



PHASE 1

ARCHAEOLOGICAL IMPACT ASSESSMENT

**RELATING TO THE PROPOSED KOPPIES SUBSTATION WITHIN THE
JURISDICTION OF NGWETHE LOCAL MUNICIPALITY OF FEZILE DABI DISTRICT
MUNICIPALITY, FREE STATE PROVINCE, SOUTH AFRICA.**



Compiled by: Millennium Heritage Group (PTY) LTD

For: Shumani HSE Consulting

78 Dorp Street

15 March 2021

i. Technical and Executive Summaries

Property details	
Province	Free State
Magisterial District	Fezile Dabi
Topo-cadastral map	2727
Coordinates	S27.14. 08. 00 and E 27.34.27.08
Closest town	Koppies
Farm name	Kopjes Commonage 248L

Development criteria in terms of Section 38 (1) of the NHR Act 25 of 1999	Yes	No
Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length		No
Construction of bridge or similar structure exceeding 50m in length		No
Development exceeding 5000 sqm	Yes	
Development involving three or more existing erven or subdivisions		No
Development involving three or more erven or divisions that have been consolidated within past five years		No
Rezoning of site exceeding 10 000 sqm		No
Any other development category, public open space, squares, parks, recreation grounds		No

Development	
Description of development	Proposed establishment of a power substation
Project name	Koppies Substation
Developer	Ngwathe Local Municipality
Heritage consultant	Mr. Mathoho Ndivhuho Eric, Millennium Heritage Pty Ltd
Purpose of the study	Heritage Impact Assessment to identify and assess significance of sites (if any) to be impacted by the proposed Koppies Substation development

Land use	
Previous land use	Open vacant land
Current land use	Vacant land

ii. Executive Summary

This report provides the results of an Archaeological Impact Assessment (AIA) study for the proposed Koppies electricity substation and associated infrastructures development. The site is located roughly 40 kilometers Southeast of the Vredefort World Heritage site. Further south of the National Road (N1) from Gauteng to Free State. Positioned (one) 1 kilometer east of Koppies airport, alongside the main tarred road which connect Koppies residential areas, which is situated roughly 8 kilometers Northeast of Rooiwal, (See Fig 1) within the Fezile Dabi District Municipality, Free State province, South Africa.

As part of the application process and good corporate citizenship, archaeological impact assessment study was conducted as part of the broader Basic Assessment (BA) study which investigate the impact of the proposed development on the receiving environment including heritage resources. As part of Basic Assessments (BA), the applicant is required by law to obtain Environmental Authorization (EA) in line with the Environmental Impact Assessment (EIA) Regulation published in Government Notice R 982 of 4 December 2014 under Section 24(5) of the National Environmental Management Act No. 107 of 1998 (NEMA) as amended in 2017. An application for Basic Assessments has been lodged with the relevant department. As part of the application process, Shumani HSE Consulting were appointed to facilitate the process where they requested Millennium Heritage Group (Pty) Ltd, an independent heritage consulting company to assess the heritage sensitivity of the area. A multi-stepped methodology was used to address the terms of reference. To begin with, a desktop study was carried out to identify any known heritage sites and their significance in the surrounding environment. This involved consulting contract archaeology and paleontological reports filed on SAHRIS, research and academic publications. Finally, the study was guided by the National Heritage Resources Act of 1999 and SAHRA Minimum Standards for impact assessment.

Based on this study, the following conclusions were reached:

- The proposed development is scheduled to take place on already disturbed, previous agricultural farmland dominated by grassland and isolated Karroo bush and exotic trees (Pine and Eucalyptus trees).
 - Ground truthing of the area Koppies substation development found no important cultural heritage resource, archaeological materials nor graves.
 - Although no archaeological remains were found, it is possible that some significant features may be buried beneath the ground. Should buried archaeological

materials and burials be encountered during the process of development, the following must apply:

- Work must stop immediately.
A professional archaeologist or nearest heritage authority must be contacted.

Based on this assessment, which found no archaeological resources in this area, we recommend that the heritage authorities approve the project as planned.

iii. ACKNOWLEDGEMENTS:

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CONSULTANT: Millennium Heritage Group (PTY) LTD

REPORT AUTHOR: Mathoho Ndivhuho Eric (PhD)

Declaration of Independence and CV

I Eric Ndivhuho Mathoho declare that I am an independent consultant and have no business, financial, personal, or other interest in the proposed development, application or appeal in respect of which I am appointed other than fair remuneration for work performed about the activity, application or appeal. There are no circumstances that compromise the objectivity of me performing such work.

Signed:

A handwritten signature in black ink, appearing to read 'Eric Ndivhuho Mathoho', written over a faint, illegible stamp or watermark.

Dr. Eric Ndivhuho Mathoho, BA (Hons) in Archaeology (Univen) MPhil. D.Phil. In Archaeology (UCT) ASAPA Member, Archaeologist and Heritage Expert.

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1. INTRODUCTION

The Ngwathe Local Municipality of the Fezile Dabi District, Free State Province identified a vast open farmland for the proposed establishment of the Koppies power substation. The proposed site was considered based on the location within land owned by the Ngwathe Local Municipality, avoiding any high sensitivity sites. Furthermore, there are no other alternative sites that could be selected for this type of activities since most farmland around Koppies are privately owned. Technically alternative sites around Koppies CBD were not considered due to the unavailability of open land. This study was commissioned as part of the proposed electrical generation and transmission and associated infrastructures development on the farm Kopjes commonage 248L near Koppies. The site is located (1) one kilometer east of Koppies airport, situated south of the main tarred road which connect Koppies residential sites. The area is situated roughly 8 kilometers Northeast of Rooiwal, Located in proximity of Koppies railway station. (See Fig 1 for site location) within the Fezile Dabi District Municipality, Free State province, South Africa.

