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DIGES GROUP CC

PHASE I ARCHAEOLOGICAL AND CULTURAL HERITAGE SPECIALIST REPORT FOR THE PROPOSED CONSTRUCTION OF 132 KV LOOP IN LOOP OUT POWERLINE FROM MAKONDE T-OFF POINT TO THE PROPOSED MUTSHIKILI SUBSTATION AT THENGWE WITHIN THULAMELA LOCAL MUNICIPALITY, VHEMBE DISTRICT MUNICIPALITY

July 2023

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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 1000 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.

INDEPENDENCE

I, Munyadziwa Magoma declare that this report has been prepared independently of any influence as may be specified by all relevant department, institution and organization. I act as the independent specialist 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 favorable to the applicant. I declare that there are no circumstances that may compromise my objectivity in performing such work, I vow to comply with all relevant Act, Regulations and applicable Legislation. Furthermore, Vhubvo Consultancy Cc, which is a company I represent in this application, is an independent service provider and apart from fair remuneration for services rendered, it has no financial interest or vested interest in the proposed project.

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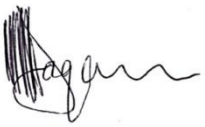

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EXECUTIVE SUMMARY

Introduction

Diges Group Cc appointed Vhubvo Consultancy Cc to conduct an Archaeological and Cultural-Heritage Impact Assessment study for the proposed construction of 132 KV loop in loop out powerline from Makonde T-Off point to the proposed Mutshikili substation at Thengwe within Thulamela Local Municipality, Vhembe District Municipality in Limpopo Province. The study aimed to outline the archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the proposed development and to advise on mitigation measures should any sites be affected. These mitigation measures will assist the developer in deciding on the most appropriate option (s) in line with the National Heritage Resource Act, 1999 (Act 25 of 1999). Desktop studies and field surveys have informed the findings of this cultural study. The desktop study was undertaken through SAHRIS for previous Cultural Heritage Impact Assessments conducted in the region of the proposed development and for research carried out in the area over the past years.

Background and Need of the Project

According to Vhembe District Municipality, IDP 2017, the district currently has 12 existing substations with a backlog of 9 x 132/22kV substations to be built. Tshilamba is one of the areas that is listed as requiring a substation. There is a need to strengthen the network currently supplied by the Makonde substation, specifically the Makonde-Thengwe 22kV feeder, which has problems with overloading and non-compliance with the reliability guide in terms of its total length of 295 km. The strengthening of the network will:

- Reduce the customer base of Makonde substation (MTG).
- Reduce the load on MTG.
- Improve the voltage profile of MTG.
- Reduce the length of MTG.

Methodology and Approach

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

- Literature Review: To understand the background archaeology of the area, a background study was undertaken, and relevant institutions were consulted. These studies entail reviewing archaeological and heritage impact assessment studies 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 pursued;

- The field surveys were conducted on the 14th of August 2018, 28th of October 2022 and 14th of July 2023.
- The final step involved the recording and documentation of relevant archaeological resources, as well as the assessment of resources in terms of the heritage impact assessment criteria and report writing, as well as mapping and constructive recommendations.

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

Impact statement

The construction of the proposed powerline will result in various threats to archaeological and grave sites in the vicinity of the new infrastructure (s), with impacts ranging from moderate to high. Thus, the impact of the proposed powerline and substation alternatives on archaeological and cultural heritage remains is rated high-medium without mitigation measures and medium-low with the implementation of measures. Noteworthy that the linear nature of the project area will cause minimal impact to the ground. Furthermore, tower positions can be moved to avoid direct impacts on heritage resources. It is important to note that all categories of heritage resources, except for movable objects, are generally known to occur in the area proposed for development. This study's primary areas of concern are the impacts on archaeological sites and the landscape traversed by the proposed power lines. The presence of the power lines within a wide servitude will have a negative visual impact on heritage sites, which will last for the lifespan of this proposed development. However, this is not addressed in this report.

Restrictions and Assumptions

Some sections of the area proposed for development is encroached by bush, making it almost impossible to access. It is thus possible that some materials could have been overlooked because the area was investigated only in a broad, overview approach, as access to the different properties was not possible. It is assumed that the Public Participation Process might also result in identifying sites, features and objects, including sites of intangible heritage potential in the corridor. These will also have to be considered in finalising the pylon positions.

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).

