HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED UPGRADE OF INFRASTRUCTURE AT GILEAD SUBSTATION LOCATED WITHIN MOGALAKWENA LOCAL MUNICIPALITY, IN THE LIMPOPO PROVINCE

DEVELOPED FOR

MYEZO ENVIRONMENTAL MANAGEMENT SERVICES
Environmental Stewardship

12TH OF MAY 2022

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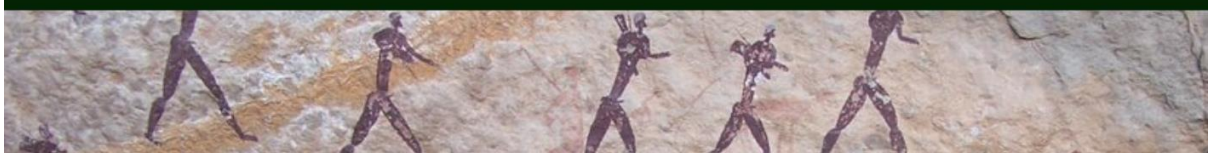

AUTHOR'S CREDENTIALS

The report was authored by Mr. Roy Muroyi (Archaeologist) Mr. Muroyi is a holder of an Honors Degree, Archaeology, Cultural Heritage and Museum Studies (Midlands State University) and a Masters Degree from the University of Witwatersrand. He is also a holder of a another Masters Degree in Heritage Studiesat the same institution. He attended further training as a Laboratory Specialist for Human anatomy and human skeletal analysis through the University of Cape-Town human biology department in-conjunction with Cape Archaeological Surveys. Mr Muroyi has over seven years of industry experience, after leaving the Department of National Museums and Monuments of Botswana where he worked as an Archaeological Impact Assessments adjudicating officer .Mr. Muroyi then moved to South Africa where has been involved in a range of Cultural Resources Management (CRM) companies before starting Tsimba Archaeological Footprints. He has so far exhumed over 500 historical burials as a professional archaeologist and carried out close to a 100 Heritage Impact Assessments.

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DOCUMENT INFORMATION

DOCUMENT INFORMATION ITEM	DESCRIPTION
Proposed development and location	The proposed development is planned for infrastructure located at the Eskom Gilead substation, which in the Mogalakwena Local Municipality
Purpose of the study	To carry out a Desktop Phase 1 Heritage Impact Assessment to determine the presence/absence of archaeological remains, assess their archaeological significance in terms of the NHRA of 1999 and SHARA guidelines.
Topography	Flat terrain
Municipalities	Mogalakwena Local Municipality.
Predominant land use of surrounding area	Farms
Applicant	Eskom Holdings (SOC) Limited
Site Coordinates	*See Table 1-4 Below*
Client Details	Myezo Environmental Management Services (Pty) Ltd
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EXECUTIVE SUMMARY

The Applicant, Eskom Holdings (SOC) Limited proposes to upgrade the infrastructure at Gilead substation located within Mogalakwena Local Municipality, in the Limpopo Province. Eskom Holdings (SOC) Limited identified the need to upgrade the infrastructure between the two substations in order to improve the reliability of the existing electricity supply and also where possible provide new supply for any additional customers. Subsequently, a 66kV powerline was constructed between Chloe and Gilead Substations. For the proposed project, Eskom seeks to deviate one km of the existing 66kV Chloe-Gilead powerline and have it connected to a new 66kV feeder as well as dismantling the existing 66kV Chloe-Gilead powerline.

Myezo Environmental Management Services (Pty) Ltd (hereafter referred to as "the EAP") have been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the Basic Assessment for the proposed development. Environmental Impact Assessment (EIA) studies are widely known as a suitable approach for assessing the impacts of development projects on the environment (Glasson *et al.,* 2012). Furthermore, all countries in the world including South Africa have some form of legal or administrative requirement for EIA (Morgan, 2012).

The scope of work for this Heritage Impact Assessment was to assess written materials and manuscripts about the broader cultural landscape to be affected by the proposed development. It also included a field based archaeological survey of the proposed development footprint *(see Methodology section).*The proposed development area exceeds 5000 m^2 therefore it triggers section *38(1) (a) of the National Heritage Resources Act (NHRA- Act No. 25 of 1999)* :- Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as— (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length; (b) the construction of a bridge or similar structure exceeding 50 m in length. The objective of the report is to fulfil the requirements of SAHRA in the in terms of Section 38(1) of the NHRA.

A review of a range of cultural heritage information was undertaken as part of the heritage assessment process. This review included archival information, historical housing and planning documents, research documents and unpublished manuscripts speaking to the general cultural landscape of the proposed development area *(see Cultural Landscape Assessment section).* The National heritage databases lists and registers, other documented information (including Heritage Impact Assessment reports and a range

of ethno-historic and archaeological sources at both local and regional levels) were also consulted for information regarding other heritage resources within the vicinity of the study area.

From this literature review, the following were noted: the proposed development site lies within a region that has a high significant heritage value from the early human origins to the colonial period. Mokopane, is home of one of the world's most important archaeological sites: Makapansgat. There, in a deep and large limestone cave, have been found the remains of some of the earliest hominids yet identified, the species *Australopithicus africanus*, who lived more than three million years ago; and also Homo erectus, who lived a million years ago. Several Late Iron Age settlements are known to occur within the broader study area, these sites are associated with early Northern Ndebele and Tswana occupation of the Makopane region. However no Iron Age sites or features were recorded in the survey footprint.

- ***Reasoned Opinion: -***

It is the reasoned opinion of the author of this report that no visible material remains pertaining to heritage resources occur within the proposed development footprint. Subject to adherence of the recommendations and approval by SAHRA the proposed development may be allowed to continue. Should skeletal remains be exposed during development and construction phases, all activities must be suspended and the relevant heritage resources authority contacted. Section 36 (6) of the National Heritage and Resources Act, 25 of 1999 also states that should culturally significant material be discovered during the course of the said development, all activities must be suspended pending further investigation by a qualified archaeologist.

