



**ARCHAEOLOGICAL AND CULTURAL HERITAGE SPECIALIST REPORT FOR
THE PROPOSED KIMBERLEY PHASE 3: CONSTRUCTION OF 400KV FERRUM
– MOOKODI POWERLINE AND ASSOCIATED SUBSTATION UPGRADE
WITHIN THE NORTHERN CAPE AND NORTH WEST PROVINCES**

October 2024

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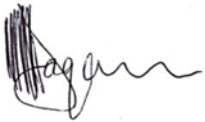
DECLARATION

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), 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.

I declare that this report has been prepared independently of any influence as may be specified by all relevant departments, institutions and organisations. I 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. I declare that there are no circumstances that may compromise our objectivity in performing such work. I 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



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EXECUTIVE SUMMARY

Introduction

At the request of Diges Group CC, Vhubvo Consultancy Cc conducted an Archaeological and Cultural Heritage Walkdown Assessment for the proposed construction and operation of the $\pm 260\text{km}$, 400kV Ferrum–Mookodi Powerline and associated Substations upgrade within Northern Cape and North West Provinces. The aim of the study is to entirely corroborate archaeological and heritage sites that were recorded during the Archaeological Assessment done by Mokakabye during the Screening Phase in 2021. Furthermore, this assessment was done to identify and document any 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 pylon. This 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 cultural 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 area over the past years. From these studies, it became clear that the landscape where the project is located is affluent of archaeological and historical sites and it covers a long span of human history.

Need of the project

National Transmission Company South Africa (NTCSA) proposes to strengthen power loads in the Northern Cape and North West Provinces. Hence, they are proposing to construct this power line. The proposed project will consist of the following:

- ✚ Construction and operation of the $\pm 260\text{km}$, 400kV powerline between Ferrum Substation and Mookodi substations.
- ✚ Upgrade of Mookodi and Ferrum substations.

Receiving environment

The proposed route transverses two district municipalities: John Taolo Gaetsewe (Northern Cape: NC), Dr Ruth Segomotsi Mompati (North West: NW), as well as five local municipalities, Joe Morolong (NC), Gamagara NC), Ga-Segonyana (NC), Naledi (NW) and Greater Taung (NW). The power line will traverse over a range of landscapes, including mountainous, flat and open plains, agricultural fields and mixed bushveld. It also transverses over streams, drainages and wetland features. (see Fig. 1). This route starts at the existing Ferrum Substation which is to be upgraded, and crosses the national road (N14), regional road R31, a few district roads between N14 and R31, and a railway line. Several mines exist close to Hotazel town, and several



settlements are near the proposed corridor. Approximately 80% of the area affected by this proposed route is rural land, and 70% of the proposed powerline route is within the Northern Strategic Transmission Corridor.

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 view 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 survey was undertaken from the 9th to the 27th of September 2024, and it was a tower specific assessment.
- The final step involved the recording and documentation of relevant archaeological resources, 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).

Research Background Studies

This geographical area is not well-known as one containing many prehistoric sites. This is most likely because research has not been extensively done before. On the SAHRIS Database, there are few indicated sites. At least five heritage projects were conducted within the greater study area. In general, the environment does provide shelter and building material for prehistoric communities. This is however limited to the hills which all seem to be too far from the proposed route.

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 observed during construction, a heritage specialist monitoring the development immediately be notified.

Survey Findings

The Archaeological and Cultural Heritage walk-down of the proposed construction and operation of the 400kV Ferrum–Mookodi Powerline and associated Substation upgrade within Northern Cape and North West



Provinces did not reveal any heritage resources at the tower locations. However, note must be taken that isolated stone tools and graves were noted in the servitude of the proposed powerline, these will not be directly affected, though accidental disturbances remain a threat to these sites, especially graves. Nevertheless, although Stone tools are almost ubiquitous in the wider region of the proposed Phase 3 Project, their unavailability is, however, not unexpected, this is mainly due to the following:

- ✚ The nature of the landscape that is traversed by the powerline is such that stone tools can be buried hidden in sand dunes and only exposed when construction resumes.

Considering the above, the recommendation in this report must be adhered to at all times. For easy reference, a table detailing the findings and recommendations have been offered on Page 46.

Recommendations

In compliance with the National Heritage Legislature, there was no observable development activities associated with the proposed project.

Recommendations are given from a heritage point of view and considering the nature of the proposed project and the cultural significance of the heritage resources in the vicinity of the proposed area. The noted tools are viewed to have a medium to low significance on a regional level. Note must be taken that stone tools are almost ubiquitous in the wider region of the proposed area, their unavailability in the proposed area is unexpected, archaeological objects are unlikely ascertainable on the surface in the area due to the soil. The Stone tools, chiefly associated with ancestors of the San and Khoekhoen, were only noted in areas where the Aeolian sands have eroded, exposing the underlying layers. Similarly, several burial grounds were noted in the proposed area. Burial sites and their contents are accorded the highest heritage accolades in South Africa, and elsewhere, principally by their relationship with human beings. Burial sites are often the focus of emotional and ethical sentiments to people. Dealing with human remains thus requires the highest ethical standards, Section 36 of the National Heritage Resources Act (3) states that 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 a formal cemetery administered by a local authority.

The developer is reminded that unavailability of archaeological materials (e.g., graves, pottery, stone tools, remnants of stone-walling, graves, etc) on the exact point of the pylon position does not mean absentee, archaeological material might be hidden underground, and as such the client is reminded to take precautions during construction.

Pre-construction education and awareness training

Prior to construction, contractors must 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.

In the event that any of the above are unearthed, construction on the affected pylon site should cease and the area be demarcated by a danger tape. Accordingly, a professional archaeologist or SAHRA officer should be contacted immediately. In the meantime, it is the responsibility of the contractor to protect the site from publicity (i.e., media) until a mutual agreement is reached. Noteworthy that any measures to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law. In the same manner, no person may exhume or collect such remains, whether of recent origin or not, without the endorsement of SAHRA.

Conclusions

A thorough background study and survey of the proposed development was conducted and findings were recorded in line with SAHRA guidelines. The proposed construction and operation of 400kv Ferrum–Mookodi Powerline and associated Substation upgrade within Northern Cape and North West Provinces can proceed on condition that recommendation laid in this report will be 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
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, 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 future generations

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



Chance Finds: 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 Archaeological and Cultural Heritage Assessment and Walk down for the proposed construction and operation of 400kv Ferrum–Mookodi Powerline and associated Substation upgrade within Northern Cape and North West Provinces. 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 construction and to advise on mitigation measures should any be affected and these will, in turn, assist the developer to ensure that their final planning are in line with the National Heritage Resource Act (NHRA), 1999 (Act 25 of 1999).

2 Nature and Need of the Proposed Project

The National Transmission Company South Africa SOC Ltd (NTCSA) a subsidiary of Eskom Holdings SOC Ltd, has to supply reliable power to meet the increasing needs of electricity users. Therefore, NTCSA must continuously maintain, construct, and upgrade its transmission powerlines and substation infrastructure. According to Eskom TDP 2010-2019, some objectives involve transmission network strengthening plans and reliability projects, ensuring the transmission system's reliability and adequacy are sustained as load demand increases. A study done for the Northern Cape and North West grid indicated that based on the anticipated growing electricity demand, there may be a risk that demand will exceed the supply. As a result, they have identified the need to strengthen the transmission system between the Ferrum, Hotazel Transmission and Mookodi Substations by constructing two 400kV transmission powerlines and upgrade substations. The advantages of the proposed transmission powerline would include:

- Avoiding current and future possible voltage collapse;
- Contributing towards a more flexible electrical network; and
- Improve the overall reliability of the electrical systems, which would benefit electricity users in the region and sustain economic growth in the two Provinces.

The scope of work proposed by NTCSA to strengthen the network entails the following:

- ❖ Construct a ± 260 km, 400kV transmission powerline from Ferrum Substation to Mookodi Substation.
- ❖ Upgrade the Mookodi Substation by installing:
 - 1 X 100MVar busbar reactor at Mookodi 400kV busbar;



- 1x400kV Mookodi feeder bay;
 - 1X400kV Line reactor at Mookodi 400kV.
- ❖ Upgrade the Ferrum Substation by installing:
- 1 X 100MVAr busbar reactor at Ferrum 400kV busbar;
 - 1x400kV Ferrum feeder bay; and
 - 1X400kV Line reactor at Ferrum 400kV.

3 Sites Location and Description

The proposed route transverses two district municipalities: John Taolo Gaetsewe (Northern Cape: NC), Dr Ruth Segomotsi Mompati (North West: NW), as well as five local municipalities, Joe Morolong (NC), Gamagara NC), Ga-Segonyana (NC), Naledi (NW) and Greater Taung (NW). The power line will traverse over a range of landscapes, including mountainous, flat and open plains, agricultural fields and mixed bushveld. It also transverses over **intermittent rivers and streams as well as** wetland features (see Fig. 1). The vegetation consists of low grassland with only a few, and mostly clumps trees. Most of the vegetation is natural and the area mainly hosts game farms. The topography is reasonably flat, but some sand dunes as well as dolerite hills are found within the landscape. This route starts at the existing Ferrum Substation and crosses the national road (N14), regional road R31, a few district roads between N14 and R31, and a railway line ending at Mookodi substation near Vryburg. Several mines exist close to Hotazel town, and several settlements are near the proposed corridor. Approximately 80% of the area affected by this proposed route is rural land, and 79% of the proposed powerline route is within the Northern Strategic Transmission Corridor.