Survey Findings and Discussions

The main aim of the survey was to evaluate potential heritage resources that would occur within the boundaries of the proposed area (s) and to determine if there is any hamartia that would prevent the proposed development from taking place in any of the proposed study area (s). The study area was investigated for sites of heritage significance that might be affected by the proposed construction. The only sites of heritage potential were mostly graves, which can be avoided. However, the impact on graves is a concern, as several graves have been noted in the proposed study area, especially in corridor one. Grave sites should be avoided in the best way possible. Meaning attempts should be made to avoid all grave sites during the final planning stage.

Archaeological sites dating to the Stone, Iron and Historical Ages are known to occur in the wider region of the study area. However, according to the survey, no archaeological site was noted in any of the proposed corridors (s). It should be noted that the area could still contain camps and some areas with suitable substrates that could have been used as quarries for material to produce tools, particularly next to the river. As such, all riverbanks are considered sensitive and should be avoided in the best way possible. Nonetheless, there is also a high chance of finding archaeological sites often hidden underground, and this will be difficult to avoid since most of these are trifling and only exposed once construction begins. Considering all the above findings and discussions, it can be recommended that the proposed development proceed.

As the powerline is still in the early stage, e.g., the exact position of the powerline/ access roads is yet to be finalized, it might be possible that specific aspects related to development might have a direct disturbance, which would result in irreplaceable loss of heritage resources.

No major heritage flaws that can hamper the accomplishment of this project were noted. **Substation Alternative 1** is the most preferred alternative from a heritage impact perspective since the land appears to have been used in the past for issues related to farming, and areas of this nature are not ideal for archaeological materials as any materials that could have existed there, would have been destroyed by past farming activities. This is followed by Site Alternative 2, 3 and then 4. Conversely, **Route Alternative 2** is also the most recommended since it mostly transverses over farmland and few graves. Accordingly, and from a holistic perspective, any alternative will not have a significant negative impact from a heritage impact perspective.
Considering that the exact coordinates for the individual tower structures are not yet available, it is difficult to determine the final impact of the proposed development. Henceforth, for the project to continue, I, as an independent archaeologist due, recommend the following:

- A heritage practitioner should complete a "walk down" of the final powerline servitude and all other activity areas (access roads, construction camps, etc.) before the start of any construction activities.

This walk down will document all sites, features and objects, in order to propose adjustments to the route and thereby to avoid as many impacts to heritage as possible.

Conclusions

A thorough background study and survey of the proposed development were conducted, and the findings were recorded in line with SAHRA guidelines. It is recommended that LIHRA exercise its discretion and allow the developer to proceed with the project subject to the recommendations given above.

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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
LIHRA	Limpopo 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 artefacts, structures, and organic and environmental remains, as residues of past human activity.

1. Introduction

Vhubvo Archaeo-Heritage Consultants Cc was appointed by DIGES Group Cc to conduct an Archaeological and cultural heritage impact assessment study for the proposed construction of +/-7km 2 x 132kV loop in and out powerlines from the Makonde-Sanari line to the new Mutshikili 132/22kV 2x20MVA substation at Tswera/Thengwe village within Thulamela Local Municipality of Vhembe District in Limpopo Province. The aim of the study was 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 mitigation should any be affected and these will in turn assist the developer to make a decision on the most appropriate option 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 surveys. 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.

1.1 Nature of the Proposed Project

The Eskom Project involves the following developmental components:

- Construction and operation of ±7km, 2 x 132kV loop in and out powerlines from the Makonde-Sanari line to the new Mutshikili 132/22kV 2x20MVA substation at Tswera/Thengwe village.
- Construction and operation of a 132/22kV substation. The structure will also comprise the following components:
  - 132kV Line bays.
  - sectionalized 132kV tubular busbar.
  - 2 x 20MVA 132/22kV Transformers.
  - Linear 22kV busbar.
  - 3 x 22kV feeder bays (outdoor MV Box structure configuration).
  - 2 x future 22kV feeder bays (busbar only, no equipment).
  - Build a standard control room to house all secondary equipment.
  - Build a palisade fence around the substation.
  - 15 m communication mast.
- Construction of a 6 m wide road from the gravel road to the proposed substation. The length of the road is approximately ±200 m measured from the gravel road.