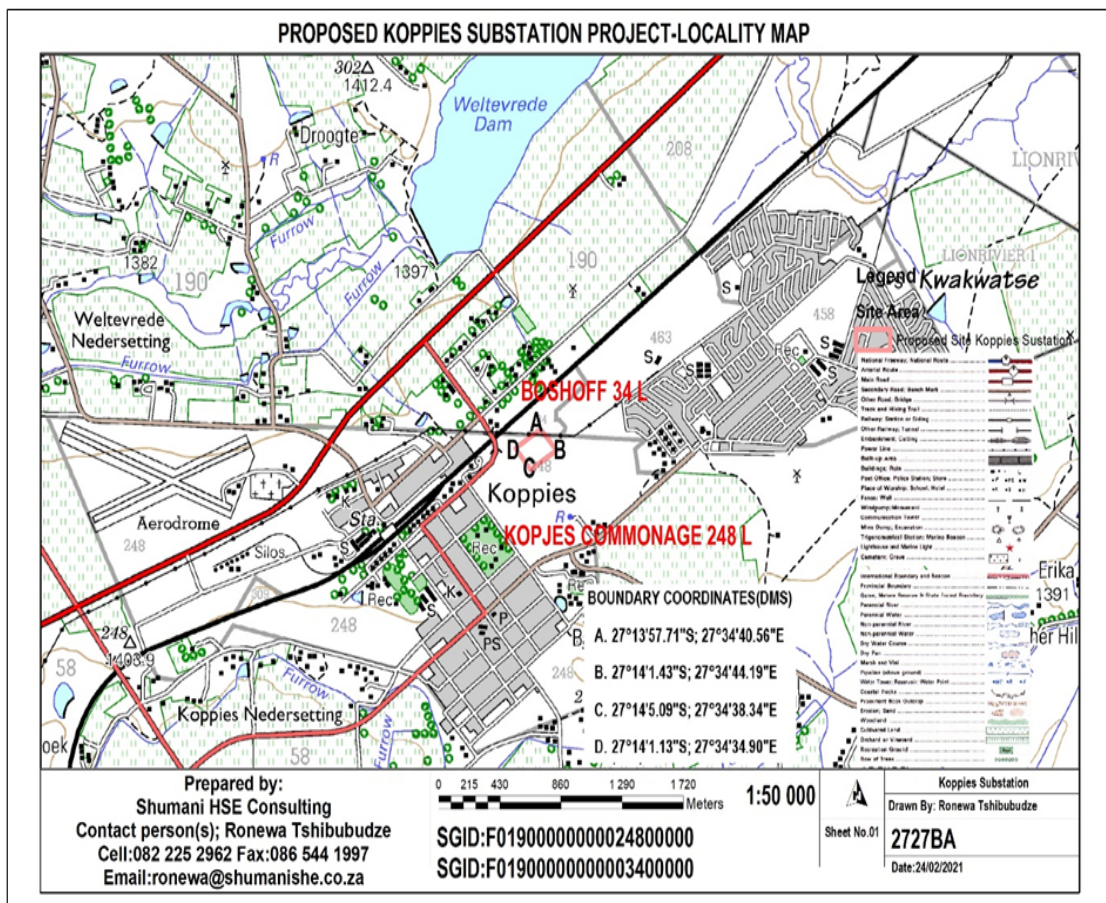


Figure 1: Topographical map of the proposed study area

The objective behind this development is to provide crucial services (Electricity generation and transmission) while creating job opportunities to the local people. In terms of EIA Regulations promulgated on 4 December 2014, read with Section 44 of the National Environmental Management Act (Act 107 of 1998), the proposed development falls within listed Activity. Therefore, pre-development Environmental Impact Assessment is a prerequisite, subject to approval by the Free State Department of Tourism, Environment and Economic Affairs. To ensure that the proposed development project and associated infrastructure meets the environmental requirements in line with the National Environmental Management Act 107 of 1998, Ngwathe Local Municipality appointed Shumani HSE Consulting as an Independent Environmental Assessment Practitioner, who then appointed Millennium Heritage Group (PTY) LTD to undertake an Archaeological Impact Assessment (AIA) for the proposed project.

To comply with relevant legislation, the applicant Ngwathe Local Municipality requires information on the heritage resources that occur within or near the proposed site and their heritage significance. The objective of the study is to document the presence of archaeological and historical sites of significance to inform and provide guidance on the proposed development activities. Apart from contributing towards the preservation of the heritage resources, the studies provide information and awareness of the types of archaeological and heritage sites that occur within the proposed study area. The document enables the developer to align their functions and responsibilities to advance proposed activities and at the same time minimize potential impact on archaeological and heritage sites. This study was conducted in line with the National Heritage Resources Act of 1999 (Act No. 25 of 1999). The Act protects heritage resources through formal and general protection. The Act provide that certain developmental activities require consents from relevant heritage resources authorities such as Provincial Heritage Resources Authorities and South African Heritage Resources Agency (SAHRA). In addition to heritage legislations, the South African Heritage Resources Agency has developed minimum standards used in impact assessment, while these local standards, are operational they are strengthened by the International Council of Monuments and Sites (ICOMOS) published guideline for assessing impacts. The Burra Charter of 1999 requires a cautious approach to the management of sites; it sets out firmly that the cultural significance of heritage places must guide all decisions.