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ABBREVIATIONS

Acronyms	Description
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management
DEA	Department of Environmental Affairs
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
ECO	Environmental Control Officer
EMPr	Environmental Management Programme
GIS	Geographic Information System
GPS	Global Positioning System
GP	Generally Protected
HIA	Heritage Impact Assessment
ICOMOS	International Council on Monuments and Sites
kV	Kilovolt
km	Kilometre
LSA	Late Stone Age
LIA	Late Iron Age
LTD	Limited
L S	Local Significance

MIA	Middle Iron Age
MSA	Middle Stone Age
Mm	Millimetre
NEMA	National Environmental Management Act,1998(Act No.107 of 1998)
NHRA	National Heritage Resources Act of 1999
N S	National Significance
SAHRA	South African Heritage Resources Agency
SADC	Southern African Development Community

GLOSSARY

Achievement	Something accomplished, esp. by valour, boldness, or superior ability
Aesthetic	Relating to the sense of the beautiful or the science of aesthetics.
Community	All the people of a specific locality or country
Culture	The sum total of ways of living built up by a group of human beings, which is transmitted from one generation to another.
Cultural	Of or relating to culture or cultivation.
Diversity	The state or fact of being diverse; difference; unlikeness.
Geological (geology)	The science which treats of the earth, the rocks of which it is composed, and the changes which it has undergone or is undergoing.
High	Intensified; exceeding the common degree or measure; strong; intense, energetic
Importance	The quality or fact of being important.
Influence	Power of producing effects by invisible or insensible means.

Potential	Possible as opposed to actual.
Integrity	The state of being whole, entire, or undiminished.
Religious	Of, relating to, or concerned with religion.
Significant	Important; of consequence
Social	Living, or disposed to live, in companionship with others or in a community, rather than in isolation.
Spiritual	Of, relating to, or consisting of spirit or incorporeal being.
Valued	Highly regarded or esteemed

1.0 INTRODUCTION

1.1 Project Background

Tsimba Archaeological Footprints (Pty) Ltd was requested Myezo Environmental Management Services (Pty) Ltd to conduct a Heritage Impact Assessment (HIA) for the proposed upgrade of infrastructure between Chloe substation and Gilead substation located within Aganang Local Municipality and Mogalakwena Local Municipality, in the Limpopo Province. Eskom Holdings (SOC) Limited identified the need to upgrade the infrastructure between the two substations in order to improve the reliability of the existing electricity supply and also where possible, provide new supply for any additional customers. Subsequently, a 66kV powerline was constructed between Chloe and Gilead Substations.

This HIA is designed to assist statutory authorities in identifying and preventing the approval of aggressive developments, understood as the development that destroys the cultural significance of heritage properties. The HIA structures an evaluation of the potential damage or benefits that may accrue to the significance of the cultural heritage assets.

The Environmental Impact Assessments (EIA) conducted by Myezo is an analytic approach for evaluating the impacts of development, widely adopted as part of the land use planning system in many countries (Glasson and Therivel, 2013). Whenever relevant, EIA also include cultural heritage as a factor to be evaluated. Both EIA and HIA adopt a similar approach. In brief, first, the overall scope of the study is defined. Second, a baseline survey is carried out to provide a reference point against which impacts can be measured, including a desktop study and/or a field research.

1.2 The Terms of Reference for this HIA study are:

Heritage impact assessments (hereinafter referred to as HIA) are applied to cultural heritage assets. This is a recent notion grounded in the requirements to perform environmental assessments at the project or more strategic levels. The practice of performing an impact analysis is not new, however. As Clark (2001, p. 22) observes, "Impact analysis is not a particularly special, unusual or complex process; it is simply a codification of the basic analysis undertaken by any competent conservation adviser". The HIA exists to:

- Review existing theories and models of cultural heritage resources interpretation and how to develop effective methods of archaeological interpretation for future generations to assist and assist SAHRA in their deliberations;
- Clarify the extent and ways in which current site context archaeological findings may affect the interpretation of cultural sites for present and future generations;
- Shed light on the potential challenges and opportunities brought about by the existence of archaeological sites and other conflicting views of the values of a site;
- Set out the ethical considerations on the interpretation and preservation of archaeological findings given the varied range of approaches available;
- Explain that the issue of archaeological preservation and conservation as relevant not only National Heritage or Provincial Heritage properties, but also for any significant cultural site;
- Focus on best practice of interpretation and preservation of archaeological findings.

1.3 The aim: - There are two interlinked aims for this HIA. The first is to identify and document cultural heritage sites, cultural resources, sites associated with oral histories (intangible heritage), graves, cultural landscapes, and any structures of historical significance (tangible heritage) that may be affected within the development footprint. The second aim of this HIA is to assess the archaeological significance of the findings and make recommendations based on the best archaeological practice of interpretation and preservation of archaeological findings

1.4 The findings: - The findings of this report have been informed by desktop data review and impact assessment reporting which include recommendations to guide heritage authorities in making decisions with regards to the proposed project. This study was conducted before any activities too place on the proposed development area. The impact assessment study also includes detailed recommendations on how to mitigate and manage negative impacts while enhancing positive effects on the project area.

1.5 Legislative Frame works used

The South African Heritage Resources Agency (SAHRA) aims to conserve and control the management, research, alteration and destruction of cultural resources of South Africa and to prosecute if necessary. It is therefore crucially important to adhere to heritage resource legislation contained in the Government Gazette of the Republic of South Africa (Act No.25 of 1999), as many heritage sites are threatened daily by development. Conservation legislation requires an impact assessment report to be submitted for development authorisation that must include a HIA if triggered. The following legislative frameworks were used in compiling this HIA report;

- The Australia International Council on Monuments and Sites (ICOMOS) charter for places of cultural significance (the Burra Charter).
- The Principles for the analysis, conservation and structural restoration of architectural heritage (2003)
- The National Heritage and Resources Act of South Africa No.25 of 1999
- The Athens Charter, the Restoration of Historic Monuments (1931)
  The International Council on Monuments and Sites (1965)
- The World Heritage Convention(1972)
- The Washington Charter (1987)
- The International Charter for the Conservation and Restoration of Monuments and sites (the Venice charter 2006).
- The Organisation of World Heritage Cities (1993).