2. Sites Location and Description

The proposed 132kV loop in loop out power line and substation is located in Vhembe District Municipality which is Category C municipality. Vhembe is one of the 5 districts of Limpopo province of South Africa. It

is the northernmost district of the country and shares its northern border with Beitbridge district in Matabeleland South, Zimbabwe. The seat of Vhembe is Thohoyandou. The majority of its 1 199 856 people speak Venda (2001 Census). The district code is DC34. The region of Vhembe was originally settled by the Khoisan people. It was later settled by the Venda people (recently migrated from further north), who constitute a majority of the population of Vhembe today. The Dzata ruins in Makhado local municipality once served as the main settlement and capital of the Venda Empire which had dominated the area during the 18th century. Below is a map of the power line route and corridor, as well as related photographs:

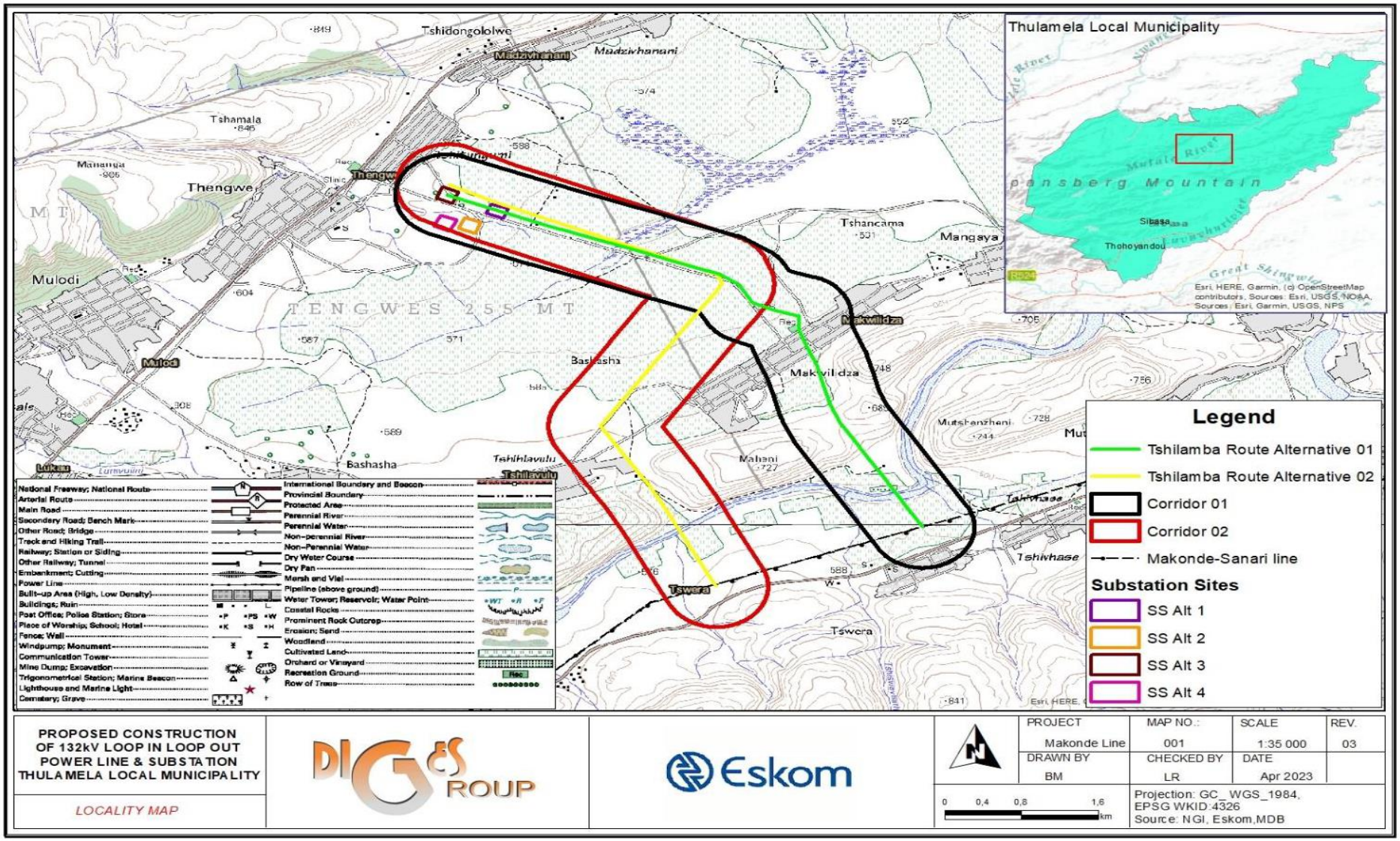

Figure 1: An overview of Google map of the proposed area (Courtesy Diges Group).

Figure 1: A general view of the site.

