuwenkuil. The site proved to be too arid for cultivation, and in about 1805 they moved the station to another spring further up the valley and called it Klaarwater. Their second choice was little better than their first, and for many years a lack of water prevented any further development. The name of the settlement was changed later to Griquatown or Griekwastad in Afrikaans. From 1813 - 17 July 1871, the town and its surrounding area functioned as Waterboer's Land. Waterboer himself lived in a "palace", which in reality was a house with six rooms. A monument for Waterboer was later erected near the town's hospital.

9. Survey Findings

The Archaeological and Cultural Heritage Phase I Impact Assessment for the proposed +-900m 22kV has identified no significant impacts to archaeological resources that will need to be mitigated prior construction. However, scatters of stone tools where noted in the vicinity of the project area.

9.1 Impact Assessment

Below is the impact rating. This rating is for cultural heritage sites known to exist in the proposed area, and includes graves, as well as Historical era materials. Note that these impacts are assessed as per Table 2 above:

Table 3: Anticipated impact rating.

Description	Ratings
Nature	Negative
Topographical Extent	The impact will only affect site
Duration	Long term
Magnitude	Low
Probability	Unlikely
Reversibility	Irreversible
Irreplaceable Loss	The impact will not result in the loss of any resources.

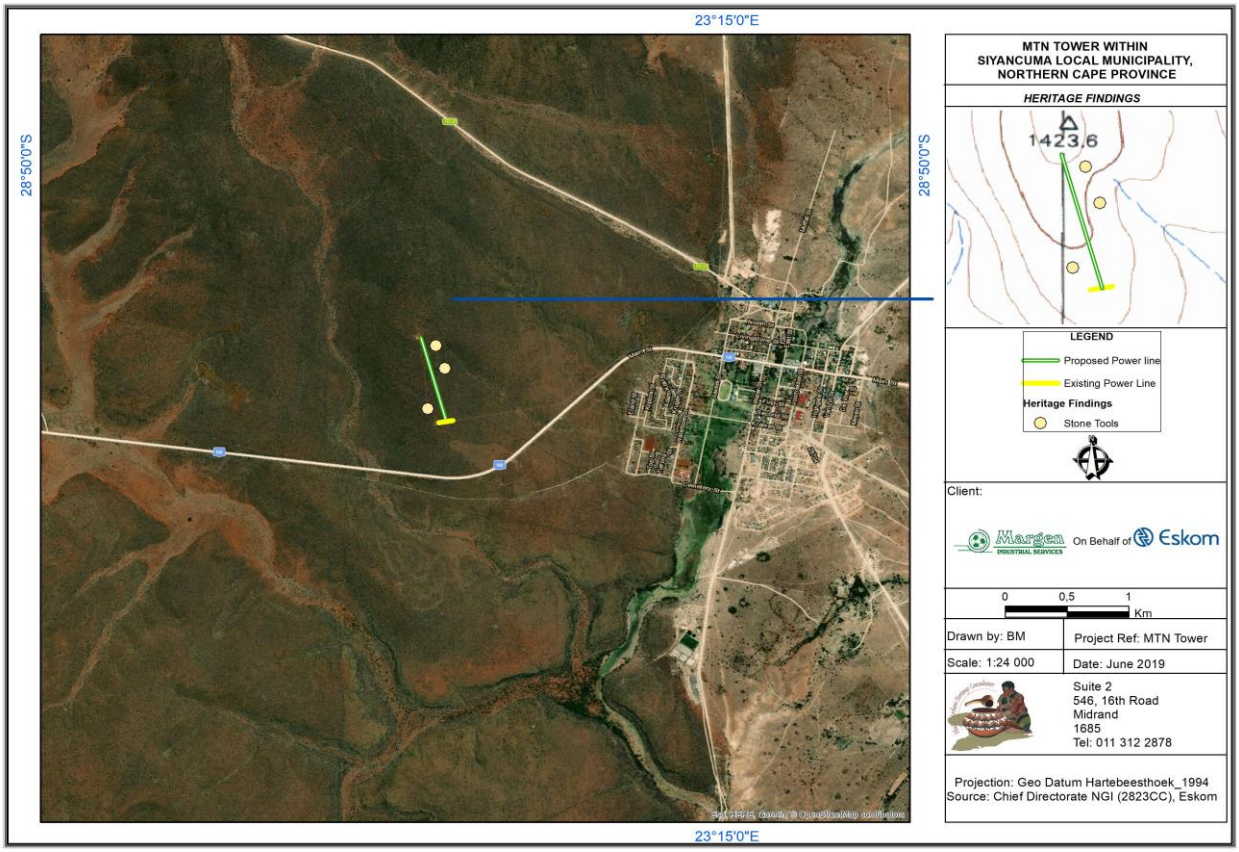

Figure 6: Map depicting sites which were noted in the area.

Table 4: Findings and Co-ordinates

Recorded Number	GPS	Description
G1	s28 50' 49.33" e23 13' 41.66"	Scattering stone tools where noted in this area
Significance: Medium-Low		
G2	s28°50'55.36", e23°13'43.33"	Stone tools which appears to have been wash-ways where noted at this area
Significance: Low		
G3	s28°51'4.84" e23°13'43.41"	Isolated flakes
Significance: Low		

Figure 8: View of some of the tools that were noted in the wider area to the proposed development.

10. Recommendations and Discussions

Although, archaeological objects were observed in the surrounding area, the proposed powerline development may proceed as planned subject to the following recommendations:

The client is reminded that should any archaeological material be unearthed accidentally during the course of construction, SAHRA MUST be alerted immediately and construction activities be stopped within a radius of at least 10m of such indicator. The area should then be demarcated by a danger tape. Accordingly, a professional archaeologist should be contacted immediately. In the meantime, 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 mandatory to report any incident of human remains encountered to the South African Police Services, SAHRA staff member and professional archaeologist. Any measure to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law under Section 35(4) and 36(3) of the National Heritage Resources Act, Act 25 of 1999. The developer should induct field worker about archaeology, and steps that should be taken in the case of exposing archaeological materials.

Should construction work commence for this project

The construction team should be inducted on the significance of the possible archaeological material that may be encountered during subsurface construction work. It should be noted that it is the duty of the developer to induct field worker about archaeology, and steps that should be taken in the case of exposing 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 limited site recognition training for the types of archaeological sites that may occur in the construction areas. Below are some of the indicators of 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);
- Packed stones which might be uncounted underground, and might indicate a grave or collapse stone walling.

The developer should take note that, only the route demarcated for the powerline were surveyed, and that the construction team should construct within such an area. Any attempt to alter beyond the surveyed area, will be illegal, and SAHRA might take legal steps against the developer;

11. Conclusions

A thorough background study and survey of the proposed development route was conducted and findings were recorded in line with SAHRA guidelines. In accordance with the recommendations above, there are no major archaeological reasons why the proposed development should not be allowed to proceed. Thus, it is recommended that the proposed development proceed on condition that the recommendation indicated above are adhered to.

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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?