2.0 DESCRIPTION OF THE RECEIVING ENVIRONMENT

2.1 Location

Table 1: Site 1 Description

Site 1: Gilead Substation	
Coordinates	23^{0} 39^{I} 19.56^{II} S 28^{I} 51 ^{I}53.92^{II} E
Ownership	Eskom Holdings (SOC) Limited
Land Use	Previously Agricultural activities however it is now used as an electricity substation.
Zoning	Farming / Agricultural

Description	Deviation of one km of the existing 66kV Chloe-Gilead powerline and have it connected to the new 66kV feeder as well as dismantling the existing 66kV Chloe-Gilead powerline.

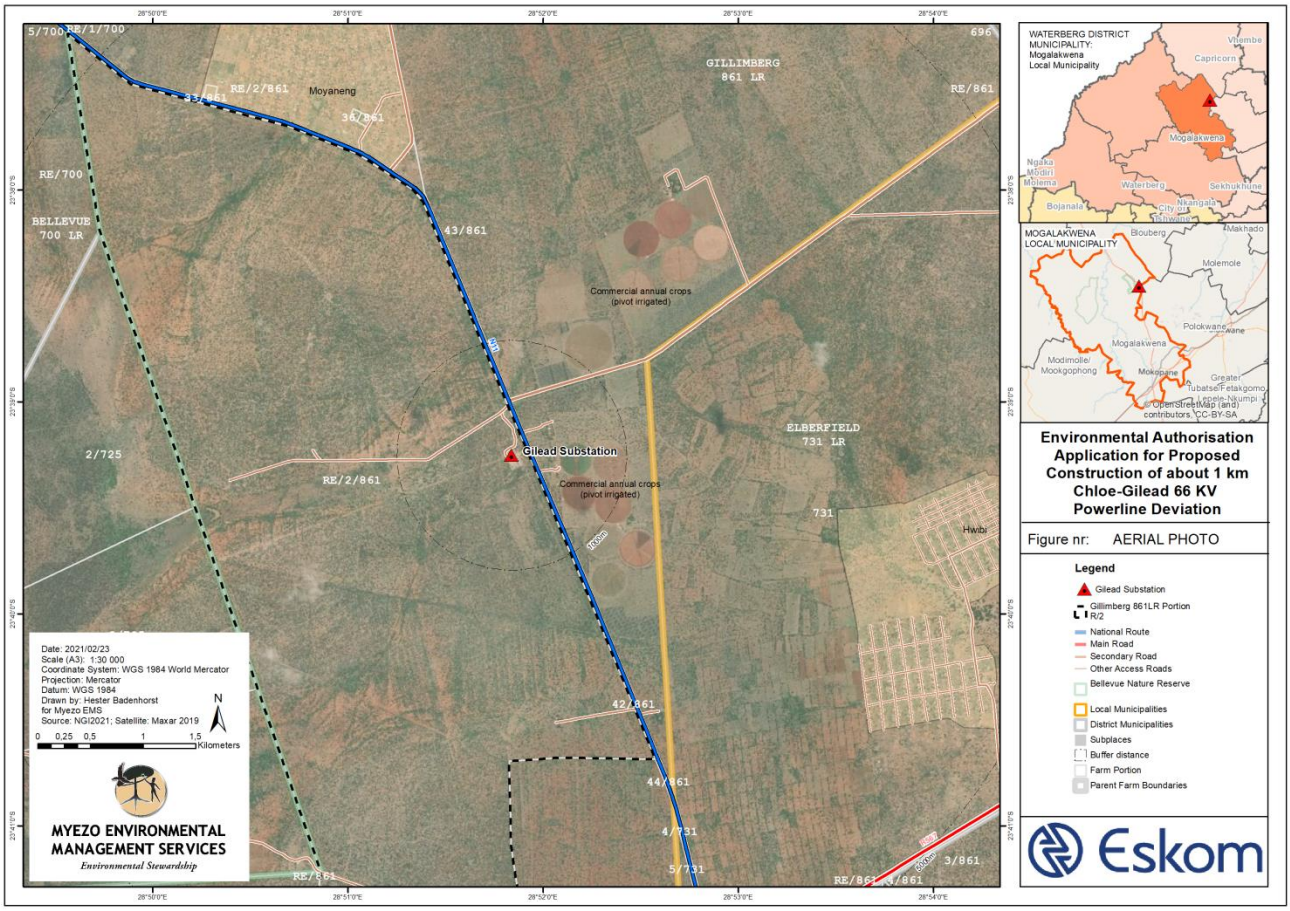

Figure 1: Arial photography of the proposed development site (Myezo)