Figure 2: Another view of the site proposed for the development.

Figure 3: A portion of the site showing the vegetation that characterize the study area.

Figure 5: Overview of the area which form part of the project site.

Figure 6: An overview of some of the communal land wherein the powerline crosswise.

Figure 7: An overview of some of the rivers wherein the powerline will transverse.

3. 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 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). 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 construction of a powerline (s) and substation;
- Providing recommendations on how best to appropriately safeguard identified heritage sites. Mitigation is an important aspect of any development on areas with identified heritage sites.

4. 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 was conducted on three occasions, being the 14th of August 2018, 28th of October 2022 and 14th of July 2023, this also included oral interviews. The latter survey also re-assessed and verified the proposed footprint from a heritage perspective, a new grave site which was not noted in the former survey was noted.

Documentation

The general project area was documented and this 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.

Oral interview

Oral interview was initiated with members of the community.

Restrictions and Assumptions

Parts of the area proposed for development is encroached by bush which makes it almost impossible to access. It is thus possible that some materials could have been overlooked due to that the area was investigated only in a broad, overview approach, as access to the different properties was not possible. Furthermore, several houses are located within both corridors (1 & 2), and access to these homesteads was not possible. It is assumed that the Public Participation Process might also result in the identification of sites, features and objects, including sites of intangible heritage potential in the corridors and that these then will also have to be considered.

5. 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 SAHRA or a Provincial Heritage Resources Authority;*

(d) the re-zoning of a site exceeding 10 000 m2 in extent; or
(e) any other category of development provided for in regulations by SAHRA or a Provincial Heritage Resources Authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

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

(a) Places, buildings structures and equipment of cultural significance
(b) Places to which oral traditions are attached or which are associated with living heritage
(c) Historical settlements and townscapes
(d) Landscapes and natural features of 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 and rare geological specimens
(ii) objects to which oral traditions are attached or which are associated with living heritage
(iii) ethnographic art and objects
(iv) military objects
(v) objects of decorative or fine art
(vi) objects of scientific or technological interest; and
(vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1 of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

Other sections of the Act with a direct relevance to the AIA are the following:
Section 34(1) *No person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.*

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

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

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

- *destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside formal cemetery administered by a local authority; or*
- *bring onto or use at a burial ground or grave any excavation equipment, or any equipment which assists in detection or recovery of metals.*

6. Discussion of (Pre-) History of the of South Africa

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 and Meyer 1999, Mitchell 2002, Robbins *et al.* 1998).

Stone Age

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, large stone artefacts identify this era.

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. Smaller tools than in ESA mark this period. MSA people made a wide range of stone tools from both course – 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. This area is home to all three known phases of the Stone Age. Early to Middle Stone Age sites are uncommon in this area, however rock-art sites and Late Stone Age sites are much bettter known. The Late Stone Age of this area is known to contain sites with rock art from the San and Khoi San cultural groups.

Iron Age

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 has 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.

Before the arrival of Europeans, the area was the home to Bantu-speaking peoples such as the Sotho-Tswana. During the Late Iron Age, farming was of significance in the region. These farming communities built numerous stone walled settlements throughout the Free State from the 17th century onwards. These sites are associated with the predecessors of the Sotho-Tswana, and are linked with the so-called N-, V-, R- and Z-Type of settlements which are respectively associated with Fokeng, Kwena, Kgatla and Rolong clans.

7. Discussion of (Pre-) History of the Area

Limpopo Province is one of the few South African Provinces with a multi-layered archaeological record, documenting the existence of the Stone Age people, Iron Age farmers and the colonial settlers of the province is a complex task. Although Stone Age sites are found in abundance throughout the province, it is one of the richest Provinces in Iron Age, and several archaeology researches had been conducted producing diverse Iron Age sites. The archaeology of the province can be divided into the Stone Age, Iron Age and Historical timeframe.