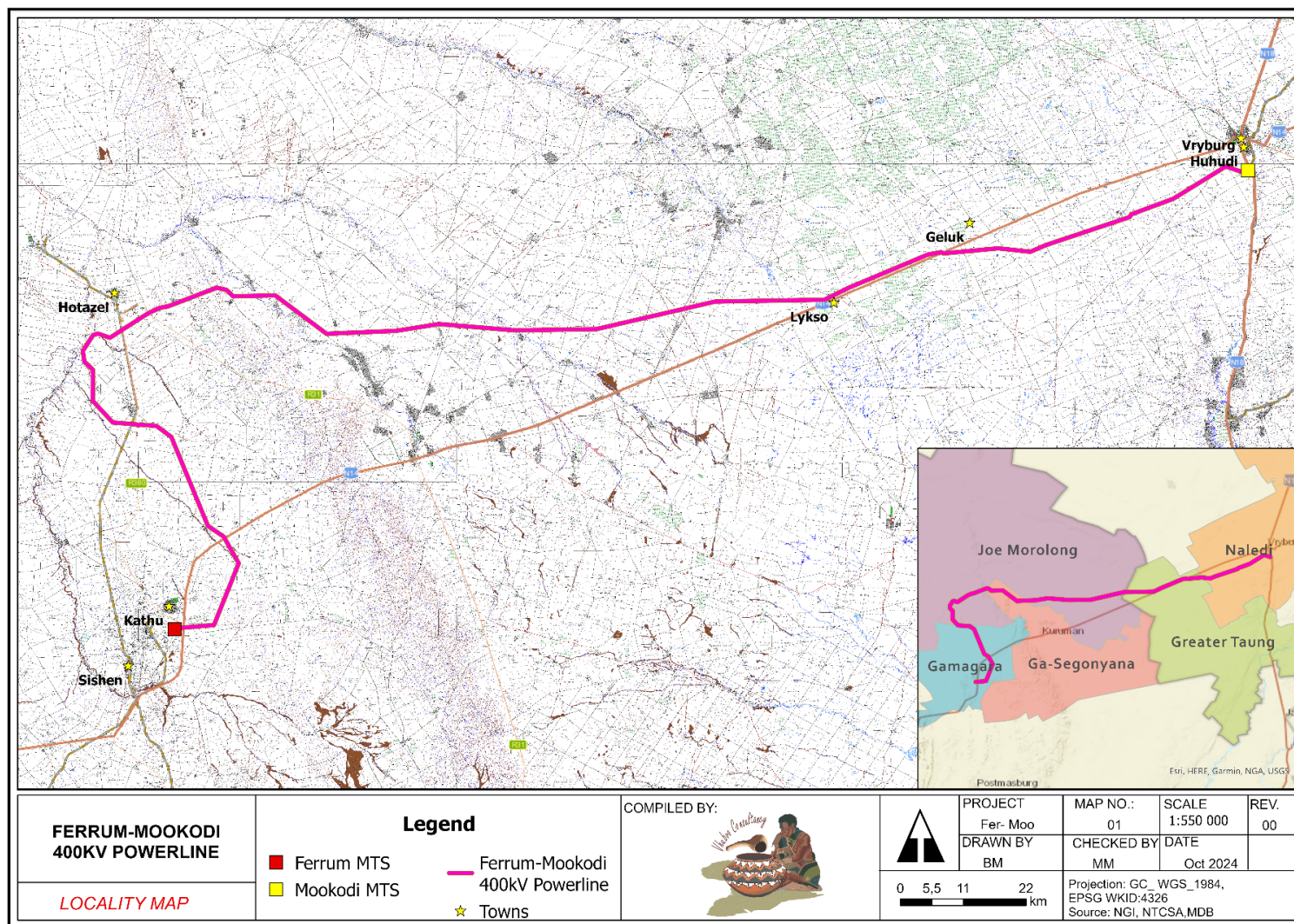


Figure 1: Locality map of the study area.



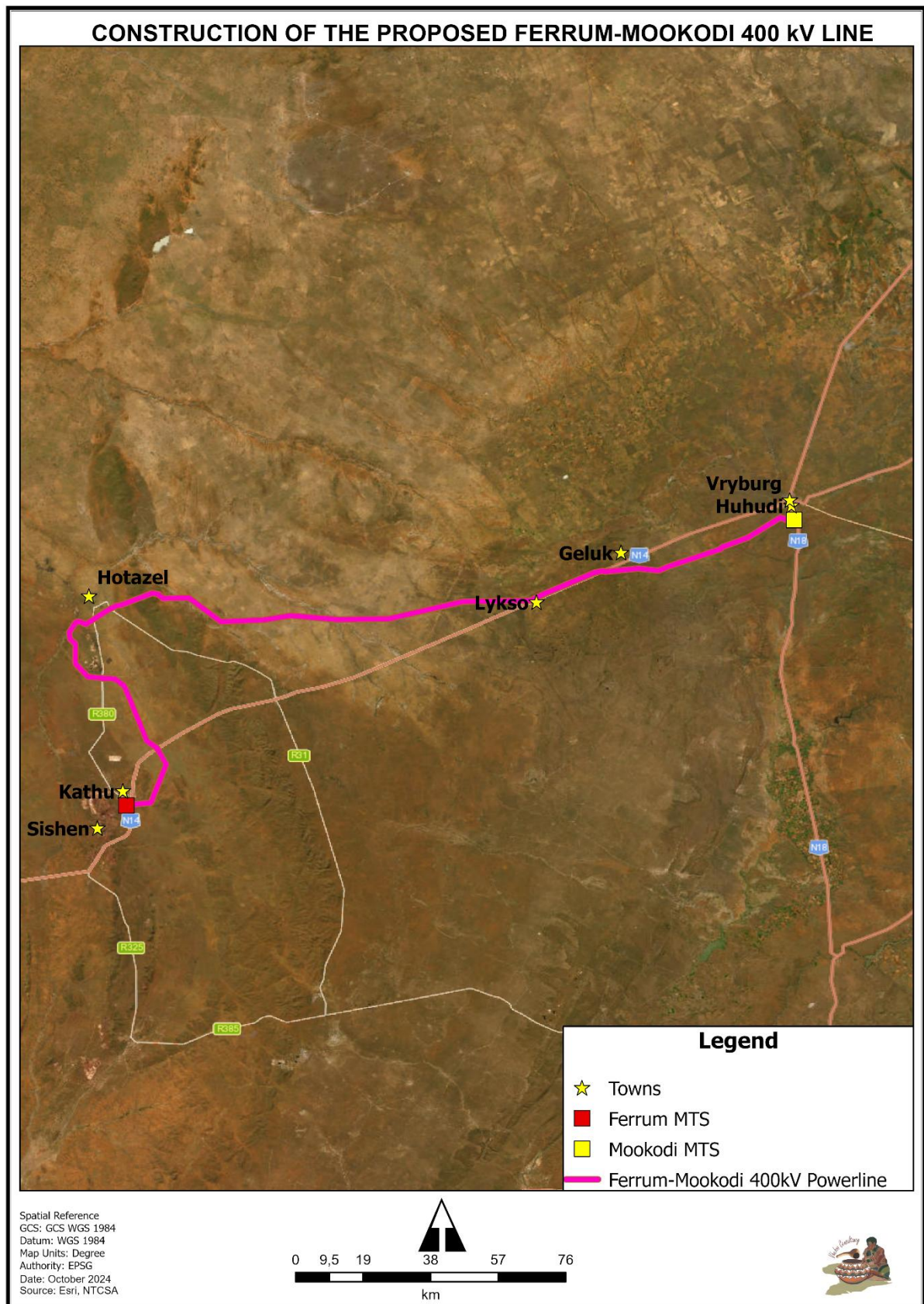


Figure 2: Google map for the area proposed for construction.



Proposed Kimberley Strengthening Phase 3 Project

Table 1: Description of the tower positions.

Tower	Description	Depiction
561-558	The proposed pylon position is located at Mookodi substation. It is just outside the substation. The area is disturbed significantly when the substation was constructed. The area is cleared exposing red Kalahari sand.	
557-546	The areas proposed for these towers are located in a Game Reserve. The areas are fairly similar and concentrated on a flat section of land and is also sand all the way through with dense vegetation.	
545-544	The area proposed for the two towers is generally flat and sandy throughout. It is characterised by scattered shrubs and pockets of grass. It is used for pastoral agriculture.	
543	The area proposed for pylon position number 543 is fairly flat. It is covered by grass with scattered shrubs. The land is used for pastoral agriculture.	



Proposed Kimberley Strengthening Phase 3 Project

Tower	Description	Depiction
542	The area proposed for this tower is reasonably flat with salty clay soil. It is characterised by thick pockets of grass and some scattered shrubs.	
541 - 537	The area proposed for these pylon positions number is fairly flat. It is covered by grass with scattered shrubs, and where it is clear there are some limestone rock outcrops.	
536-526	The area proposed for these tower positions have fairly the same conditions. The areas are fairly flat with thick pockets of grass. They are characterised by scattered trees, and in some instances green trees. In some portions changes in grass is reflective of the changes in soil type.	
525-516	The areas for these tower positions are in a stretch with fairly same conditions. They are mainly in grassland. They are few scattered trees except in portions where can bushes of shrub vegetation. The area is mainly used for pastoral agriculture.	