The National Heritage Resources Act (NHRA - Act No. 25 of 1999) protects all structures and features older than 60 years (Section, 34), archaeological sites and materials (Section 35) and graves and burial sites (Section, 36). To comply with the legislation, the applicant requires information on the heritage resources that occur in the area proposed for development and their

significance. This will enable the Applicant to take pro-active measures to limit the adverse effects that the development could have on such heritage resources.

2. RELEVANT LEGISLATION

Two sets of legislation are relevant for the purposes of this study in as far as they contain provisions for the protection of tangible and intangible heritage resources including burials and burial grounds.

2.1. The National Heritage Resource Act (25 of 1999)

This Act established the South African Heritage Resource Agency (SAHRA) as the prime custodian of the heritage resources and makes provision for the undertaking of heritage resources impact assessment for various categories of development as determined by section 38. It also provides for the grading of heritage resources (Section, 7) and the implementation of a three-tier level of responsibility and functions from heritage resources to be undertaken by the State, Provincial and Local authorities, depending on the grade of heritage resources (Section, 8).

In terms of the National Heritage Resource Act 25, (1999) the following is of relevance:

Historical remains

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.

Archaeological remains

Section 35(3) Any person who discovers archaeological and paleontological materials and meteorites during development or agricultural activity must immediately report the find to the responsible heritage resource authority or the nearest local authority or museum.

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 paleontological site or any meteorite.
- destroy, damage, excavate, remove from its original position, collect or own any archaeological or paleontological material or object or any meteorite.
- trade in, sell for private gain, export or attempt to export from republic any category of archaeological or paleontological material or object or any meteorite; or

- bring onto or use at an archaeological or paleontological site any excavation equipment or any equipment which assists with the detection or recovery of metal or archaeological material or object or such equipment for the recovery of meteorites.

Section 35(5) When the responsible heritage resource authority has reasonable cause to believe that any activity or development which will destroy, damage or alter any archaeological or paleontological site is underway, and where no application for a permit has been submitted and no heritage resource management procedures in terms of section 38 has been followed, it may

- serve on the owner or occupier of the site or on the person undertaking such development an order for the development to cease immediately for such period as is specified in the order
- carry out an investigation for obtaining information on whether an archaeological or paleontological site exists and whether mitigation is necessary.
- if mitigation is deemed by the heritage resources authority to be necessary, assist the person on whom the order has been served under paragraph (a) to apply for a permit as required in subsection (4); and
- recover the cost of such investigation from the owner or occupier of the land on which it is believed an archaeological or paleontological site is located or from the person proposing to undertake the development if no application for a permit is received within two weeks of the order being served.

Subsection 35(6) the responsible heritage resource authority may, after consultation with the owner of the land on which an archaeological or paleontological site or meteorite is situated; serve a notice on the owner or any other controlling authority, to prevent activities within a specified distance from such site or meteorite.

Burial grounds and graves

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

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

Subsection 36 (6) Subject to the provision of any person who during development or any other activity discover the location of a grave, the existence of which was previously unknown, must

immediately cease such activity and report the discovery to the responsible heritage resource authority which must, in co-operation with the South African Police service and in accordance with regulation of the responsible heritage resource authority-

- (I) carry out an investigation for obtaining information on whether such grave is protected in terms of this act or is of significance to any community; and
if such grave is protected or is of significance, assist any person who or community which is a direct descendant to decide for the exhumation and re-interment of the contents of such grave or, in the absence of such person or community, make any such arrangement as it deems fit.

Cultural Resource Management

Section **38(1)** Subject to the provisions of subsection (7), (8) and (9), any person who intends to undertake a development*...

- must at the very earliest stages of initiating such development notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

development means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in a change to the nature, appearance or physical nature of a place, or influence its stability and future well-being, including:

- (i) Construction, alteration, demolition, removal or change of use of a place or a structure at a place;
- (ii) Any change to the natural or existing condition or topography of land, and
- (iii) Any removal or destruction of trees, or removal of vegetation or topsoil.

place means a site, area or region, a building or other structure.

structure means any building, works, device or other facility made by people, and which is fixed to the ground.

2.2. The Human Tissue Act (65 of 1983)

This act protects graves younger than 60 years, these falls under the jurisdiction of the National Department of Health and the Provincial Health Department. Approval for the exhumation and reburial must be obtained from the relevant provincial MEC as well as relevant Local Authorities.

3. TERMS OF REFERENCE

The terms of references for the study were to undertake an Archaeological Impact Assessment relating to the proposed Koppies substation and associated infrastructure and submit a specialist report, which addresses the following:

- Executive summary
- Scope of work undertaken
- Methodology used to obtain supporting information.
- Overview of relevant legislation
- Results of all investigations
- Interpretation of information
- Assessment of impact
- Recommendation on effective management measures
- References

4. TERMINOLOGY

The Heritage Impact Assessment (HIA) referred to in the title of this report includes a survey of heritage resources as outlined in the National Heritage Resources Act, 1999 (Act No 25 of 1999). Heritage resources, (Cultural resources) include all human-made phenomena and intangible products that are result of the human mind. Natural, technological, or industrial features may also be part of heritage resources, as places that have made an outstanding contribution to the cultures, traditions and lifestyle of the people or groups of people of South Africa.

The term ‘pre-historical’ refers to the time before any historical documents were written or any written language developed in a area or region of the world. The historical period and historical remains refer, for the project area, to the first appearance or use of ‘modern’ Western writing brought South Africa by the first colonist who settled in the Cape in the early 1652 and brought to the other different part of South Africa in the early 1800.