Stone Age

Limpopo Province is known for the existence of several Stone Age sites that conform to the generic South African periodization spilt into the Early Stone Age (ESA), Middle Stone Age (MSA) and Late Stone Age (LSA) (van der Walt 2012). It is well known for the World Heritage Site Makapans Caves which yields evidence of hominid occupation by "*Australopithecus africanus*" from approximately 3.3 million years ago (Bergh 1999; van der Walt 2012). The Caves of Hearths is considered to be one of the two known in the world to have yielded an unbroken sequence showing evidence and artefacts of occupation of the caves through ESA, MSA, LSA, and right up to the Iron Age; and it is one of the few rock shelters to present Acheulian assemblages in Southern Africa (Mitchell 2002). Most of the LSA sites in the region are well documented and preserved. LSA in the region is well represented by sites that had been discovered in the Waterberg which is known for its many rock art sites including those containing shaded painting such as at Haakdoorndraai (Eastwood et al., 2002). Other rock art site can be found at Makgabeng plateau which has over 460-recorded rock art sites (Pager 1973; Eastwood et al., 2002). Rock art paintings have also been documented at Blouberg Mountains and Soutpansberg Mountains (Blundell & Eastwood, 2001; Eastwood, 2003; Hall & Smith, 2000; Louw 1969).

Iron Age

Limpopo Province is one of the provinces with the most extensive research done on Iron Age (Huffman 2007). Many of the Limpopo Province Iron Age sites are located near flood plains, along and near some of the major rivers, hill slopes and/or mountain areas (Hall & Smith 2000; Huffman 2007; van Schalkwyk 2007) The Iron Age of Limpopo Province region dates back to the 5th century AD when the Early Iron Age proto-Bantu-speaking farming communities began arriving in the area, which was then occupied by Stone Age

people. The region is well known for the famous golden rhino that was recovered from Iron Age settlement site of Mapungubwe in the Limpopo Shashi Valley, now a UNESCO World Heritage Site.

The Early Iron Age (EIA) in the wider area of Limpopo Province is represented by sites such Schroda in the Limpopo Valley, Kommando Kop and Pont Drift. The EIA of the area of study is significantly represented by the site at Silver Leaves a few kilometres south of Tzaneen which has provided the oldest evidence for grain cultivation in southern Africa and represents the earliest phase of the Kwale Branch in South Africa (Klapwijk & Huffman 1996). Huffman proposed Middle Iron Age for the period between 900 and 1300 AD in the Shashe-Limpopo area (2007: 361). Some researchers still do not agree with Huffman's proposal. Limpopo Middle Iron Age (MIA) includes the well-known Mapungubwe a World Heritage site, K2, Kommandokop and Shroda in the Limpopo Valley (AD 900-1000) (Bergh 1999; Huffman, 2005). Late Iron Age (LIA) sites are found in abundance throughout the Limpopo Province and are usually located on the foot or against slope hills for defensive purposes, an example would be the LIA Zimbabwe tradition sites such as Thulamela and Dzata found in the Soutpansberg. Despite the Lowveld region poor environmental conditions, this area of study holds a significant history of Middle and Late Iron Age settlements which has been ascribed to its mineral wealth and the attraction of metal working communities (Evers 1975; Evers & Van Der Merwe 1987).

Historical era

Historically the people in the wider vicinity of the study area include the Pedi people, Shangaan/Tsonga and Lobedu (Krige 1938). The first Europeans arrived in the area around 1838, with the second group arriving in 1844. They were not able to settle permanently due to tsetse fly. During the 1840's and 1850's there was a great explosion in the trading and exploring activity in the area due to the abundance of game in this region (http://www.kruger2canyons.org/tribal_history.html).

Oral traditions show that migrations to the Soutpansberg region came from north of Limpopo River. Two migrations stand out among the smaller infiltrations. The Vhatavhatsindi group (this group found another group, the Vhangona), followed by the Makwinda group, who became masters of the group. The first chief of Vhatavhatsindi was Netshiendeulu. One of the great cultural differences between Vhatavhatsindi and other Venda groups is that they practice a form of cremation. The bones are exhumed some months after burial and burnt ceremonially at a specified river, in which ashes are finally scattered. According to Stayt (1931:12) it is possible that Makwinda, often called "vha ila mbudzi" (those who taboo the goat) were led across the Limpopo River by Dimbanyika (or Vele Lambeu). It is not clear when the name Venda was first used. However, there is a tradition that Dimbanyika called the country Venda after his settlement in the Soutpansberg. After arrival it is said that he subjugated the Ngona and Vhatavhatsindi, and placed his various sons as petty chiefs throughout Venda, and he settled at Tshiendeulu. However, recent scientific evidence has tested this theory and reduces it to speculation.