Proposed Kimberley Strengthening Phase 3 Project

Tower	Description	Depiction
515-513	The area proposed for these two tower positions have similar landscape characteristics. They are located after a river, and they are on a mountain with rock outcrops. They are characterised by vegetation that do well on highlands.	
512-509	The area proposed for these tower positions is on top of a mountain. The areas are characterised by some rock outcrops, and sandy soils. There are pockets of dense grass and scattered trees in most of the areas.	
507 - 505	The area for these tower positions is fairly flat with patches of grass and found on loose soils. It is located close to a gravel road.	
504 - 464	The area proposed for these tower positions is a grassland. The ground is totally covered by grass with few scattered small trees.	



Proposed Kimberley Strengthening Phase 3 Project

463-459	The areas proposed for these tower positions is fairly flat with calcrete rocks. Vegetation is scanty with some clump of grass.	
458-443	The area proposed for these tower positions are in rugged terrain. Some portions are fairly flat whereas others are gently sloping. Vegetation is sparse with slumps of grass.	
442-434	The areas proposed for these towers are fairly similar and concentrated on a flat section of land and is also sand all the way through in an open grassland.	
433-423	These towers are proposed on an area which is fairly flat and sandy, and in an open grassland with scattered shrubs along the stretch.	



Proposed Kimberley Strengthening Phase 3 Project

422-395	The areas proposed for these towers are fairly similar and concentrated on a flat section of land and is also sand all the way through.	
394-381	The proposed areas are similar in landscape and are characterised by the dominant sand soils. The topography is fairly flat to undulating. The vegetation is dominated by scattered shrubs in most sections.	
380-371	The area proposed for these tower points is within commercial farms. They are in a fairly flat landscape which is grassland throughout with some scattered shrubs.	
370 - 369	The area proposed for this tower is on the side of a river. The slope is fairly flat with dense green vegetation because of its proximity to the river.	



Proposed Kimberley Strengthening Phase 3 Project

368-364	The five towers are proposed on an area which is similar in topography. Thus, both areas are sandy with shrubs throughout. The area is also characterised by grass that is associated or is a sign of overgrazing.	
363-360	These proposed towers are located on an undulating slope with rock outcrops with shrubs. There are calcrete rocks around the proposed position.	
353-367	The area proposed for these tower positions are close to a pocket of green vegetation. The topography is fairly flat.	
352-343	The areas proposed for these towers are fairly similar and concentrated on a flat section of land and is also sand all the way through within a grassland.	



Proposed Kimberley Strengthening Phase 3 Project

342-307	The areas proposed for these towers are fairly similar and concentrated on a flat section of grassland and is also sandy all the way through. There are pans on the landscape where these proposed tower positions are located.	
306-299	The area proposed for this tower position is on a plateau. The area is devoid of trees with only pockets of grass. The area is also characterised by calcrete rocks.	
298	The area proposed for pylon position 298 is bushy. In terms of topography it is fairly flat.	
297-282	These proposed areas are similar and comprise sections which are reasonably flat, though with minor undulation. The areas are also characterised by dense shrubs.	



Proposed Kimberley Strengthening Phase 3 Project

281-260	These proposed areas are similar and comprise sections which are reasonably flat, though with minor undulation. The areas are also characterised by scattered shrubs.	
259-250	The proposed areas are similar in landscape and are characterised by scattered shrubs.	
250-234	These towers are proposed on an area which is fairly flat. The proposed tower positions are characterised by dense vegetation throughout.	
233-205	The areas proposed for these towers are fairly similar and concentrated on a flat section of land with fairly dense vegetation all the way through.	



Proposed Kimberley Strengthening Phase 3 Project

206-203	The area proposed for these pylon positions are dominated by impenetrable black thorns. In terms of topography, they are found on a highland with rock outcrops and sand gritty soils in some sections. There is very little to no undergrowth.	
201-195	The area proposed for these tower points is bushy dominated by black thorns. The topography is undulating with red Kalahari soils.	
194-188	The area proposed for these tower positions is between two mountains. The topography is undulating. The area is rocky throughout with scattered trees.	
187-186	The area proposed for the two pylon positions is in a dense bush of shrubs. There are also black thorns. The topography is fairly flat and is rocky.	



Proposed Kimberley Strengthening Phase 3 Project

185-182	The areas proposed for these towers are fairly similar and concentrated on a flat to undulating sections of land. They are also characterised by sand gritty soils with fairly dense vegetation all the way through.	
181-180	The proposed pylon position for the two towers is located in an area that is fairly flat. The area is rocky, with sandy gritty soils and scant vegetation. It is located at the edge of the village.	
179-170	The proposed pylon positions are located in the village. They are located in an area that is fairly flat with red Kalahari sands. The areas are devoid of vegetation.	
135-130	The area proposed for these towers is in a fairly flat landscape. It is characterised by dense vegetation and dense grass cover throughout.	



Proposed Kimberley Strengthening Phase 3 Project

112-90	The proposed tower positions are located in an area characterised by flat to undulating topography. The vegetation is fairly dense with thick grass cover on red Kalahari sands.	
89-71	The area proposed for these tower positions are located in active farming areas. The farms are used for pastoral agriculture. The land is fairly flat to undulating with dense vegetation and thick grass on red Kalahari sands.	
70-57	These tower positions are located in the same topography. The area are characterised by scattered trees, and some grass. Some sections are bare due to overgrazing.	
56-50	These towers are proposed on a similar section of terrain which is fairly flat with scattered shrubs and fairly dense grass. There are also thorny bushes.	



Proposed Kimberley Strengthening Phase 3 Project

49	The area proposed for the pylon position is close to N14 Road. The topography is fairly flat with scattered shrubs and dense thick grass.	
48-38	The areas proposed for these towers are fairly similar and concentrated on a flat section of land. The area is characterised by sandy soils with scattered shrubs and pockets of grass.	
37-27	These towers are proposed on an area which is fairly flat and sandy. The areas fall within plots where active farming is taking place.	
26-16	The towers are proposed on an area which is similar in topography. Thus, all the areas are sandy with shrubs throughout. The areas are within farming plots hence disturbed.	



Proposed Kimberley Strengthening Phase 3 Project

15-9	The area proposed for these towers is characterised by fairly flat topography, but slightly undulating in some portions. The vegetation is characterised by scattered bushes and crumps of grass. The proposed areas are disturbed since they fall within agricultural plots.	
8-7	The area proposed for these two towers is characterised by bare grounds. It is devoid of vegetation. The topography is fairly flat with compact soils.	
6-3	The area proposed for these tower points is within agricultural plots where there is active farming. The areas are fairly flat with scattered shrubs and dense grass cover.	
2	The proposed pylon position is located in area that is fairly flat. The area is bare since vegetation was burnt.	



1	The area proposed for the first tower position is just outside the substation. The area is disturbed when the substation was constructed. The topography is fairly flat with no trees, only dense grass cover.	
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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 and operation of 400kv Ferrum–Mookodi Powerline and associated Substation upgrade and these will, in turn, assist the developer in ensuring proper conservation measures 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 and operation;
- 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.



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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 conducted from the 9th to the 27th of September 2024 by an archaeologist from Vhubvo. The map below shows the track