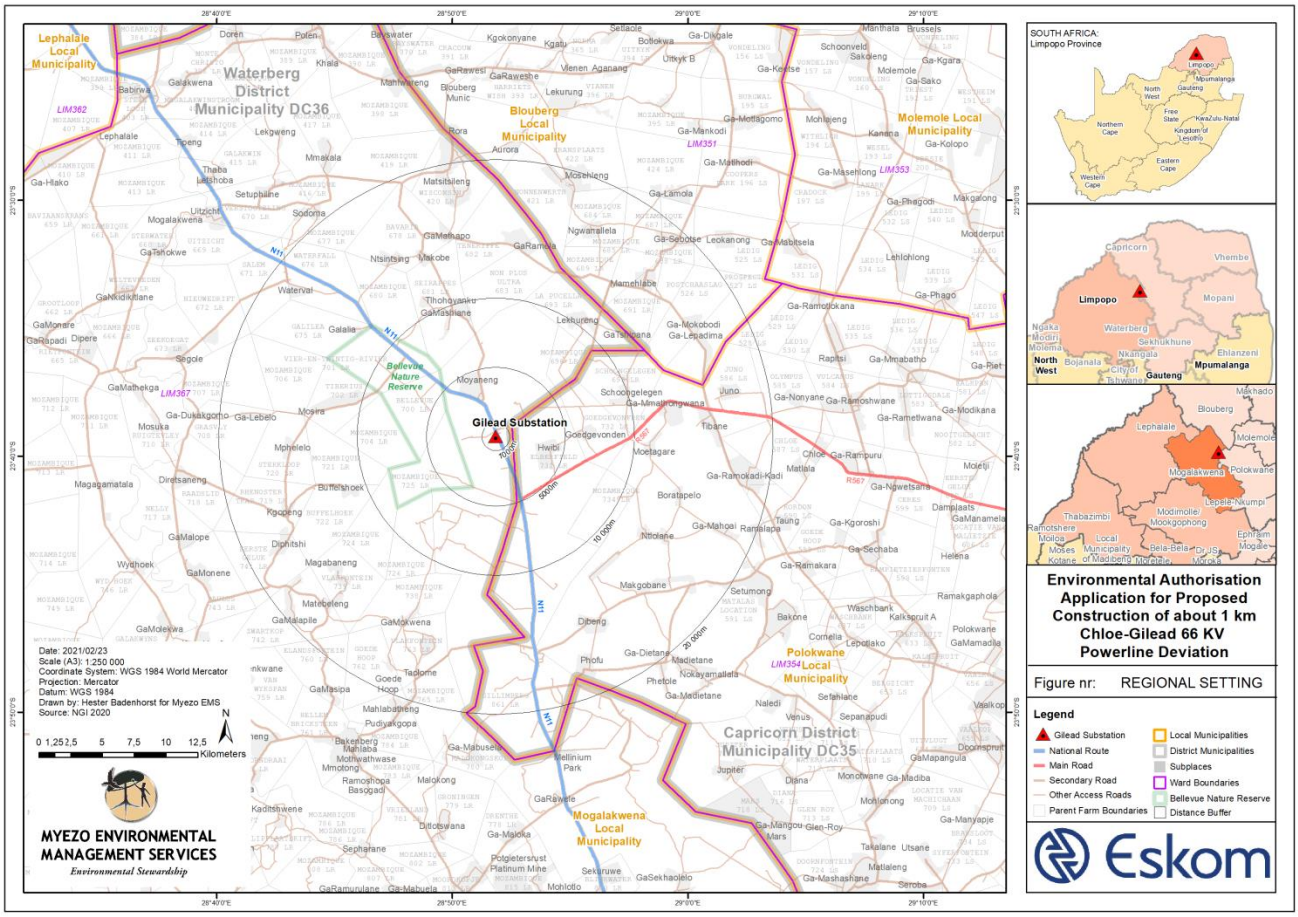

Figure 2: Map showing the regional context of the proposed development site (Myezo)

Figure 3: Google earth image showing the existing power line and the proposed deviation (Tsimba)

2.2 Geo-spatial Context

The Bushveld Complex (surrounding area) is a massive body of igneous origin and it is intrusive in the Transvaal Supergroup (Kent, 1980). The Bushveld Complex extends over 440 km east-west, from Burgersfort to Nietverdiend; and for nearly 350 km north-south from Villa Nora to Bethal. It covers an area of 65 000 km² and is chrome and platinum rich (Visser, 1989). The age is Vaalian (2,100 – 1,920 Ma). The layered rocks of the Bushveld Complex are generally believed to be the result of crystals settling out of magma during slow cooling. The magmatic events petrogenetically related to and generally considered part of the whole magmatic evolution of the Complex are, the diabase sills and the Rooiberg Group. The Complex consists of three main units or suites of which the Rustenburg Layered Suite is one (Kent, 1980), the other two are the Rashoop Granophyre Suite and Lebowa Granite Suite (Visser, 1989). The region will be covered by 'Bushveld' vegetation *(see Appendix E).*

3.0 METHODOLOGY

3.1 Literature review

The methodology used in this HIA is based on a comprehensive understanding of the current or baseline situation; the type, distribution and significance of heritage resources as revealed through desk-based study and additional data acquisition, such as archaeological investigations, previous heritage impact assessments reports and intangible heritage. This is systematically integrated by the use of matrices with information on the nature and extent of the proposed engineering and other works to identify potential. The following tasks were also undertaken in relation to the cultural heritage and are described in this report:

The background information search of the proposed development area was conducted following the site maps from the client. Sources used in this study included:

- Published academic papers and HIA and PIA studies conducted in and around the region where the proposed infrastructure development will take place;
- Available archaeological literature on the broader Mokopane area was consulted;
- The SAHRIS website and the National Data Base were consulted to obtain background information on previous heritage surveys and assessments in the area; and other planning documents.
- Map Archives - Historical maps of the proposed area of development and its surrounds were assessed to aid information gathering of the proposed area of development and its surrounds

3.3 Archaeological Field Survey

The archaeological reconnaissance of the study area was conducted by Mr. Roy Muroyi (Principal Archaeologist – Tsimba) and Mr. Manasah Thabani Dziwani (Assistant Archaeologist - Tsimba) through an unsystematic pedestrian site survey. A systematic pedestrian survey was not possible due to extremely dense vegetation. However, our team was accompanied by Miss Prisca Thobejane (Environmentalist – Myezo) and an Eskom Holdings representative who both provided valuable input in terms of possible site locations and general site conditions.