Thohoyandou as a Town was named after Thohoyandou who is considered as the great legendary hero of the Vhavenda people. It is said that he ruled over a large country, including parts of Zimbabwe and also maintain dominance over certain Sotho and Shangaan in the area we now call Limpopo Province. He was colossal rich and powerful. His great power enticed jealousy among his brothers. He set out one day with few of his follower on an expedition to solicit support against his hostile brothers. After which, he crossed the Limpopo River and was never seen again. It is believed that Thohoyandou will return one day to his people to restore the Vhavenda to their former greatness. Today as scientists we believe that the Zimbabwe culture which first developed in Mapungubwe also links, albeit indirectly the Venda culture with the culture of Mapungubwe. As such, the Sotho-Tswana people and the Shona people who moved to the Shashe-Limpopo confluence engaged in incorporation (this incorporation was possible because they supported the tradition that chief were politically equal). After about 100 years this incorporation of Sotho-Tswana and Shona had led to the creation of the Venda culture. It is important to note that the Venda culture and language came into existence before the Singo (who had been part of the important Rozvi dynasty in Zimbabwe) moved south of the Limpopo River.

8. Degree of Significance

This category requires a broad, but detailed knowledge of the various disciplines that might be involved. It must be borne in mind that the significance of a site from an archaeological perspective does not necessarily depend on the size of the site but more on the uniqueness of the site within a region. The following table is used to grade heritage resources.

Table 1: 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

Level	Significance	Possible action
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

These categories relate 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, and will thus be considered to be of high regional significance, however; should there be heavy erosion of the greater part of the site, its significance rating would be medium to low. 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 the appropriate heritage authority has issued a permit. The following table is used to determine rating system on the receiving environment.

Table 2: 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.

9. Findings and Discussions

The main aim of the survey was to evaluate potential heritage resources that would occur within the boundaries of the proposed area (s) as well as to determine if there is any hamartia that would prevent the proposed development from taking place in any of the proposed study areas. Archaeological sites dating to the Stone, Iron and Historical Age are known to occur in the wider region of the study area. From the survey conducted, there was no archaeological site noted in any of the proposed corridors (s). It is however the impact on graves which are of concern. Thus, there are several graves that have been noted on the proposed study area, especially on corridor one. Note should be taken that detailed information about the powerline is still in early stage, e.g., the exact position of the powerline/ access roads are yet to be finalised, it might be possible that specific aspects related to development might have a direct disturbance, which would result in irreplaceable loss of heritage resources. Below are the sensitive areas that were noted during survey:

- Iron Age people preferred to settle on the alluvial soils close to rivers. As such, all river banks are viewed to be sensitive and should be avoided in the best way possible.

The study area was investigated for sites of heritage significance that might be affected by the construction of the proposed powerline and substation. The only sign of sites of heritage potential were graves and historical structures found mostly on corridor one. Although no remains of Stone/ Iron Age sites were noted during site visit, the area could still contain camps and some areas with suitable substrates that could have been used

as quarries for material to produce tools. Below is the table detailing some of the finds noted in the proposed area (s).

Table 3: Information of some of the archaeological/ heritage sites noted in the proposed area

Site	Coordinates	Description	Significance
TT001	S22° 43' 51.8" E30°36' 16.4"	Informal grave site (s) with marked and unmarked graves was noted on the area. The grave yard is characterized by a number of graves.	High
TT002	S22° 43' 39.8" E30°36' 03.3"	An informal grave site with two graves was noted along the proposed corridor, densely populated with active vegetation suggesting the likelihood of discovering many more graves on the area.	High
TT003	S22° 43' 52.6" E30°36' 32.3"	One grave was noted on the hill side surrounded by dense vegetation.	High
TT004	**S**22° 43' 02.5" **E**30°34' 47.9"	A Grave was noted on the proposed power line route	High
TT005	S22.716894 E30.578243	Cairns of stones which may well be an unidentified grave.	High if grave
TT006	S22° 43' 01.5" E30°34' 42.3"	An abandoned farm house was noted in the area. Although it is not clear how old this is, it is assumed to have been built in the last 30 years.	Medium to Low
TT007	S22° 43' 02.7" E30°34' 47.9"	An abandoned area which was used as a rest site was noted. This area also has an engraved Morabaraba game.	Low
TT008	S22° 43' 51.8" E30°36' 16.4"	An abandoned structure consisted of rubbles was noted. It appears these rubbles are a result of an old house.	Low
TT009	-22.726665 30.599928	A noted grave site located on an area which is demarcated for farming. This area is encroached by shrubs.	High

Figure 8: An overview of some of the informal grave sites noted along the corridor.

Figure 9: View of other grave sites located along the corridor.

Figure 10: View of the stone cairns on the proposed site of development.