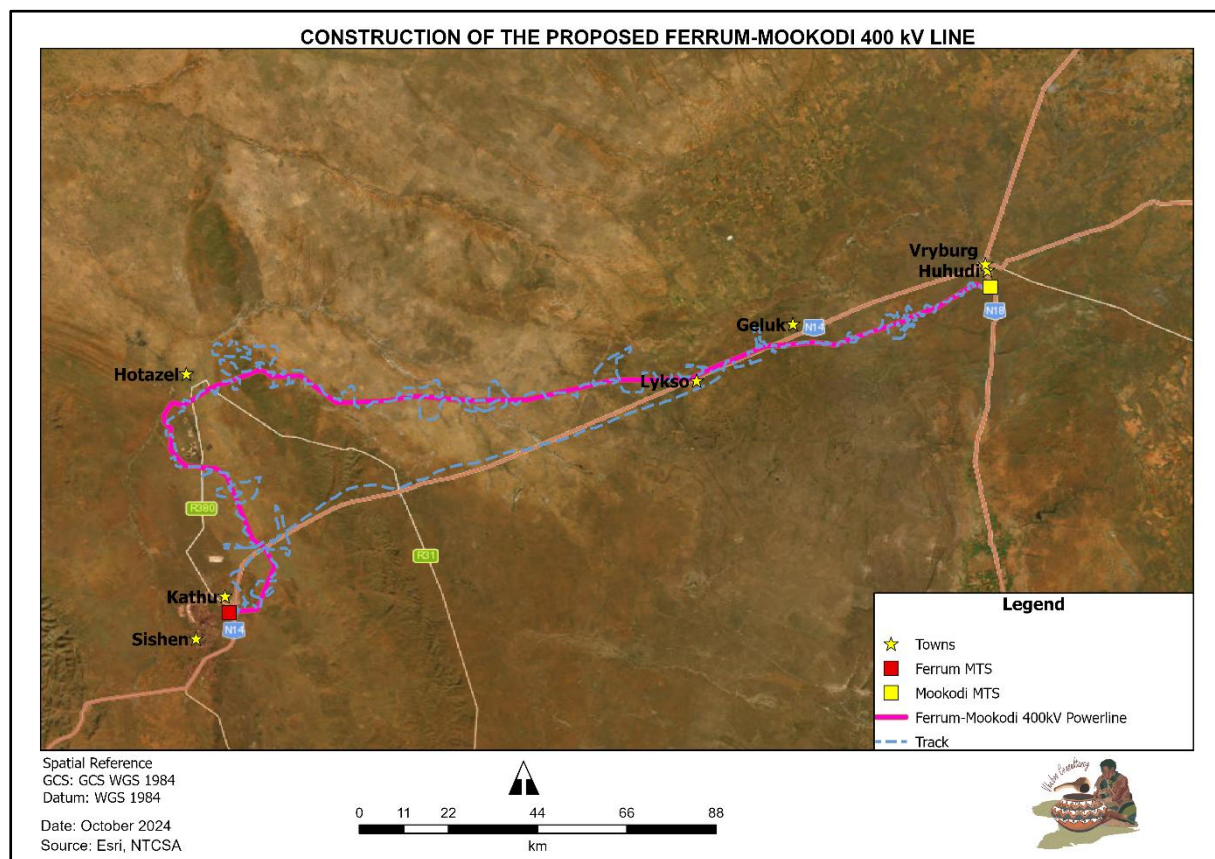


Figure 3: Track showing areas investigated

5.1.3 Documentation

The general project area was documented by taking photographs using a 14.1 mega-pixel Sony Cybershort Digital Camera. Recording findings was done by 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 once construction resume. As a result, should any archaeological/ or grave site be observed during construction stage, a heritage specialist monitoring the development must immediately be notified. In the meantime, no further disturbance may be made until such time as the heritage specialist has been able to make an assessment of the find in question. It is the responsibility of the contractor to protect the site from publicity (i.e., media) until all assessments are made.

5.3 Site Sensitivity Verification

Sub regulation 16(1)(v) of the Environmental Impact Assessment Regulations (EIA), Government Notice R326 of 2017 (as amended) indicates that an application for Environmental Authorisation must be accompanied by a report generated by the national web based environmental screening tool. This tool is a geospatial web-enabled application providing screening of sites for environmental sensitivity and the placement of proposed developments in relation to the impact avoidance hierarchy. In addition, the report recommends the specialist studies that must be undertaken and submitted with the application. The Screening Tool Report, for the construction and operation of 400kv Ferrum–Mookodi Powerline and associated Substation upgrade generated by Vhubvo Consultancy rated the sensitivity of archaeological and cultural heritage theme as very high due to a Grade I site within 5km of the servitude. Refer to Figures 4. It must however be noted that the graded site (I) is in Vryburg which is more than 10km away from the proposed line. The construction and operation of the proposed line will therefore result in insignificant aesthetics impacts and no site destruction. Furthermore, no Grade II, IIIA, IIIB sites or significant stone tools were noted close to the servitude. This has also been confirmed by the several studies done in the area which have not recorded any materials or sites. Based on this, the very high sensitivity is disputed, rather a low sensitivity is assigned to the powerline servitude and substation footprints.



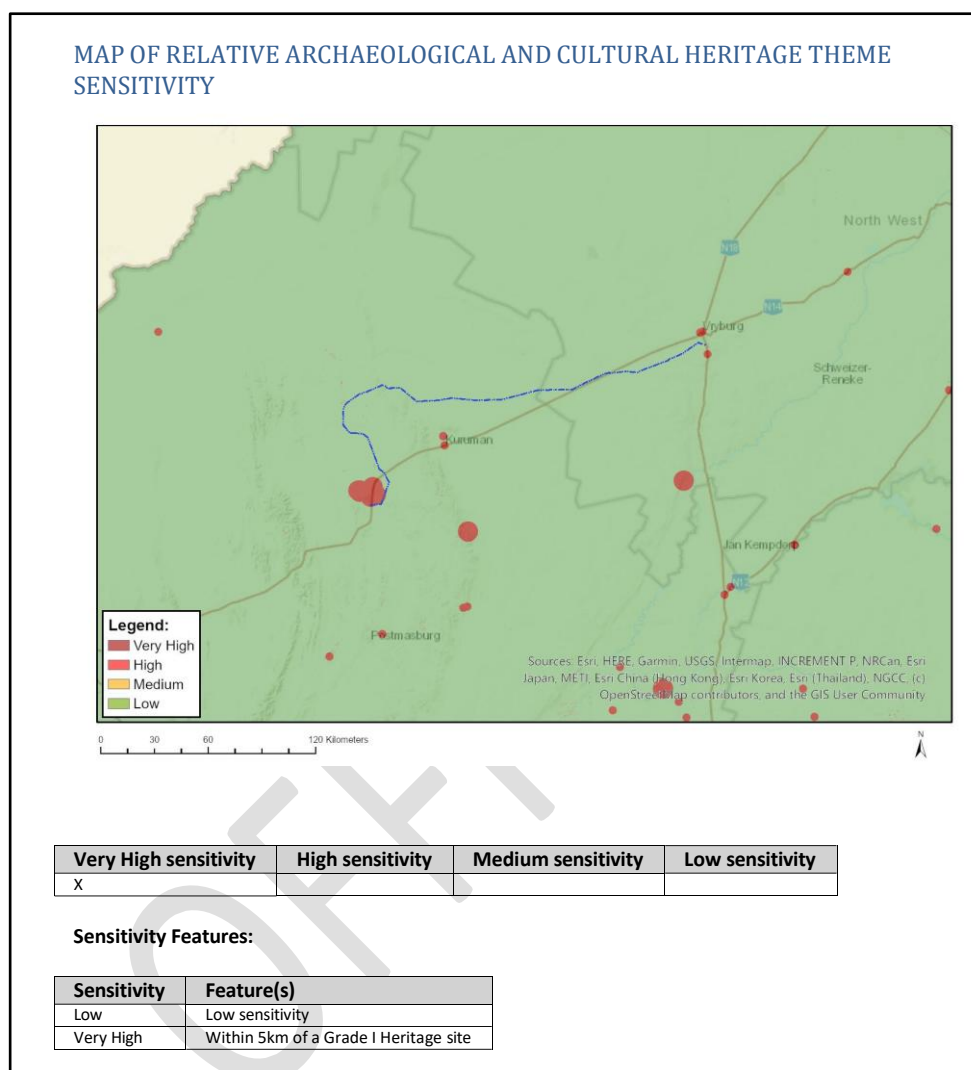


Figure 4: Very high sensitivity regarding the powerline.

Though a low sensitivity has been assigned, an Impact Assessment has been done as per section 38(3) and 38(8) of the National Heritage Resources Act, Act 25 of 1999 (NHRA) as required by section 24(4)b(iii) of NEMA. The summary of the verification is indicated in the Table below.

Table 2: Sensitivity verification.

Aspect	Screening tool sensitivity	Verified sensitivity	Outcome statement	Relevant section
Archaeology	Very High	Low	Archaeological Impact Assessment	Section 38(3) and 38(8) of NHRA

6 Applicable Heritage Legislation

Several legislations provide the legal basis for the protection and preservation of both cultural and natural resources. These include the Tourism Act (No. 72 of 1993); Cultural Institution Act (No.



119 of 1998). However, there are two legislations which are most relevant regarding the conduction of Phase 1 Heritage Impact Assessment, and these are the following:

- National Heritage Resources Act (NHRA), Act No. 25 of 1999); and
- National Environmental Management Act (NEMA), Act No. 107 of 1998.

A Phase 1 HIA is an obligatory for development in South Africa as prescribed by SAHRA and stipulated by legislation. The overall purpose of heritage specialist input is to:

- Identify any heritage resources;
- Evaluate the nature and degree of significance of such resources;
- Assess the negative and positive impact of the development on these resources; and
- Propose recommendations for the appropriate heritage management of these impacts.

Other sections of the National Heritage Resource Act with direct relevance to the Heritage Assessment 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.

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 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 cultural significance*
- (e) Geological sites of scientific or cultural importance*



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(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 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).*

Human remains older than 60 years are protected by the National Heritage Resources Act, with reference to Section 36. Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act), as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36[5]) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in this age category, located inside a formal cemetery administrated by a local authority, require the same authorisation as set out for graves younger than 60 years, in addition to SAHRA authorisation. If the grave is not situated inside a formal cemetery, but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws, set by the cemetery authority, must be adhered to.

Human remains that are less than 60 years old are protected under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925), as well as the Human Tissues Act



(Act 65 of 1983) and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning; or in some cases, the MEC for Housing and Welfare. Authorisation for exhumation and reinternment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. To handle and transport human remains, the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

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 3: 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



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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 4: Rating and evaluating criteria of impact assessment.