3.4 Data Consolidation and Report Writing

Data captured on the development area (during the field survey) by means of a desktop study and physical survey is used as a basis for this HIA. This data is also used to establish assessment for any possible current and future impacts within the development footprint. This includes the following:

- Assessment of the significance of the cultural resources in terms of their archaeological, built environment and landscape, historical, scientific, social, religious, aesthetic and tourism value;
- A description of possible impacts of the proposed development, especially during the construction phase, in accordance with the standards and conventions for the management of cultural environments;
- Proposal of suitable mitigation measures to minimize possible negative impacts on the cultural environment and resources that may result during construction;
- Review of applicable legislative requirements that is the National Environmental Management Act (NEMA) (read together with the 2014 EIA Regulations) and the NHRA of 1999
- The consolidation of the data collected using the various sources as described above;
- Acknowledgement of impacts on heritage resources (such as unearthed graves) predicted to occur during construction; and
- Geological Information Systems mapping of known archaeological sites and maps in the region
- A discussion of the results of this study with conclusions and recommendations based on the available data and study findings.

4.0 LEGISLATIVE FRAMEWORK

This HIA is informed and conducted to fulfil the requirements of the National Heritage Resources Act (No. 25 of 1999) *38(1) (a) of the National Heritage Resources Act (NHRA- Act No. 25 of 1999) (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—any development or other activity which will change the character of a site—(i) exceeding 5 000 m2 in extent; and 4) No person may, without a permit issued by the responsible heritage resources authority— (a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite.*

4.1 Scope of the Phase 1 HIA

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

- Identify any heritage resources, which may be affected within the broader cultural landscape;
- Assess the nature and degree of significance of such resources;
- Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;
- Assess the negative and positive impact of the development on these resources; and
- Make recommendations for the appropriate heritage management of these impacts.

4.2 Cultural Heritage Resources Management Policy Objectives

a. To preserve representative samples of the National archaeological resources for the scientific and educational benefit of present and future generations;
b. To ensure that development proponents consider archaeological resource values and concerns in the course of project planning; and
c. To ensure where decisions are made to develop land, the proponents adopt one of the following actions:
    - Avoid archaeological sites wherever possible;
    - Implement measures which will mitigate project impacts on archaeological sites; or
    - Compensate the local communities for unavoidable losses of significant archaeological value.

5.0 CULTURAL LANDSCAPE ASSESSMENT

5.1 Introduction

Recent heritage management research has shown that it is important to have a clear framework of criteria in order to be able to interpret the cultural heritage significance of any particular landscape. This interpretation will be based on established practice from other works that have been carried out within the existing cultural landscape. It will be based on a wide range of criteria (archaeological background of the area, historical background of the area, the settlement pattern in the area and degree of apparent human influence, among others) and it will define the degree of significance of the existing cultural landscape.

The question of the value of cultural landscape receptors will need careful consideration. By its very nature the work is concerned with designated cultural landscapes of national value for their cultural heritage values but the cultural landscapes within designated areas do nevertheless vary in their character and quality. It may therefore be appropriate to make a fine grained assessment of the value of

the cultural landscape character areas affected in the designated area. This will draw on statements about the special qualities contributing to the cultural heritage value of individual designated areas, on established criteria such as landscape quality and condition, scenic quality, historic/ heritage value, perceptual aspects and associations, and on other information such as the extent and setting of heritage assets including registered cultural heritage sites, burial grounds and archaeological sites.

5.2 Methodology

The methodology employed in carrying out the cultural landscape assessment of the proposal for this proposed development has been drawn from best practice guidelines and the Landscape Institute and the Institute of Environmental Management & Assessments "Guidelines for Landscape and Visual Impact Assessment" Second Edition (Spon Press 2002).The aim of these guidelines is to set high standards for the scope and contents of landscape and visual assessments and to establish certain principles that will help to achieve consistency, credibility and effectiveness in cultural landscape impact assessment. Guidance is contained in this publication on some approaches and techniques, which have been found to be effective and useful in practice by landscape professionals. However, the guidelines are not intended as a prescriptive set of rules, and have been adapted to the specific project.

Stage 1: Through a desktop and archival research process the heritage specialist is required to identify those landscape character types/areas of National, Provincial and Regional heritage significance which may be affected by the proposed development. The specialist should also locate information relevant to assessing landscape value for example written historical statements of special qualities.

Stage 2: Initial identification of potential effects the proposed development will bring to the broader regional area and design options to mitigate potential effects;

Stage 3: Design the development taking account of identified potential mitigation measures to avoid negative effects.

Stage 4: Assessment of effects the proposed developments has on the broader cultural landscape and considers its residual effects;

Stage 5: Fitting the cultural landscape assessment into the whole HIA.

5.3 Previous studies in the broader study region

Author	Project	Archaeological Findings	Heritage Findings
Digby Wells (2013)	Platreef mining project, Mokopane, Limpopo	Remains found during the project include Stone Age artefacts dating to the MSA, Iron Age stone-walling, potsherds, grinding stones and an Iron Age smelting site etc.	55 burial grounds and 25 isolated surface occurrences and 3 archaeological sites.
PGS Heritage 2013	Mogalakwena Water Supply Infrastructure Project	N/A	N/A
Nzumbululo Cultural Heritage and Development	Borutho-Nzhelele 400kv power lines	N/A	The dominance of these resources is largely burial grounds and graves – making approximately 98% of the total number of sites identified, recorded and mapped. In terms of the site density
Vhubvo Consultancy (2019)	New tomato farming and Processing facilities on portions of the farms Platdoorns,Davidspoort and Graslaagte at Lebowakgomo	N/A	(3) Grave sites within the area proposed for development. Some of the noted graves are over 60 years of age and thus protected against any form of alteration by the National Heritage Resources Act (Act 25 of 1999)
Francois P Coetzee Heritage Consultant	Lapalala Wilderness Reserve, Lephalale Local Municipality	N/A	N/A

5.4 Archaeological background

Local museums such as the Arend Diepkirk Museum in Mokopane, and Polokwane Museum in the Limpopo Province, and the Origins Centre at the University of the Witwatersrand in Johannesburg, maintain a strong interest in local heritage issues, and provide most of the information regarding the archaeological sequence of the area under investigation.