Figure 11: View of the farmhouse noted in the proposed area.

Figure 12: View of the noted grave site.

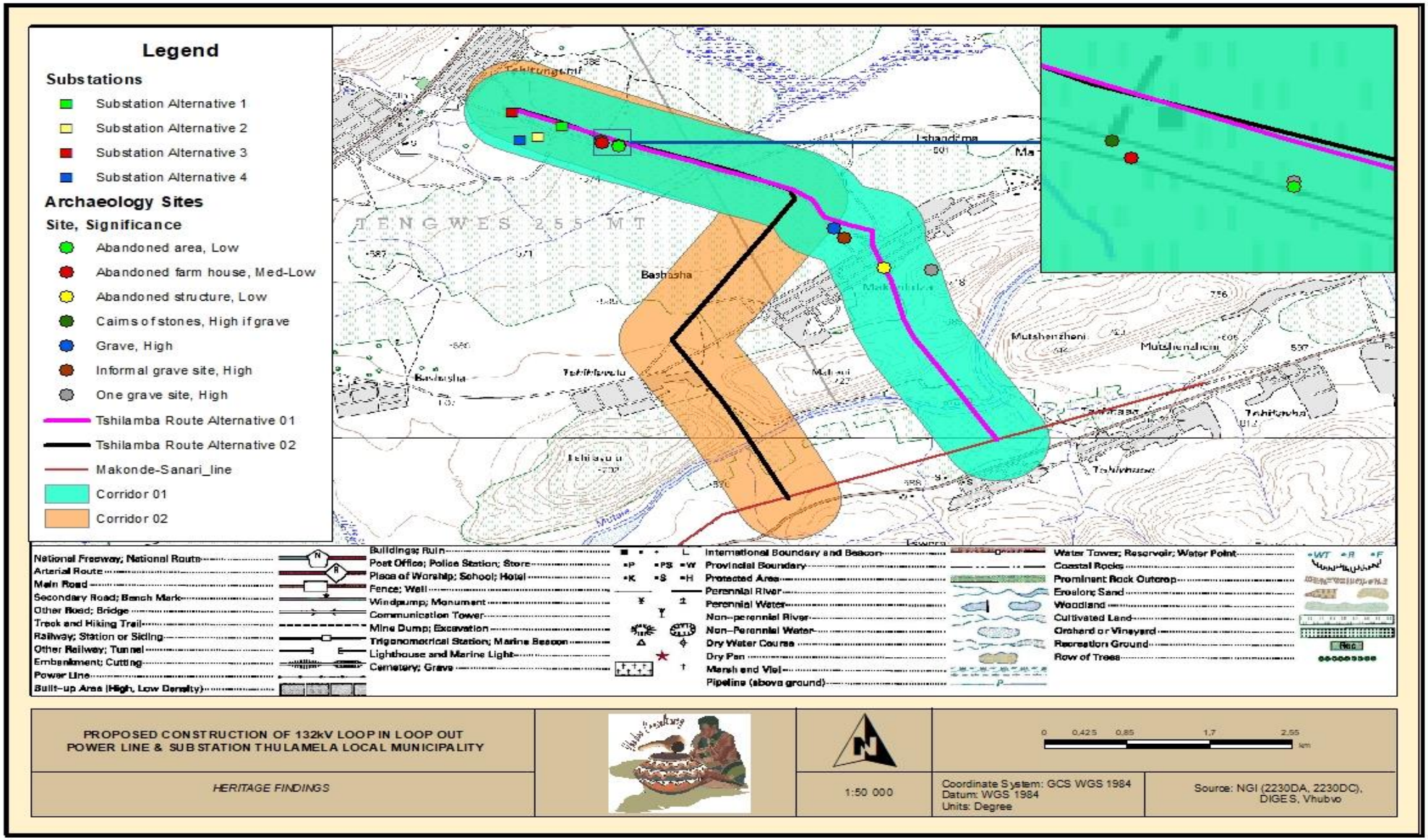

Figure 13: View of the archaeological sensitivity map.