The Status of The Impact	
The impacts are assessed as either having a: negative effect (i.e., at a 'cost' to the environment), positive effect (i.e., a 'benefit' to the environment), or Neutral effect on the environment.	
Extent of the Impact (1) Site (site only), (2) Local (site boundary and immediate surrounds), (3) Regional (within the three local municipalities), (4) National, or (5) International.	
Duration of the Impact The length that the impact will last for is described as either: (1) Immediate (<1 year) (2) Short term (1-5 years), (3) Medium term (5-15 years), (4) Long term (ceases after the operational life span of the project), (5) Permanent.	
Magnitude of the Impact The intensity or severity of the impacts is indicated as either: (0) None, (2) Minor, (4) Low, (6) Moderate (environmental functions altered but continue), (8) High (environmental functions temporarily cease), or (10) Very high / Unsure (environmental functions permanently cease).	
Probability of Occurrence The likelihood of the impact actually occurring is indicated as either: (0) None (the impact will not occur), (1) Improbable (probability very low due to design or experience) (2) Low probability (unlikely to occur),	



- (3) Medium probability (distinct probability that the impact will occur),
- (4) High probability (most likely to occur), or
- (5) Definite.

Reversibility

The degree to which an impact is reversible:

- (1) Completely reversible
- (2) Partly reversible
- (3) Barely reversible
- (4) Irreversible

Significance of the Impact

This rating is formulated by adding the sum of the numbers assigned to extent (E), duration. (D) and magnitude (M) and multiplying this sum by the probability (P) of the impact.

$$S=(E+D+M) P$$

The significance ratings are given below:

Table 5: Legend for Impact Significance

	Significance	Description of Significance
(<30)	Low	The activity will have a low impact in the environment. This impact would not have a direct influence on the decision to develop in the area.
(30-60)	Medium	Medium Impact – the activity will have a medium impact on the environment. The impact could influence the decision to develop in the area unless it is effectively mitigated.
(>60)	High	The activity will have a high impact on the environment. The impact must have an influence on the decision process to develop in the area.

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

The Northern Cape Province and its neighbouring North West Province of South Africa provided the first scientific evidence for the centrality of Africa for hominin evolution. In the late 1800s, before the fossil hominin finds at Olduvai Gorge in East Africa or the Cradle of Humankind sites in Gauteng Province, alluvial diamond diggers found extensive assemblages of Earlier Stone Age



(ESA) artefacts in the Vaal River gravels at localities such as Klipdrift (Canteen Kopje) in the Northern Cape (Johnson and Young 1906). World-famous prehistorians visited the area and described the archaeological findings (e.g., Péringuey 1911; Goodwin 1928; Goodwin and van Riet Lowe 1929; Breuil 1945; Mitchell 1998; Kunneriath and Gaillard 2010).

Stone Age

The remnants of Stone Age hunter-gatherer's activities are customarily divided into the Early, Middle and Late Stone Age. MSA period is the representation of the Stone Age era in the regional North West province (Pistorius 2006, 2007a; Van Vollenhoven & Pelsner 2008; Kruger 2012; Matenga 2017). Concisely, the MSA dates from approximately 300 000 years ago (kya) to 20 kya. The era is defined by the use of good quality raw material and bone tools; ochre, beads and pendants appear in the archaeological record at this time (Clark, 1982; Deacon & Deacon, 1999). Most archaeological material in the Northern Cape are found near water sources such as rivers, pans and springs, as well as on hills and in rock shelters. These sites usually comprise of open sites where the majority of evidence of human occupation is scatters of stone tools (Parsons 2003).

The most impressive archaeological sites in the Northern Cape Province is Wonderwerk Cave located approximately 100km away from the Ferrum. The cave is an enormous dolomitic cavity that has yielded archaeological deposits covering the Earlier, Middle, and Later Stone Age remains (ESA, MSA, LSA, respectively), spanning the past *ca.* 2.0 Ma years (Humphreys and Thackeray 1983; Beaumont and Vogel 2006; Matmon *et al.* 2012; Chazan and Horwitz 2015). The lengthy cultural sequence preserved at Wonderwerk has provided suitable contexts for dating, and the good preservation of faunal and botanical remains which offer excellent representations for paleo environmental studies, making the site an archaeological and paleontological locality of global significance for studying human evolution.

The Fauresmith industry characterised by prepared cores, long, narrow flake blades, convergent points and small, broad hand axes (Mitchell 2002) belonging to the MSA era is also found on the broader region of Northern Cape. These artefacts dating to 276 00 –510 000 BP were also found at Wonderwerk. Associated with the MSA materials were several incised stone slabs, most with curved parallel lines. Pieces of haematite were also found. Due to significantly drier conditions, the cave was abandoned between 70 000 and 12 500 BP during which much of the region was abandoned and settlement only occurred at a few sites near permanent water sources (Beaumont & Vogel 2006).



The earlier LSA industry of the region forms part of the Oakhurst industry, characterised by rare, retouched artefacts, most of which are large scrapers that are oblong with retouch on the side. The predominant raw materials are banded ironstone and dolomite. Very few adzes and blades are found, while backed artefacts and bone tools are absent. Ostrich eggshell beads and fragments are also found (Humphreys & Thackeray 1983). At Wonderwerk, Oakhurst assemblages were dated to 8000 –10500 BP (Beaumont & Vogel 2006). Following after was the Wilton industry, distinguished by the use of various raw materials including banded iron stone, chert, chalcedony, jasper and quartz. The main retouched tools are elongated scrapers with repaired on the end and backed artefacts such as segments and blades. Other repaired or renovated tools include adzes, unifacial points, borers and notched artefacts. At other sites, bifacial points and bifacial tanged and barbed arrowheads are found.

At Wonderwerk, a few bone points have been found. Ostrich eggshell beads, pendants and decorated fragments, as well as stone rings were found (Humphreys & Thackeray 1983). Pottery made its appearance in the region by approximately 1400 BP and at Wonderwerk, Ceramic Later Stone Age layers have been dated to 900 –2000 BP (Humphreys & Thackeray 1983; Beaumont & Vogel 2006). Two discrete, contemporary stone tool industries are associated with pottery remains in the Northern Cape: Swartkop and Doornfontein (Beaumont et al.1995). Swartkop is a Wilton industry characterised by circular blades, a high proportion of backed blades, coarse undecorated pottery sherds that commonly contain grass temper, and a few iron items. It seems scrapers were favoured over blades on the Ghaap plateau (Humphreys & Thackeray 1983). These sites are usually found near water sources, such as pans and springs, or on the sides of low hills. Stone circles and ovals are sometimes also found and may represent the bases of dwellings. A late phase of this industry can be linked with the /XamSan who lived in the Karoo. Several Stone Age sites are known for the area surrounding Kuruman as well as along the Kuruman River (Humphreys & Thackeray, 1983; Beaumont & Morris, 1990; Parsons, 2003). Some of these sites contain rock engravings as well, such as Nchwaneng and Tsineng (Beaumont & Morris, 1990; Morris, 1988, 2002, 2003).

Iron Age

It is believed by Schapera (1962:6) that the Kgalagadi people, who are thought to have originated from Great-Lakes of East-Africa were the first group of the Tswana people to have encountered the San in the Northern Cape and North West provinces (Levitas 1983). However, Breutz (1989:1)



argues that it was stated in oral tradition 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 1952). It was indicated by Breutz (1989) and Levitas (1983) that these groups arrived between 1200 and 1350.

Pilanesberg is a noticeable igneous massif in the North West Province. This mountainous area provided building stones, cultivatable soil, water and protection for Iron Age farmers in the past. Circular stone-walls marking Late Iron Age settlements found throughout the area belong mostly to the Group II (refer to Taylor 1979). The settlement belonging to this group is said to resemble a “sunflower” which is basically a representation of the Central Cattle Pattern (Huffman 1982). Group II settlement stretches across the hilly areas of Gauteng west towards Zeerust (Boeyens 1998, 2000; Huffman 1986; Mason 1986; Pistorius 1992; Taylor 1979,1984) and the Pilanesberg appears to form the northern limit. Some Group II settlements were vast aggregations housing thousands of people, such as Vlakfontein west of Sun City. These sites date back to the 18th century to the beginning of the Historic period and were inhabited by the Western Sotho-Tswana, such as the BaHurutshe and BaKwena.

Early History

Upon the arrival of the white settlers -c. AD 1650s-in this part of the country majority of things changed for the indigenous inhabitants of the land. The settlers were largely self-sufficient, relying on cattle/sheep farming and also hunting. Within few years of occupying the land, towns were established and farming remains the most dominant economy. From 1800 AD the archaeological record also reflects the development of a complex colonial frontier when precolonial social formations were considerably disrupted and there is an increasing 'fabric heavy' imprint of built structures, ash-heaps, and so on. The copper mines of Namaqualand and the diamond rush to the Kimberley area resulted in industrial archaeological landscapes in those areas which herald the modern era in South African history. All archaeological traces in the Northern Cape that are greater than 100 years old are automatically protected by the South African Heritage Resources Act, while some are formally protected by declaration as either Provincial Heritage Sites (e.g. Wildebeest Kuil and Nooitgedacht) or National Heritage Sites (e.g. Wonderwerk Cave).