The term ‘relatively recent past’ refers to the 20th century. Remains from this period are not necessarily older than sixty years and therefore may not qualify as archaeological or historical remains. Some of these remains, however, may be close to sixty years of age and may soon qualify as heritage resources.

It is not always possible, based on observation alone, to distinguish clearly between archaeological remains and historical remains or between historical remains and remains from the relatively recent

past. Although certain criteria may help to make this distinction possible, these criteria are not always present, or when they are present, they are not always clear enough to interpret with great accuracy. Criteria such as square floors plan (a historical feature) may serve as a guideline. However circular and square floors may occur together on the same site.

The 'term sensitive remains' is sometimes used to distinguished graves and cemeteries as well as ideologically significant features such as holy mountains, initiation sites or other sacred places. Graves are not necessarily heritage resources if they date from the recent past and do not have head stones that are older than sixty years. The distinction between 'formal' and 'informal' graves in most instances also refers to graveyards that were used by colonists and by indigenous people. This distinction may be important as different cultural groups may uphold different traditions and values regarding their ancestors. These values should be recognized and honored whenever graveyards are exhumed and relocated.

The term 'Stone Age' refers to the prehistoric past, although Late Stone Age people lived in South Africa well into the historical period. The Stone Age is divided into an Early Stone Age (3Million years to 150 000 thousand years ago) the Middle Stone Age (150 000 years ago to 40 years ago) and the Late Stone Age (40 000 years to 200 years ago).

The term 'Early Iron Age' and Late Iron Age respectively refers to the periods between the first and second millenniums AD.

The 'Late Iron Age' refers to the period between the 17th and the 19th centuries and therefore includes the historical period.

Mining heritage sites refers to old, abandoned mining activities, underground or on the surface, which may date from the pre-historical, historical or relatively recent past.

The term 'study area' or 'project area' refers to the area where the developers want to focus its development activities (refer to plan)

Phase I studies refer to surveys using various sources of data to establish the presence of all possible types of heritage resources in each area.

Phase II studies include in-depth cultural heritage studies such as archaeological mapping, excavating and sometimes laboratory work. Phase II work may include documenting of rock art, engravings or historical sites and dwellings; the sampling of archaeological sites or shipwrecks; extended excavation of archaeological sites; the exhumation of bodies and the relocation of graveyards, etc. Phase II work may require the input of specialist and require the co-operation and the approval of SAHRA.

5. METHODOLOGY

Source of information

i. Desktop studies

A desktop study was performed to gain information on the heritage resources in the area. The region boasts its diverse history that stretches back to stone age. The fact that this community were present in the region is well confirmed by the occurrence of abundant signs of Stone Age artefacts the represent Early and middle periods in and around the Vredefort Dome World Heritage Site. The Vredefort Dome World Heritage Sites is situated roughly 40 kilometers Northwest of the proposed Koppies substation. At Vredefort dome World Heritage Site, a large caches of Acheulian hand axes, cleavers and core axes made of quartzite rocks have been collected (Sohnge et al 1937, Cooke 1949). The presence of stone walled sites has been acknowledged built by the Sotho- Tswana speakers also form part of the rich cultural landscape of the region dating from 1400-1800(Maggs 1976, Pelser 2004) with the late arrival well represented by the European settlement which occurred from the 1836, associated with the Voortrekker. The advent of industrialization and mining also boosts this rich cultural diversity of the province.

ii. Field surveys

To identify sites on the ground and assess their significance, a dedicated field survey was performed to the site for the proposed Substation and associated infrastructure development. The fieldwork was performed on the 15 March 2021, the process followed systematic inspections of predetermined linear transects which resulted in the maximum coverage of the entire site. The sampling method selected was the stratified random technique where the study area was taken as strata with random field walking around them. Standard archaeological observation practices were followed; visual inspection was supplemented by relevant written source, and oral traditions with local communities from the surrounding Koppies informal settlement. The site was recorded by handheld GPS and plotted on 1:50 000 Topographical and Google Earth maps. The general condition of the terrain was photographed with a Canon 1000D Camera.

Assumption and Limitations

It must be pointed out that heritage resources can be found in unexpected places, it must also be borne in mind that survey may not detect all the heritage resources in each project area. While some remains may simply be missed during surveys (observations) under tall grass and vegetational concealment, others may occur below the surface of the earth and may be exposed once development (such as the construction of the proposed facilities) commences.

6. ASSESSMENTS CRITERIA

This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The significance of archaeological and heritage sites was determined based on the following criteria:

- The unique nature of a site.
- The amount/depth of the archaeological deposit and the range of features (stone walls, activity areas etc.).
- The wider historic, archaeological and geographic context of the site.
- The preservation condition and integrity of the site.
- The potential to answer present research questions.

6.1 Site Significance

The site significance classification standards as prescribed in the guidelines and endorsed by the South African Heritage Resources Agency (2006) and approved by the Association for Southern African Professional Archaeologists (ASAPA) for the Southern African Development Community (SADC) region, were used in determining the site significance for this report.

The classification index is represented in the Table below that show grading and rating systems of heritage resources in South Africa.

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination

Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)	Grade 4A	High / Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)	Grade 4B	Medium Significance	Recording before destruction
Generally Protected C (GP.C)	Grade 4C	Low Significance	Destruction

6.2 Impact Rating

VERY HIGH

These impacts would be considered by society as constituting a major and usually permanent change to the (natural and/or cultural) environment, and usually result in severe or very severe effects, or beneficial or very beneficial effects.