Mokopane, is home of one of the world's most important archaeological sites: Makapansgat. There, in a deep and large limestone cave, have been found the remains of some of the earliest hominids yet identified, the species Australopithicus africanus, who lived more than three million years ago; and also Homo erectus, who lived a million years ago (Taylor, Hinde and Holt-Biddle 2003).

The first substantial evidence of hominid habitation relates to people of the Middle Stone Age (MSA). There are extensive remains of MSA occupations in the Waterberg; until specific research is conducted in the Waterberg it will not be possible to know precisely when the Waterberg MSA occupations occurred and at present we can only say that the occupations would have been somewhere between 200 000 and 25 000 years ago. People living in the MSA lived in rock shelters or open camps, sometimes near pans, lakes or rivers, though they were not as dependent on close sources of water as their ancestral Early Stone Age (ESA)
counterparts. This independence from water suggests that they had water containers that could have been made of skin or ostrich eggshell.

People in the MSA were efficient hunters and gatherers. They hunted with spears tipped with stone. We know this because some South African sites like Klasies River Mouth (near Storms River) had stone spear-tips embedded in animal bones (Mitchell 2012). In addition, researchers have found microscopic traces of blood and animal remains on stone points. Stone points were hafted onto handles because microscopic analysis has revealed resins on their bases, in addition to micro-chipping where twine would have been used to attach the stones to shafts (Wadley *et al*. 2004).

5.5 Ethno- Historical Context of Colonial Conquest

Correspondence from Boer Commandant-general P.J. Potgieter and a report written by Commandant-general M.W Pretorius[1] provide the basic details of the murders of the Trekboers around the Makopane area[2]. Oral testimonies recorded and written later contribute the bulk of the more colourful narrative popularised by Preller in the 1900s. According to the primary sources a party of Trekboers passed through the Makapanspoort in September of 1854. About 10km south of the present day town of Mokopane at a point where the Mokgalakwena River was shallow enough to cross, members of Mugombane's Chiefdom murdered the party. The Trekker party of approximately 12 men, women and

[1] Although Pretorius may have exaggerated extent to which the bodies were dismembered and discarded all of the oral testimonies mention dismemberment. See for example the version captured by Montanha in his diary a year after the siege (Ferreira 2002: 204).

[2] S.S.6, R684/54: P.J. Potgieter – M.W. Pretorius, Waterberg, 29 September 1854.

children were viciously attacked and their bodies dismembered around the same time M.A. Venter and his son arrived at Mugombane's headquarters at Pruissen allegedly to trade and were also gruesomely murdered[3].

Seemingly at the same time Mankopane murdered Hermanus Potgieter and his hunting party at his capital, Fothane. Although, there were no witnesses to the attack on the hunting party most versions suggest that the Langa Ndebele lured the party to Fothane. Following the murder of the trekkers by Mankopane and Mugombane, the Boers sent for reinforcements from Rustenburg and the Zoutpansberg. In the time it took for the commandos to arrive, Mugombane and his people had retreated into the Historic Cave and Mankopane had taken refuge in the hills. The Boers discovered the Kekana hideout, and over a period of about a month implemented various strategies to dislodge the AmaNdebele group. Boer Commandant-general Piet Potgieter was shot dead during the course of the month, but by the end of the month the AmaNdebele resistance ceased and the Boers entered the cave. The surviving women and children were dispersed among Boers, and their aides[4]

The siege event featured in a number of subsequent traveller, missionary and trader diaries, and was retold in a number of history books and popular articles[5]. Over time the number of Kekana killed, as well as the factors that led to the demise of the besieged AmaNdebele, were altered or twisted to suit the circumstance of the storyteller. One particular version, recounted by Gustav Preller, was accorded iconic status in Afrikaner public history, and became a central prop of the ideology of Apartheid. Preller constructed an elaborate mythology that produced heroes, portrayed the Trekboers as the 'chosen people' and Africans as treacherous and uncivilized, thereby producing a rationale and imperative for the separation of 'races'[6].

The first dedicated study of the relationship between the early Trekboers, Chief Mugombane and the Langa Chief Mankopane was carried out by De Waal in 1978. This thesis provides an exhaustive investigation of archival documents and written histories. In 1987 Naidoo analysed the written accounts of the siege and in particular questioned the veracity of M.W. Pretorius' version, which he believed was

[3] SS7 R733/54. Verslag van M.W. Pretorius 6 Des. 1854.

[4] The Portuguese trader Joâo Albasini who provided the Boers with VhaTsonga marksmen, took awoman by the name of Aia (De Vaal 1953: 21). Paul Kruger who would become the ZAR President,
allegedly took a women by the name of Matlhodi Kekana (Paulina). He later allegedly allowed her to marry 'Kgosi Mokgatle' in exchange for bride wealth (Morton 2005: 203). The Bafokeng Chief occupied a portion of Kruger's farm and provided him with a military resource and labour (Ibid.).

[5] See for example Joâo Albasini's diary (De Vaal 1953) and Montanha's dairy (Ferreira 2002)

[6] Paul Kruger long time President of the Republic allegedly retrieved the body of Piet Potgieter after he had been shot by Kekana marksmen, a feat of bravery memorialized in a panel at the foot of Kruger's statue in Pretoria

intentionally trumped up. During the late 1980s and early 1990s, Hofmeyr (1993) recorded several oral accounts related by elders and members of the descendant Kekana chiefdom. These recounts focussed mainly on the restoration of chiefly lineage following the alleged suicide of Chief Mugombane in 1855. It should also be noted that a series of trekker family oral narratives were recorded by Preller in the early part of the 20th century, and although these do not provide much comment on the siege itself they offer invaluable insight into the experiences and activities of the trekkers in the 1850s and the background to the siege[7].