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

This report emancipated from the Phase I Archaeological study (van Schalkwyk, 2012) undertaken during the previous Environmental Impact Assessment (EIA). Accordingly, the study done during screening by Mokakabye (2021) identified Late Iron Age/ historical site as well as two grave yards on the servitudes of the area proposed Kimberley Strengthening Phase 3 Project between Ferrum Substation, Hotazel and Mookodi substations. Nevertheless, considering that the area was surveyed on an overview basis, since the exact pylon positions had not been finalised, it was recommended that a walkdown of the final selected points be completed.

The Archaeological and Cultural Heritage walk-down and assessment of the construction and operational Kimberley Strengthening Phase 3 Project between Ferrum Substation and Mookodi substations did not reveal any heritage resources on the area proposed for the pylon positions. However, note must be taken that isolated Stone tools and graves were noted in the servitudes of the proposed powerline. The noted tools were found in secondary positions, with no provenance and were graded as of Medium-Low value. Stone tools are almost ubiquitous in the wider region of the area. The Stone tools, chiefly associated with ancestors of the San and Khoekhoen were only noted in area where the Aeolian sands have eroded, exposing the underlying layers. In addition, burial grounds were also documented, however these were located away from the proposed Pylon position. Note must be taken that, irrespective of their significance, these resources are protected from any form of alteration or demolition without a permit by the National Heritage Resources Act (No 25 of 1999). The recommendation mentioned below should be



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considered with responsiveness, since they are meant to protect and conserve archaeological and heritage materials.

Table 6: Attributes of noted materials and respective significance.

Description	Coordinates	Significance	Mitigation
A solitary grave was noted approximately 100m from tower 507, the burial site is fenced, and four large granite stones used as fence line posts. The grave has an inscribed tombstone. The site shows signs of regular visitation as evidenced by the state and condition of the burial site.	27°05'30.00"S 24°32'6.00"E	High	An educational programme to construction workers is essential to avoid accidental damage. In addition, NTCSA must take note of the position and ensure that no negative impact take place during construction. A danger tape around the site is recommended.
A burial site with more than 33 graves including infant graves were noted about 110m from the tower 507. This burial site is not fenced and is overrun by vegetation. The site has one grave marked by cement plastered headstones while the other graves are marked by stone cairns.	27°05'31.00"S 24°32'5.00"E	High	An educational programme to construction workers is essential to avoid accidental damage. In addition, NTCSA must take note of the position and ensure that no negative impact take place during construction. A danger tape around the site is recommended.
The site is a community cemetery, the burial site is fenced, the graves are	27°14'23.81"S 23°15'21.59"E	High	An educational programme to construction workers is essential to avoid accidental



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Description	Coordinates	Significance	Mitigation
under acacia trees which are scattered across the burial site. Most of the graves are marked by inscribed tombstone. The site shows signs of regular visitation as evidenced by the state and condition of the burial site.			damage. In addition, NTCSA must take note of the position and ensure that no negative impact take place during construction. A danger tape around the site is recommended.
The stone cairns were found at the edge of a wetland near tower 437.	27°08'53.66"S 24°13'40.44"E	Medium-Low	None required
The cores were found in an open field, they are out of context.	27°09'6.48"S 24°13'11.35"E	Low	None
The stone tools were found on a rocky outcrop.	27°09'1.84"S 24°13'12.97"E	Low	None
The two flakes were found on Tower point 466. The tower is close to a pan, and it's possible that the stone tools came as a result of erosion, and hence out of context.	27°07'57.50"S 24°21'5.01"E	Low	None
The blade was found isolated close to a pan which shows that it was brought by erosion.	27°12'51.00"S 24°03'1.24"E	Low	None
Late Iron Age Tswana pottery with surface finish red ochre	27°11'54.56"S 23°08'18.72"E	Medium-Low	An ECO must monitor construction activities on tower position 199-203



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The location of the finding in relation to the pylons and servitude are shown in the maps below.



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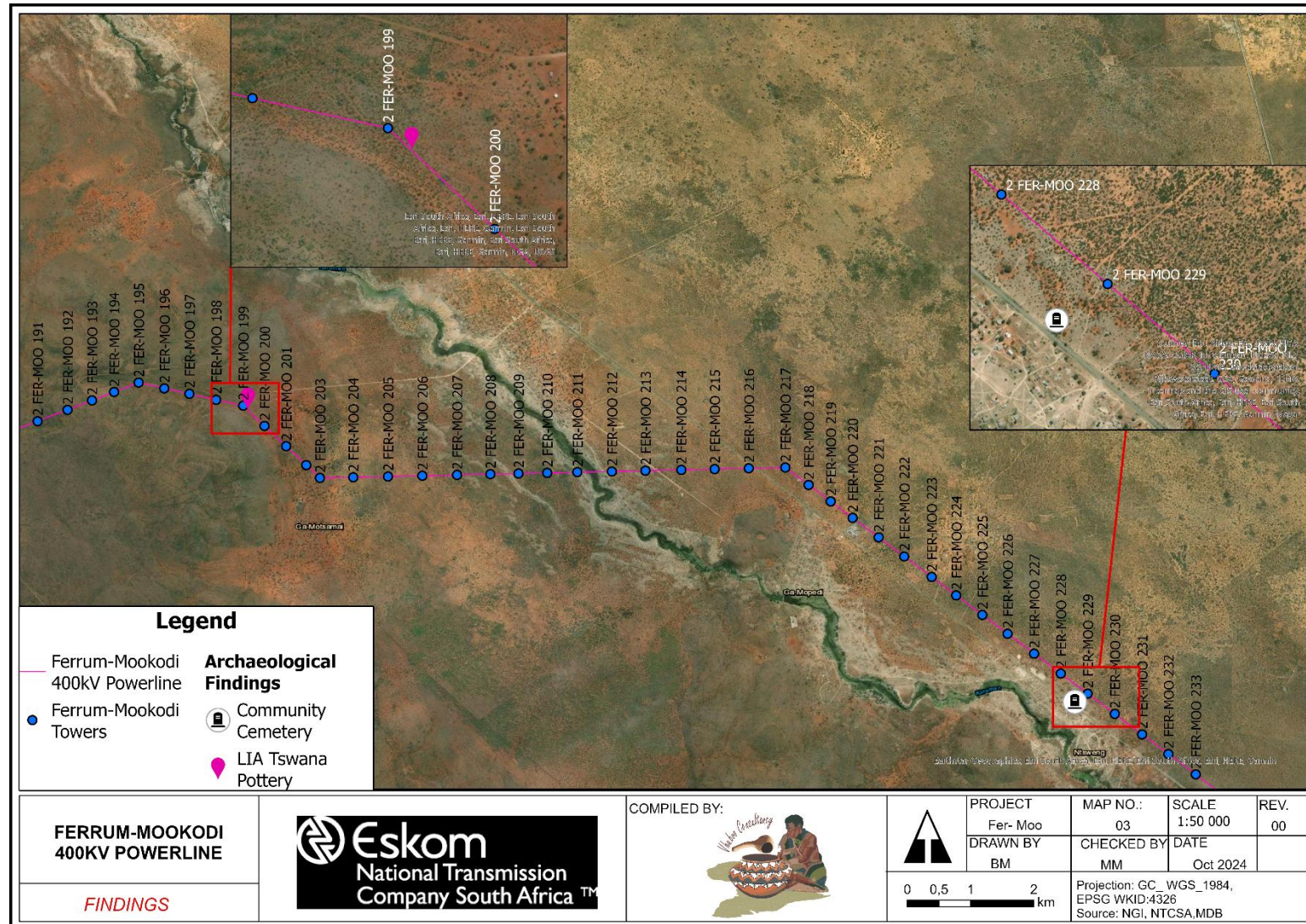