Example: The loss of a species would be viewed by informed society as being of VERY HIGH significance.

Example: The establishment of a large amount of infrastructure in a rural area, which previously had very few services, would be regarded by the affected parties as resulting in benefits with VERY HIGH significance.

HIGH

These impacts will usually result in long term effects on the social and /or natural environment. Impacts rated as HIGH will need to be considered by society as constituting an important and usually long-term change to the (natural and/or social) environment. Society would probably view these impacts in a serious light.

Example: The loss of a diverse vegetation type, which is common elsewhere, would have a significance rating of HIGH over the long term, as the area could be rehabilitated.

Example: The change to soil conditions will impact the natural system, and the impact on affected parties (e.g. farmers) would be HIGH.

MODERATE

These impacts will usually result in medium- to long-term effects on the social and/or natural environment. Impacts rated as MODERATE will need to be considered by the public or the specialist as constituting a unimportant and usually short-term change to the (natural and/or social) environment. These impacts are real, but not substantial.

Example: The loss of a sparse, open vegetation type of low diversity may be regarded as MODERATELY significant.

Example: The provision of a clinic in a rural area would result in a benefit of MODERATE significance.

LOW

These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as LOW will need to be considered by society as constituting an important and usually medium-term change to the (natural and/or social) environment. These impacts are not substantial and are likely to have little real effect.

Example: The temporary changes in the water table of a wetland habitat, as these systems are adapted to fluctuating water levels.

Example: The increased earning potential of people employed because of a development would only result in benefits of LOW significance to people living some distance away.

NO SIGNIFICANCE

There are no primary or secondary effects at all that are important to scientists or the public.

Example: A change to the geology of a certain formation may be regarded as severe from a geological perspective but is of NO SIGNIFICANCE in the overall context.

6.3 Certainty

DEFINITE: More than 90% sure of a fact. Substantial supportive data exist to verify the assessment.

PROBABLE: Over 70% sure of a fact, or of the likelihood of an impact occurring.

POSSIBLE: Only over 40% sure of a fact, or of the likelihood of an impact occurring.

UNSURE: Less than 40% sure of a fact, or of the likelihood of an impact occurring.

6.4 Duration

SHORT TERM : 0 – 5 years

MEDIUM: 6 – 20 years

LONG TERM: more than 20 years

DEMOLISHED: site will be demolished or is already demolished

6.5 Mitigation

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be classified as follows:

- ✓ **A** – No further action necessary
- ✓ **B** – Mapping of the site and controlled sampling required
- ✓ **C** – Preserve site, or extensive data collection and mapping required; and
- ✓ **D** – Preserve site

7. Historical background a brief synthesis of the archaeology and heritage of the study area.

7.1.1. The Stone Age Periods

Most of the archaeological research in and around the region took place along the Vaal gravels between Vereeniging and the Vaal River and further to the Vredefort Dome World Heritage site. The Vredefort dome represents the central portion of the deeply eroded complex impact structure formed between 2023± 4 Ma ago in the Archean and Paleoproterozoic rocks of the Kaapvaal craton (Gibson and Reimold, 2001). Nevertheless, this region provides a general account of early human occupation in and around the Vredefort dome World Heritage site. Conventionally speaking, records in and around the Vredefort Dome World Heritage Sites has been divided into the Early Stone Age (ESA) (3.5 million and 250 000 BP), the Middle Stone Age (MSA) (250 000 – 25000 BP) and the Later Stone Age (25000 – 2000 BP) (Phillipson 2005). Early Stone Age stone tool assemblages are made up of the earlier Oldwan and later Acheulian types. The Oldwan tools were very crude and were used for chopping and butchering. These were replaced by Acheulian ESA tools dominated by hand axes and cleavers which are remarkably standardized (Wadley, 2007; Sharon, 2009). Evidence presented from Vredefort Dome World Heritage sites corroborated by evidence from Makapansgat caves shows that the first tool making hominids belong to either an early species of the Homo or an immediate ancestor which is yet to be discovered here in South Africa (Phillipson 2005; Esterhuysen, 2007). Both the Oldwan and Acheulian industries are well represented in the archaeology of the Free State Province, just like other South African provinces such as the Limpopo where stone age studies in the Makapansgat valley revealed different lithic technologies (Kuman et al. 2005; Sumner and Kuman 2014).

The Middle Stone Age dates to between 250 000 years ago and 25 000 years ago. In general, Middle Stone Age tools are characterized by a size reduction in tools such as hand axes, cleavers,

and flake and blade industries. Some large catches of Achelian hand axes, cleavers and core- Axes made from quartzite have been collected in and around the Vredefort Dome World Heritage sites and the Vaal River gravels (Sohnge et al, 1937, Cooke 1949). The period is marked by the emergence of modern humans and was accompanied by changes in technology, behavior, physical appearance, art, and symbolism (Phillipson 2005). A variety of MSA tools includes blades, flakes, scraper, and pointed tools that may have been hafted onto shafts or handles and used as spear heads. Surface scatters of these flake and blade industries occur widespread across southern Africa (Klein 2000; Thompson & Marean, 2008). Residue analyses on some of the stone tools indicate that these tools were certainly used as spear heads (Wadley, 2007). From about 25 000 BP, stone tool assemblages generally attributed to the Later Stone Age emerged. This period is marked by a reduction in stone tool sizes. Typical stone tools include microliths and bladelets (Deacon and Deacon 1999; Phillipson 2005).