9.1 Impact Assessment

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

Corridor (Route) Alternative 1

The corridor stretches on farming land and section of the mountainous area and cuts across Mutale River. These areas are ideal for isolated archaeological materials or historic settlements such as stone walling, which are known to spread across the area. This corridor also transverses overactive subsistence agricultural fields. Farmers and villagers in these areas are known to bury their loved ones in their place of dwelling. Making this an ideal place for finding either known or unknown burials. The anticipated rating is given in Table 4 below:

Table 4: Anticipated impact rating

Powerline	**Ratings**
Impact	Loss of archaeological objects and graves
Nature	Negative
Topographical Extent	The impact will only affect site
Duration	Long term
Magnitude	Medium
Probability	Possible
Reversibility	Irreversible
Irreplaceable Loss	The impact can result in significant loss

Corridor (Route) Alternative 2

The second corridor also transverses on a land which is mainly used for farming activities, as well as section of the mountainous area, and a river (Mutale), most of these areas are ideal for isolated graves dating from historic settlement. Villagers in these areas are known to bury their loved ones near their homes. The anticipated rating is given in Table 5 below:

Table 5: Anticipated impact rating

Powerline	Ratings
Impact	Loss of graves
Nature	Negative
Topographical Extent	The impact will only affect site
Duration	Long term
Magnitude	Medium
Probability	Possible
Reversibility	Irreversible
Irreplaceable Loss	The impact can result in significant loss

Substation Alternative 1 – 4

The first alternative is located on a fairly flat section of land which is currently unused. This land appears to have been used in the past for issues related to farming. Areas of this nature are not ideal for archaeological materials in that, any materials that could have existed there, would have been destroyed by past farming activities. The second alternative is located on a similar landscape to the alternative one. However, a certain portion of this corridor, especially the southern section, is more disturbed. The third alternative is located on an undulating section of land that is currently unused. This land appears to have been used in the past for issues related to small-scale farming. Areas of this nature are ideal for archaeological materials. The fourth alternative is located on an undulating section of land that is currently unused. This land appears to have been used in the past for issues related to farming. Areas of this nature are ideal for archaeological materials. The anticipated rating for the Alternatives is given in Table 6 below:

Table 6: Anticipated impact rating

Description	Substation 01	Substation 02	Substation 03	Substation 04
Impact	Negative	Negative	Negative	Negative
Nature	Negative	Negative	Negative	Negative
Topographical Extent	The impact will only affect site	The impact will only affect site	The impact will only affect site	The impact will only affect site
Duration	Long term	Long term	Long term	Long term
Magnitude	Low	Low	Low	Low
Probability	Possible	Possible	Possible	Possible
Reversibility	N/A	N/A	N/A	N/A

Irreplaceable Loss	The impact will not result in the loss of any resources	The impact may result in the loss of any resources	The impact may result in the loss of any resources	The impact will may result in the loss of any resources

10. Recommendations and Discussion

The study area was investigated for sites of heritage significance that might be affected by the proposed construction. The only sign of sites of heritage potential were mostly graves, and this can be avoided. Nonetheless, there is also a high chance of finding archaeological sites. This will be difficult to avoid since most of these are trifling, often hidden underground, and only exposed once construction begins. Although no remains of Stone/ Iron Age sites were noted during the site visit, the area could still contain camps and some areas with suitable substrates that could have been used as quarries for material to produce tools, particularly next to the river. Considering all the above findings and discussions, it can be recommended that the proposed development proceed. Noteworthy that all grave sites should be avoided in the best way possible. Meaning attempts should be made to avoid all grave sites during the final stage of planning. No major heritage flaws that can hamper the accomplishment of this project were noted. **Substation Alternative 1** is the most preferred alternative from a heritage impact perspective since the land appears to have been used in the past for issues related to farming, and areas of this nature are not ideal for archaeological materials in that any materials that could have existed there, would have been destroyed by past farming. This is followed by Site Alternative 2, 3 and then 4. Conversely, **Route Alternative 2** is also the most recommended since it mostly transverses over farmland, and few graves. Accordingly, and from a holistic perspective, any alternatives will not have a significant negative impact from a heritage impact perspective.

Considering that the exact coordinates for the power line and the individual tower structures are not yet available, it is difficult to determine the final impact of the proposed development. Henceforth, for the project to continue, I, as an independent archaeologist due recommend the following:

(i) A heritage practitioner should complete a "walk down" of the final powerline servitude, and all other activity areas (access roads, construction camps, etc.) prior to the start of any construction activities. This walk down will document all sites, features and objects, in order to propose adjustments to the route and thereby to avoid as many impacts to heritage as possible.

11. Conclusions

A thorough background study and survey of the proposed development was conducted and findings were recorded in line with SAHRA guidelines. It is recommended that LIHRA exercise its discretion and allow the developer to proceed with the project subject to the recommendations given above.

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Data bases

Chief Surveyor General

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

National Archives of South Africa

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?