Figure 5: Location of the cemetery and pottery in relation to the pylons



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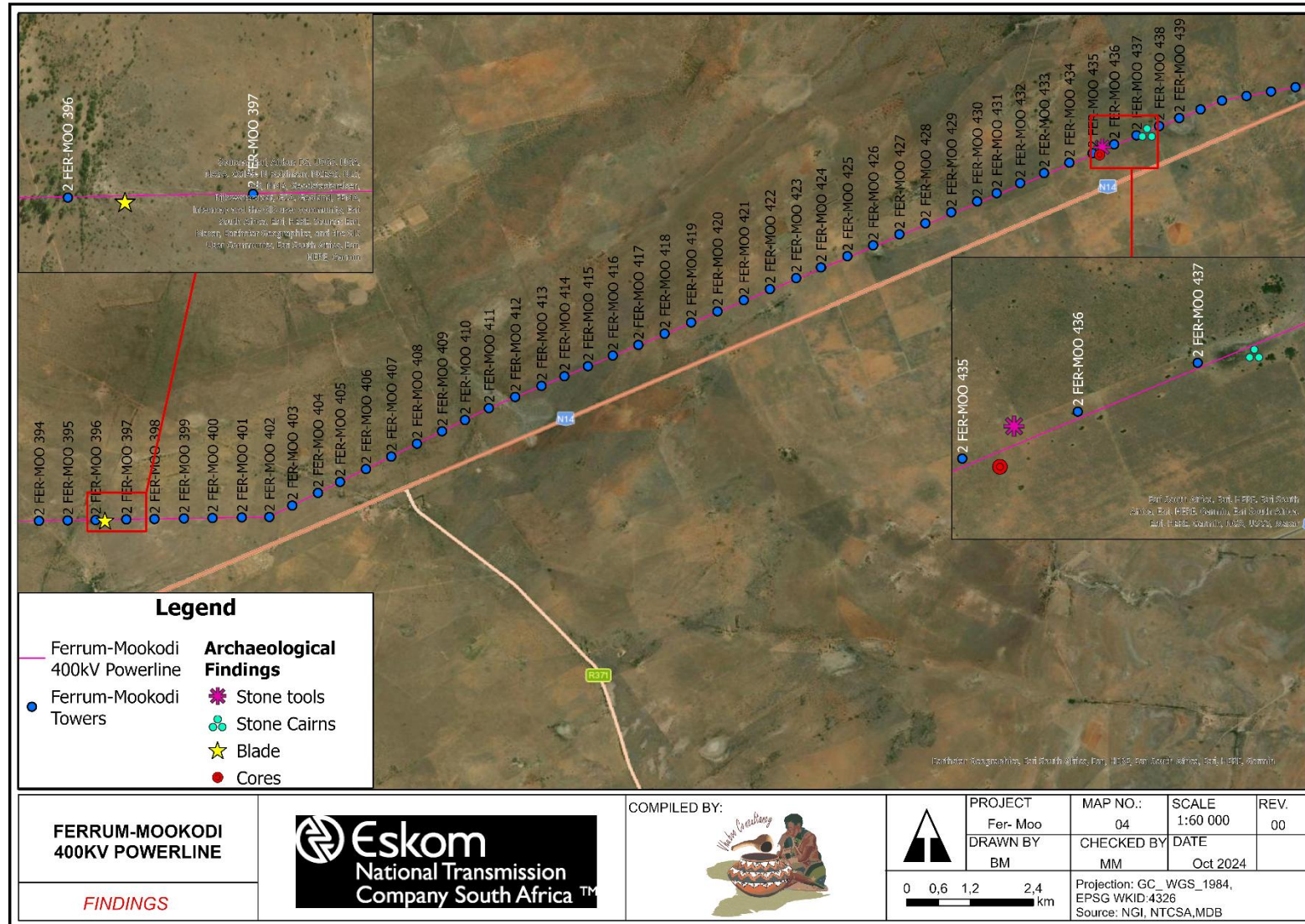


Figure 6: Location of the stone tools and cairns, blade and cores in relation to the pylons



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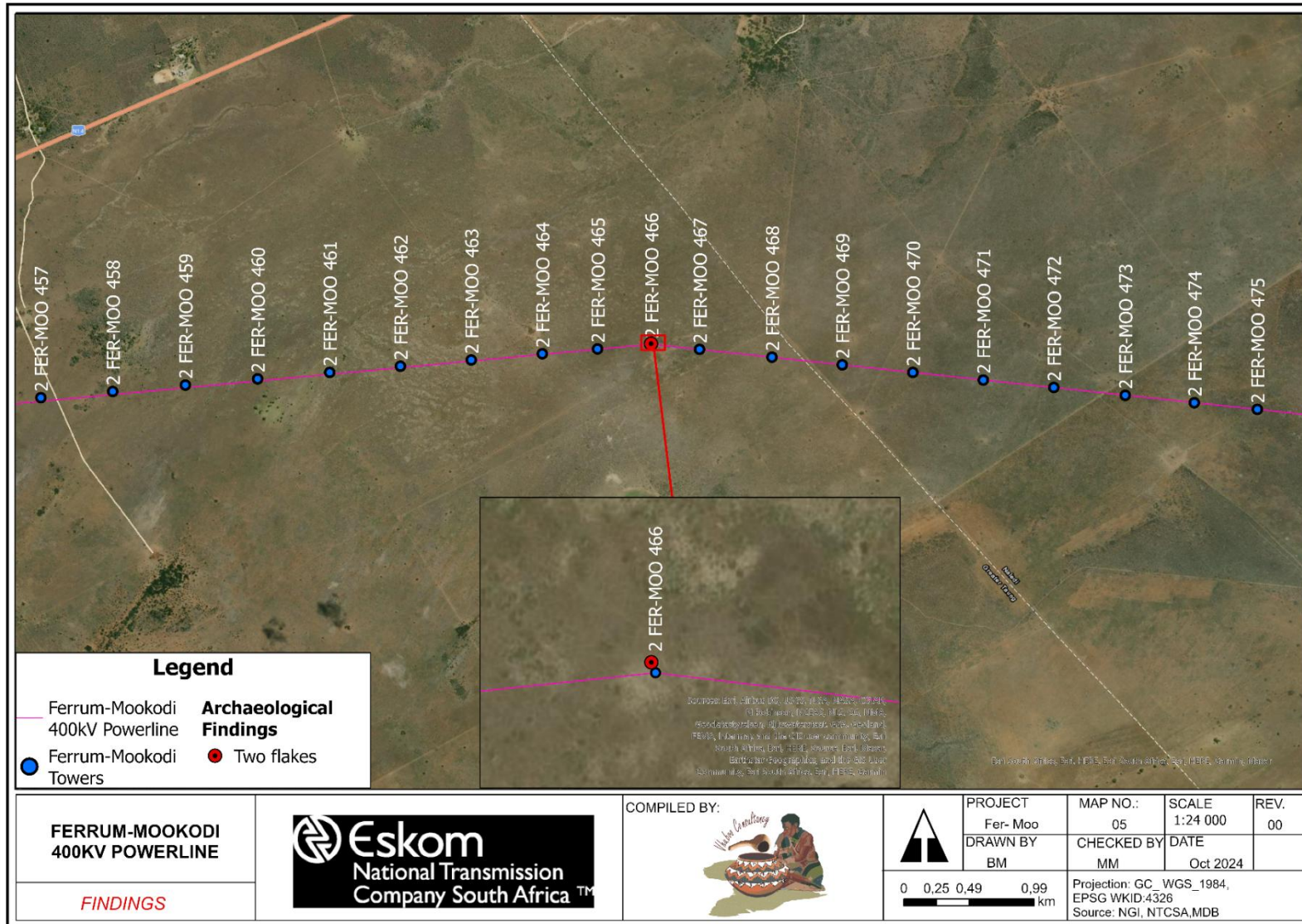


Figure 7: Location of the two flakes in relation to the pylons



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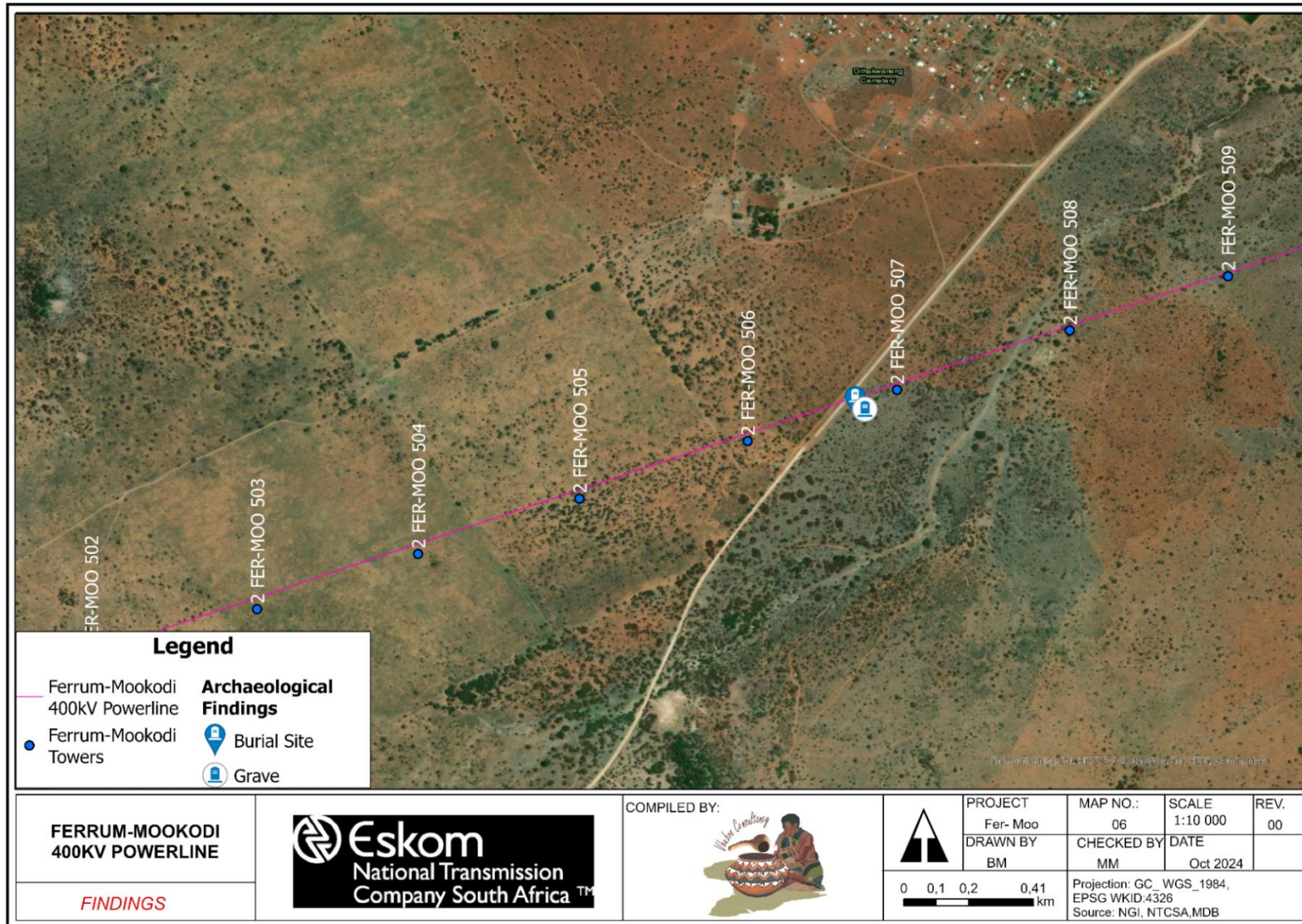


Figure 8: Location of the burial site and grave in relation to the pylons



Portrait of Documented Stone Implements and other Heritage Resource



Figure 9: View of an isolated grave site noted approximately 100m of tower 507.