The greatest concentrations of engravings occur on the basement rocks and the intrusive Karoo dolerites, but sites are also found on rock types including dolomite, granite, gneiss, and in a few cases on sandstone (Morris, 1988). Most of these paintings depict a wide variety of the fauna of the artistic renderings of animal such as giraffes and other large grazers and mixed feeders such as zebra, wildebeest, hartebeest, eland, and buffalo (Parkington *et al.* 2008) Late Stone age period is associated with the use of micro- lithic stone tools. On farm fourteen stream Rossouw (2008) recorded a rock art site with over 80 different rock engravings near the Vaal Riverbank. Concentration of engravings images dominated by Eland and other antelope which appeared to be in the San – Hunter gathering tradition has been documented on a small island in the Vaal river (Hollman, 1999).

7.1.2. FARMING COMMUNITIES AND RECENT HISTORIES

Maggs (1976) presented an extensive survey of Iron Age sites distribution on the Highveld, which for the first time resulted in an Archaeological framework for the region. The presence of the Iron Age stone walled complex sites scattered throughout the province are remains of the early Sotho - Tswana speakers and form the rich cultural landscape of the province most dating from the 1400 to 1800 (Maggs,1976, Pelsers 2004). These plentiful signs of Late Iron Age human occupation lie in a frontier zones, where hunter-gatherers encountered agro-pastoralists (Thorp 1996, Maggs 1976). Some settlements are not characterized by the presence of stone walls, but rather cattle dung deposits with pits and burials (Huffman 1982). The south and eastern Free State is a landscape of contact between migrating Iron Age farming communities and San hunter-gatherers. During the sixteenth and eighteenth centuries, there was a southward movement of Iron Age communities across the Vaal River and into the eastern Free State (Klatzow, 1994).

As they moved into the area, the first-farming communities met hunter-gatherers (Klatzow, 1994). Hall (1990) mentioned that there were several ways in which hunter gatherers responded to contact with mixed agriculturalists. They may have retreated into areas that were out of reach of agriculturalists. The arrival of farming communities in the study area could have been disruptive to the hunter gatherers way of life, it also provided new economic and social opportunities (Hall 1990). The presence of these early farming communities is associated with distinctive stone walling settlement, ceramic sherds, kraals, possible remains of domesticated animals, upper and lower grindstones and storage pits are related for identifying Iron Age sites. Existence of Iron Age settlement has been recorded over large area south of the Vaal River basin which signify the presence of the Sotho-Tswana communities in the area. These settlements distributions stretched south and north of the Vaal River dominated by stone walls with scalloped surrounding walls. Some of these walls demonstrate substantial diversity of shapes and sizes of irregular dimensions with straight and curved stone walling's sections with the interiors dominated by Corbbled huts, livestock enclosures and ashmidden. It is still widely accepted that all the old kraals and the corbbeled huts were constructed by a group called the Leghoya community (Maggs,1976, Dryer 1992, Tylor 1986). This architectural house design and style was later executed by the Taung and the Kubung communities. These stone walled sites are generally large settlements, but the archaeological visibility may in most cases be difficult owing to the organic nature of the homesteads. These sites were occupied by the ancestral group to the Sotho- Tswana speaking people of today (Maggs, 1976).

The 18th century's period is marked by the presence of white, where land was taken from African chiefs and redistributed to the Boers; this was followed by demarcation of portions of land into farms. The European settlement within the study area occurred from early 1837. The first white farms were established along the rivers and tributaries, close to springs. Many of these farms have been in the ownership of families for generations. Thus, they possess a large corpus of information regarding the area and its history. A significant number of battles and skirmishes took place in the region (Van Schalkwyk, 2011). The northern Free State is located with the area where some of the main operation of the Boer general Christiaan De wet took place between 1899 and 1900 when the war ended. Skirmishes took place on town near Koppies, with Kroonstad being one of the towns. During the Anglo-Boer War Kroonstad remain in the hands of the British and housed concentration camps for both Boer civilian and Black communities (Pistorius, 2010:225-226). The Town Koppies was established after the Anglo Boer war because of economic and personal losses of the Boer community. Emily Hobhouse was the promoter of the idea of the development of home- industry amongst the inhabitants of the town (van der Walt 2019).

8. SITE LOCATION AND PROJECT DESCRIPTION

The site is located roughly 40 kilometers South of the Vredefort World Heritage site. The area is further south of the National Road(N1) from Gauteng to Free State. Positioned (One) 1 kilometer east of Koppies airport, alongside the main tarred road which connect Koppies residential sites. The area is situated roughly 8 kilometers Northeast of Rooiwal, within the Fezile Dabi District Municipality, Free State province, South Africa.

A well fenced area, with few existing infrastructures which includes, informal settlement to the east, with built up areas to the west, while powerlines transverse the site towards the north and northeast. Two concrete reservoirs exist, one to the southeast and the second one to the west outside the development footprint. The area is situated on a slightly flat section currently covered by isolated Karoo bush and exotic tress which include *Pine* and *Eucalyptus* trees. The natural vegetation of the study area falls within the eastern free state grassland which covered a broader zone extending towards the Sasolburg. The dominant grass cover comprised of *Themeda triandra*, while *E. Curvula* and *E. Chloromelas* became dominant in degraded habitats. Dwarf Karoo bushes existed in isolation dominant in severely degraded areas this include Acacia Karoo. The geology and soils are dominated by mudstones and sandstone of the Adelaide subgroup (Beuafort Group, Karoo super group) as well as those of the Eccca group (Karoo supergroup) found in the extreme Northern section of this grassland, giving rise to the vertic, Melanic soils. The area is dominated by heavy clayey soils which has given a watershed or wetland during heavy rains. (Mucina & Rutherford, 2003:381-82). Overgrazed and trampled lower lying areas with heavy clayey soils are prone to Acacia Karoo encroachment. The area was part of old agricultural land.