5.6 Cultural Landscape Assessment of Significance

Significance is not absolute and can only be identified in relation to each individual development and its unique location. It is important that any assessment of significance adopts an informed and well-reasoned judgement, supported through a clear justification as to how the conclusions about significance for each effect have been derived. It should be emphasised that whilst this methodology is designed to be robust and transparent, professional judgement is ultimately applied to determine the level of significance applied to each effect.

The two principal criteria determining the significance of effects are the scale or magnitude of effect, and the cultural heritage sensitivity of the location or receptor. With regard to visual receptors, a **HIGH** significance of effect would be from **HIGH** sensitivity receptors such as Regional to National significance old buildings and heritage sites with a local rating where they would receive a major change in the view. A low significance of effect would be from the least sensitive low significance old buildings and heritage sites with a Local rating would be affected for a smaller period of time as they would experience transient views. Where no change is identified the significance is assessed as neutral. These thresholds will be determined by combining sensitivity and magnitude, with reference to any general terminology accepted for the whole Heritage Impact Assessment.

5.8 Significance of Cultural Landscape Impacts

- *This project is given a Low adverse significance to the cultural landscape. This is due to the fact that the proposed development landscape has very minimal known cultural heritage significance. Given below is a table that shows the ICOMOS assessment of significance of cultural landscapes.*

[7] See for example, Theal (1908), Preller (1931); Bulpin (1965)

Assessment of significance of the cultural landscape impacts ▪ Red cells represent significant adverse impacts ▪ Yellow cells represent significant beneficial impacts ▪ Blue cells represent impacts that are not significant			Landscape receptor sensitivity		
			High	Medium	Low
			Landscape with National heritage significance Status sites and cultural Landscapes with Provincial heritage Significance Status	Regional or Local Significance Heritage sites valued characteristics reasonably tolerant of changes of the type proposed.	A relatively unimportant cultural landscape with few features of value or interest, potentially tolerant of substantial change of the type proposed.
Magnitude of landscape impact	Major adverse	Significant adverse changes, over a significant area, to key characteristics or features or to the landscape's character or distinctiveness for more than 2 years	High adverse significance	High/Medium adverse significance	Medium adverse significance
	Moderate adverse	Noticeable but not significant adverse changes for more than 2 years or significant adverse changes for more than 6 months but less than 2 years, over a significant area, to key characteristics or features or to the landscape's character or distinctiveness.	High/Medium adverse significance	Medium adverse significance	Low adverse significance
	Slight adverse	Noticeable adverse changes for less than 2 years, significant adverse changes for less than 6 months, or barely discernible adverse changes for any length of time.	Medium adverse significance	Low adverse significance	Neutral
	Neutral	Any change would be negligible, unnoticeable or there are no predicted changes.	Neutral	Neutral	Neutral
	Slight benefit	Noticeable beneficial changes for less than 2 years, significant beneficial changes for less than 6 months, or barely discernible beneficial changes for any length of time.	Medium beneficial significance	Low beneficial significance	Neutral
	Moderate benefit	Noticeable but not significant beneficial changes for more than 2 years or significant beneficial changes for more than 6 months but less than 2 years, over a significant area, to key characteristics or features or to the landscape's character or distinctiveness.	High/Medium beneficial significance	Medium beneficial significance	Low beneficial significance
	Major benefit	Significant beneficial changes, over a significant area, to key characteristics or features or to the landscape's character or distinctiveness for more than 2 years	High beneficial significance	High/Medium beneficial significance	Medium beneficial significance

Figure 4: ICOMOS guideline for assessing significance of cultural landscape impacts

6.0 DISCUSSION OF THE FINDINGS

6.1 Limitations

The vegetation at the Gilead substation is extremely dense and limited movement to a great extent .The proposed development area is largely inaccessible. Visibility was extremely poor during the time of surveying as a result of dense vegetation. The general area within the Gilead substation boundaries are disturbed as a result of a close by man-made dam, its tributary man-made channels, as well as roads in areas with less dense vegetation.

Figure 5: A view of a man -made water pond along the existing powerline

Figure 6: A view of the existing powerline with access roads

Figure 7: Dense vegetation cover within the proposed development footprint.

Figure 8: View of a man- made trench that serves as a tributary to the pond.

Figure 9: View of the proposed development footprint in relation to the existing substation features

7.0 HERITAGE ASSESSMENT OF SIGNIFICANCE

Site significance classification standards prescribed by SAHRA (2006), and acknowledged by ASAPA for the SADC region, were used for the purposes of this report.

- The main aim in assessing significance is to produce a succinct statement of significance, which summarises an item's heritage values. The statement is the basis for policies and management structures that will affect the item's future.

Table 2: SAHRA's Site Significance classification minimum standards

FILED RATING	GRADE	CLASSIFICATION	RECOMMENDATION
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)		High/ Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)		Medium Significance	Recording before destruction
Generally Protected C (GP.A)		Low Significance	Destruction

Site significance is calculated by combining the following concepts in the given formula.