Figure 10: View of the community cemetery noted approximately 130m of tower point 229.



Figure 11: View of graves site with more than 33 graves nearby tower 507.



Figure 12: View of stone tools found adjacent to the river nearby tower point 184.



Figure 13: View of the stone cairns noted on the buffer of the powerline.



Figure 14: View of some of the isolated tools noted in the proposed area.



Fig 15: View of some of the Late Stone Age tools noted in the servitudes of the area proposed for powerline.



Figure 16: View of Middle Stone Age tools noted in the buffer of the area proposed for powerline.



Figure 17: View of the pot sheards found in the servitudes.

9.1 Impact Assessment

Several resources were recorded in the Project area. Based on the current layout, the recorded sites will not be directly impacted. Impacts on the noted resources without mitigation will be permanent and negative and occur during the construction activities. No impacts are anticipated for the operation or decommissioning phases. Any additional effects on subsurface heritage resources can be successfully mitigated by implementing a Chance Find Procedure. With the implementation of the recommended mitigation measures, the impacts of the project on heritage resources are acceptable. Cumulative impacts are an effect caused by the proposed action that results from the incremental impact of an action when added to other past, present, or reasonably foreseeable future actions. The importance of identifying and assessing cumulative impacts is that the whole is greater than the sum of its parts. Sites outside the surveyed area would suffer a major cumulative negative impact if the impact of the proposed powerline development were permitted to extend beyond the surveyed area. Stamping by construction vehicles, in particular, at the site has a substantial cumulative effect that requires attention. Heavy construction equipment must be closely monitored to ensure that they do not move outside of authorized areas. Currently, there are no anticipated significant cumulative impacts beyond those already taken into account in the



impact assessment. The graves identified in the archaeological resources are localized, and tower placement can be altered to avoid the graves.

9.2 Anticipated impact rating

The following ratings are for archaeological and cultural heritage sites known to exist in the proposed area, and include burial grounds, stone, Iron Age, historical era materials, and built environment. Note that these impacts are assessed as per Table 2.

Construction Phase

The construction phase will involve the removal of topsoil and vegetation as well as establishment of infrastructure. These activities will have a negative and irreversible impact on the landscape. Impacts include destruction or partial destruction of the area, and this may accidentally unearth archaeological materials.

Operation Phase

No impacts are expected during the operation phase.

Decommissioning Phase

No impacts are expected during the decommissioning phase.

Table 7: Anticipated impact rating on graves.

Issue	Management Measures	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Graves	No	Negative	1	5	10	4	High
	Yes	Negative	1	5	4	1	Low
Management Actions	- In line with the NHRA, a 30m buffer must be established. - Before construction, contractors should be trained to identify and protect archaeological remains that may be discovered during construction.						

Table 8: Anticipated impact rating on stone tools.

Issue	Management Measures	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Stone Tools	No	Negative	3	5	4	3	Medium
	Yes	Negative	2	5	3	2	Low
Management Actions	- NTCSA must take note of the site and ensure that the area is demarcated on the day of construction. - Before construction, contractors should be trained to identify and protect archaeological remains that may be discovered during construction.						



10 Recommendations

In compliance with the National Heritage Legislature, there was no observable development activities associated with the proposed project.

The developer is reminded that archaeological materials (e.g., pottery, stone tools, remnants of stone-walling, graves, etc) might be hidden underground, and only exposed once construction began, as such the client is reminded to take precautions during construction.

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.

In the event that any of the above are unearthed, construction on the affected pylon site should cease and the area be demarcated by a danger tape. Accordingly, a professional archaeologist or SAHRA officer should be contacted immediately. In the meantime, it is the responsibility of the contractor to protect the site from publicity (i.e., media) until a mutual agreement is reached. Noteworthy that any measures to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law. In the same manner, no person may exhume or collect such remains, whether of recent origin or not, without the endorsement of SAHRA.

11 Conclusions

Although there was no archaeological site documented in the area proposed for pylon position, isolated tools were noted. These are of medium significant and monitoring should be partitioned whenever construction is happening around them. If such measures are implemented successfully,



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there would be no objection to the proposed operation and construction of Eskom 400kv Ferrum–Mookodi Powerline and associated Substation upgrade.



12 References

- Beaumont, P.B., Smith, A.B and Vogel, J.C. 1995. Before the Einqua: the archaeology of the frontier zone. In: Smith, A.B (ed.) Einqualand: studies of the Orange River frontier, pp 236-264. Cape Town: University of Cape Town Press.
- Bergh, J.S. (red.). 1999. Geskiedenisatlas van Suid-Afrika. Die viernoordelikeprovinsies. Pretoria: J.L. van Schaik.
- Burchell, W. J. 1824. Travels in the interior of southern Africa. Volume II. Longman and Green: London.
- 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.
- Denbow, J. 1983. Iron Age economies: herding, wealth and politics along the fringes of the Kalahari Desert during the Early Iron Age. Unpublished PhD dissertation.
- Denbow, J. 1984. Prehistoric herders and foragers of the Kalahari: the evidence of 1500 years of interaction. In: Schrie, C (ed.). *Past and Present in Hunter-gatherer studies*: 175-193. Academic Press.
- 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.



Proposed Kimberley Strengthening Phase 3 Project

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.

Hutten, M. 2011. HIA for the proposed Boshof Solar Plant on the farm Rosenthal, north of Boshof, Free State Province. (Unpublished report, Hutten Heritage Consultants).

Korsman, S.A. & Meyer, A. 1999. Die Steentydperkenrotskuns. Bergh, J.S. (red.). Geskiedenisatlas van Suid-Afrika. Die viernoordelikeprovinsies. 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.

Mokakabe, J. 2021. Phase 1 Heritage Impact Assessment (HIA) for the proposed 400kV transmission powerline of approximately 460km long from Ferrum- Hotazel-Mookodi and Mookodi - Epsilon via Hermes 400kV transmission powerlines and substations upgrade. Unpublished report, Setjo Sesho Consultant: Gauteng.

Morris, D. 2005. Report on a Phase 1 Archaeological Impact Assessment of proposed mining areas on the farms Ploegfontein, Klipbankfontein, Welgevonden, Leeuwfontein, Wolhaarkop and Kapstevel, west of Postmasburg, Northern Cape. Unpublished report, Kimberley: McGregor Museum.



Proposed Kimberley Strengthening Phase 3 Project

Morris, A.G. 1995. The Einqua: an analysis of the Kakamas skeletons. In: Smith, A.B (ed.) Einqualand: studies of the Orange River frontier.pp 110-164. Cape Town: University of Cape Town Press.

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

Penn, N. 2005. The forgotten Frontier: Colonist and Khoisan on the Cape's Northern Frontier in the 18th Century. Athens, Ohio and Cape Town: Ohio University Press and Double Storey Books

Raper, P.E. 1987. Dictionary of southern African place names. Jonathan Ball Publishers: Johannesburg.

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. 2013. Archaeological Impact Assessment for the proposed Boshof-Les Marais/ Buitenfontein 5MW Solar Energy Facility near the town of Boshof in the Free State Province. (Unpublished report, Heritage Contracts and Archaeological Consulting).

Van Jaarsveld, A. 2006. Hydra-Perseus and Beta-Perseus 765kv Transmission Power Lines Environmental Impact Assessment Impact on Cultural Heritage Resources. (Unpublished Report).

Van Schalkwyk, J.A. 2003. Mercury - Perseus 400 Kv Transmission Line Cultural Heritage Resources. (Unpublished Report).

van Schalkwyk J A. 2012. Heritage Assessment for the proposed Ferrum-Hotazel-Mookodi-Epsilon 400kV transmission power line and substations upgrade, Northern Cape and North West Provinces

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 NTCSA 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 NTCSA'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 the 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



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- 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.



Appendix III: Heritage Impact Assessment Phases

- Pre-assessment or scoping phase – establishment of the scope of the project and terms of reference.
- Baseline assessment – establishment of a broad framework of the potential heritage of an area.
- Phase I impact assessment – identifying sites, assess their significance, make comments on the impact of the development and makes recommendations for mitigation or conservation.
- Letter of recommendation for exemption – if there is no likelihood that any sites will be impacted.
- Phase II mitigation or rescue – planning for the protection of significant sites or sampling through excavation or collection (after receiving a permit) of sites that may be lost.
- Phase III management plan – for rare cases where sites are so important that development cannot be allowed.