The Project Entails the following detailed scope of work:

Electrical Scope of Works:

- Installation of 2 x10MVA 88/6.6kV stepdown transformers equipment.
- Installation of auxiliary 25kVA transformer equipment.
- Installation of 6.6kV outdoor and indoor switchgears.
- Installation of overhead 2x current transformers and 2x voltage transformers at 88kV.
- Installation of HT steel structures.
- Installation of line landing gantry & surge arresters at 88kV.
- Installation of overhead circuit breakers and isolators & earth switches at 88kV.
- Installation of underground mv cables at 6.6kV.
- Installation overhead tubular bus bar at 88kV.
- Installation of 2x 16m lighting mast with lights.

- Installation of lightning and protection; and
- Installation of small power and lighting in the substation control rooms.

Civil Scope of Works:

- Site Clearance of approximately 3Ha
- Box Cut Excavations to a depth of 1,2m - spoil excavated material to a designated area.
- Import G6 material and compact to create a platform.
- Erection of a perimeter fence (proposed clear vu – actual spec to be provided by client)
- Construction of Approximately 300 m of access road to site
- Construction of concrete lined storm water channel around perimeter fence
- Construction of foundations for steel columns and brick building
- Placement of 30 mm stone around the site.



Figure 1: Study area towards the south



Figure 2: Pine trees and Pylon traversing the area.



Figure 3: Concrete storm water drainage system outside the development footprint



Figure 4: Raised Concrete reservoir.

9. ASSESSMENT OF SITES AND FINDS

This section contains the results of the heritage sites/finds assessment. The phase 1 heritage scoping assessment program as required in terms of Section 38 of the National Heritage Resource Act (Act 25 of 1999) was done for the proposed electricity Substation and associated infrastructures. No sites were found during the desktop study and the subsequent field survey. There are no primary or secondary effects at all that are important to scientist or the public that will be impacted by the proposed project activities.

Heritage Significance: No significance

Impact: Negative

Impact Significance: High

Certainty: Probable

Duration: Permanent

Mitigation: A

10. CONCLUSION AND RECOMMENDATIONS

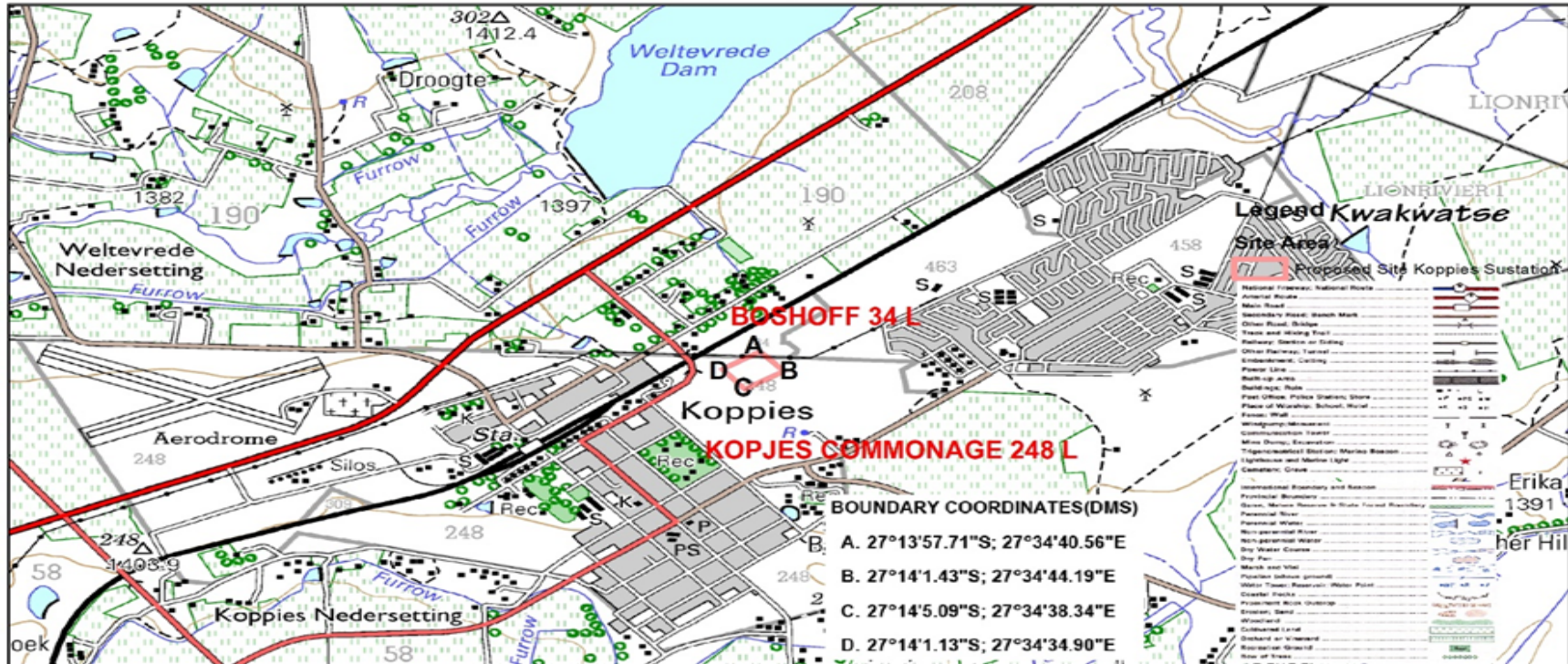
Based on this study, the following conclusions were reached:

- The proposed development is scheduled to take place on already disturbed, previous agricultural farmland dominated by grassland and isolated Karroo bush and exotic trees (Pine and Eucalyptus trees).
 - Ground truthing of the area Koppies substation development found no important cultural heritage resource, archaeological materials nor graves.
 - Although no archaeological remains were found, it is possible that some significant features may be buried beneath the ground. Should buried archaeological materials and burials be encountered during the process of development, the following must apply:
 - Work must stop immediately.
A professional archaeologist or nearest heritage authority must be contacted.

Based on this assessment, which found no archaeological resources in this area we recommend that the heritage authorities approve the project as planned.

11. TOPOGRAPHICAL AND GOOGLE EARTH MAPS OF THE STUDY AREA

PROPOSED KOPPIES SUBSTATION PROJECT-LOCALITY MAP



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SGID:F019000000002480000
SGID:F0190000000003400000


Koppies Substation
 Drawn By: Ronewa Tshibubudze
2727BA
 Date:24/02/2021

PROPOSED KOPPIES SUBSTATION PROJECT-SATELLITE IMAGERY MAP



Legend

Site Area

 Proposed Site Koppies Sustation

BOUNDARY COORDINATES(DMS)

- A. 27°13'57.71"S; 27°34'40.56"E
- B. 27°14'1.43"S; 27°34'44.19"E
- C. 27°14'5.09"S; 27°34'38.34"E
- D. 27°14'1.13"S; 27°34'34.90"E

Prepared by:

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1:50 000

SGID:F0190000000002480000
SGID:F0190000000000340000



Sheet No.01

Koppies Substation	
Drawn By: Ronewa Tshibubudze	
2727BA	
Date:24/02/2021	

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Addendum 1: Definitions and Acronyms

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

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.

Cultural Heritage Resources Same as Heritage Resources as defined and used in the South African Heritage Resources Act (Act No. 25 of 1999). Refer to physical cultural properties such as archaeological and paleontological sites; historic and prehistoric places, buildings, structures and material remains; cultural sites such as places of ritual or religious importance and their associated materials; burial sites or *graves* and their associated materials; geological or natural features of cultural importance or scientific significance. Cultural Heritage Resources also include intangible resources such as religion practices, ritual ceremonies, oral histories, memories and indigenous knowledge.

Cultural Significance The complexities of what makes a place, materials or intangible resources of value to society or part of, customarily assessed in terms of aesthetic, historical, scientific/research and social values.

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. A grave may occur in isolation or in association with others where upon it is referred to as being situated in a cemetery.

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

In Situ material *Material culture* and surrounding deposits in their original location and context, for example an archaeological site that has not been disturbed by farming.

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

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

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

Acronyms:

AIA	Archaeological Impact Assessment
EIA	Environmental Impact Assessment
EIA	Early Iron Age
EMP	Environmental Management Plan
MHG	Millenium Heritage Group (PTY)LTD
NEMA	National Environmental Management Act, 1998 (Act No.107 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No.25 of 1999)
SAHRA	South African Heritage Resources Agency
ESA	Early Stone Age
MSA	Middle Stone Age
LSA	Late Stone Age
IA	Iron Age
LIA	Late Iron Age
UNESCO	United Nations Educational, Scientific and cultural Organization
WHC	World Heritage Conventions of 1972

ADDENDUM 2: Types and ranges as outlined by the National Heritage Resource Act (Act 25 of 1999)

The National Heritage Act (Act No 25 of 1999, Art 3) outlines the following types and ranges of the heritage resources that qualify as part of the national estate, namely:

- (a) Places, buildings structures and equipment of cultural significance;
- (b) Places to which oral tradition are attached or which are associated with living heritage;
- (c) Historical settlement and townscapes
- (d) Landscape and natural features of cultural significance;
- (e) Geological sites of scientific or cultural importance
- (f) Archaeological and paleontological sites
- (g) Graves and burial ground including-
 - (I) Ancestral graves
 - (II) Royal graves and graves of traditional leaders
 - (III) Graves of victim 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) movable objects, including-
 - (I) object recovered from 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) object of scientific or technological interest; and
 - (VII) books, records, documents, photographs, positive and negatives, graphic, film or video material or sound recording, excluding those that are public records as defined in section1(xiv) of the National Archives of South Africa Act,1996(Act No 43 of 1996).

The National Heritage Resource Act (Act No 25 of 1999,Art 3)also distinguishes nine criteria for places and objects to qualify as ‘part of the national estate if they have cultural significance or other special value... these criteria are the following:

- (a) its importance in the community, or pattern of South Africa’s history;
- (b) its possession of uncommon, rare or endangered aspects of South Africa’s natural or cultural heritage;
- (c) its potential to yield information that will contribute to an understanding of South Africa’s natural or cultural heritage;
- (d) its importance in demonstrating the principal characteristics of a particular class of South Africa’s natural or cultural places or objects;
- (e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;

- (f) its importance in demonstrating a high degree of creative or technical achievement at a period;
- (g) its strong or special association with a community or cultural group for social, cultural or spiritual reasons
- (h) Its strong or special association with the life or work of a person, group or organization of importance in the history of South Africa
- (i) Sites of significance relating to the history of slavery in South Africa.