S= (E+D+M) P

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The significance weightings for each potential impact are as follows:

Table 3: The significance weightings for each potential impact

ASPECT	DESCRIPTION	WEIGHT
Probability	Improbable	1
	Probable	2
	Highly Probable	4
	Definite	5
Duration	Short term	1
	Medium term	3
	Long term	4
	Permanent	5
Scale	Local	1
	Site	2
	Regional	3
Magnitude/Severity	Low	2
	Medium	6
	High	8

Table 4: Impact of Significance

IT PROVIDES AN INDICATION OF THE IMPORTANCE OF THE IMPACT IN TERMS OF BOTH TANGIBLE AND INTANGIBLE CHARACTERISTICS. (S) IS FORMULATED BY ADDING THE SUM OF NUMBERS ASSIGNED TO EXTENT (E), DURATION (D), AND INTENSITY (I) AND MULTIPLYING THE SUM BY THE PROBABILITY. S= (E+D+M) P		
<30	Low	Mitigation of impacts is easily achieved where this impact would not have a direct influence on the decision to develop in the area.
30-60	Medium	Mitigation of impact is both feasible and fairly easy. The impact could

		influence the decision to develop in the area unless it is effectively mitigated.
>60	High	Significant impacts where there is difficult. The impact must have an influence on the decision process to develop in the area.
NATURE: DURING THE CONSTRUCTION PHASE ACTIVITIES RESULTING IN DISTURBANCE OF SURFACES AND/OR SUB-SURFACES MAY DESTROY, DAMAGE, ALTER, OR REMOVE FROM ITS ORIGINAL POSITION ARCHAEOLOGICAL MATERIAL OR OBJECTS.		
	Without Mitigation	With Mitigation
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (2)	Low(2)
Probability	Not Probable (2)	Not probable (2)
Significance	Low (16)	Low(16)
Status	Negative	Negative
Reversibility	Not irreversible	Not irreversible
Irreversible loss of resources	No resources were recorded	No resources were recorded
Can impacts be mitigated?	Yes, a chance find procedure should be implemented.	Yes
Mitigation: Impacts are rated as <30 (Low) Mitigation of impacts is easily achieved where this impact would not have a direct influence on the decision to develop in the area. Due to the lack of apparent significant heritage resources no further mitigation is required prior to construction. A Chance Find Procedure should be implemented for the project should any sites be identified during the construction process.		

6.2 Conclusions

- *This report is an independent view and makes recommendations to The Provincial Heritage Authority based on its findings. The authority will consider the recommendations and make a decision based on conservation principles.*

- ***Stone Age sites***

No Stone Age settlements, structures, features, assemblages or artefacts were recorded during the survey.

- ***Rock art sites***

Although several rock art sites are known in the general region, none were recorded near the survey area.

- ***Iron Age Settlements***

Several Late Iron Age settlements are known to occur within the broader study area, these sites are associated with early Northern Ndebele and Tswana occupation of the Mokopane region. However no Iron Age sites or features were recorded in the survey footprint.

6.3 Recommendations

The proposed powerline deviation associated infrastructure may proceed as there is no objection from a heritage perspective. Archaeological deposits usually occur below ground level. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and an archaeologist should be notified in order for an investigation and evaluation of the find(s) to take place (see NHRA (Act No. 25 of 1999), Section 36 (6).

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APPENDIX A: DEFINITION OF TERMS ADOPTED IN THIS HIA

- **The terminology adopted in this document is mainly influenced by the NHRA of South Africa (1999) and the Burra Charter (1979).**

Adaptation: Changes made to a place so that it can have different but reconcilable uses.

Artefact: Cultural object (made by humans).

Buffer Zone: Means an area surrounding a cultural heritage which has restrictions placed on its use or where collaborative projects and programs are undertaken to afford additional protection to the site.

Co-management: Managing in such a way as to take into account the needs and desires of stakeholders, neighbours and partners, and incorporating these into decision making through, amongst others, the promulgation of a local board.

Conservation: In relation to heritage resources, includes protection, maintenance, preservation and sustainable use of places or objects so as to safeguard their cultural significance as defined. These processes include, but are not necessarily restricted to preservation, restoration, reconstruction and adaptation.

Contextual Paradigm: A scientific approach which places importance on the total context as catalyst for cultural change and which specifically studies the symbolic role of the individual and immediate historical context.

Cultural Resource: Any place or object of cultural significance

Cultural Significance: Means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance of a place or object for past, present and future generations.

Feature: A coincidental find of movable cultural objects.

Grading: The South African heritage resource management system is based on a grading system, which provides for assigning the appropriate level of management responsibility to a heritage resource.

Heritage Resources Management: The utilization of management techniques to protect and develop cultural resources so that these become long term cultural heritage which are of value to the general public.

Heritage Resources Management Paradigm: A scientific approach based on the Contextual paradigm, but placing the emphasis on the cultural importance of archaeological (and historical) sites for the community.

Heritage Site Management: The control of the elements that make up the physical and social environment of a site, its physical condition, land use, human visitors, interpretation etc. Management may be aimed at preservation or, if necessary at minimizing damage or destruction or at presentation of the site to the public.

Historic: Means significant in history, belonging to the past; of what is important or famous in the past.

Historical: Means belonging to the past, or relating to the study of history.

Maintenance: Means the continuous protective care of the fabric, contents and setting of a place. It does not involve physical alteration.

Object: Artefact (cultural object)

Paradigm: Theories, laws, models, analogies, metaphors and the epistemological and methodological values used by researchers to solve a scientific problem.

Preservation: Refers to protecting and maintaining the fabric of a place in its existing state and retarding deterioration or change, and may include stabilization where necessary. Preservation is appropriate where the existing state of the fabric itself constitutes evidence of specific cultural significance, or where insufficient evidence is available to allow other conservation processes to be carried out.

Protection: With reference to cultural heritage resources this includes the conservation, maintenance, preservation and sustainable utilization of places or objects in order to maintain the cultural significance thereof.

Place : Means a geographically defined area. It may include elements, objects, spaces and views. Place may have tangible and intangible dimensions.

Reconstruction: To bring a place or object as close as possible to a specific known state by using old and new materials.

Rehabilitation: The repairing and/ or changing of a structure without necessarily taking the historical correctness thereof into account.

Restoration: To bring a place or object back as close as possible to a known state, without using any new materials.

Site: A large place with extensive structures and related cultural objects. It can also be a large assemblage of cultural artefacts, found on a single location.

Sustainable: Means the use of such resource in a way and at a rate that would not lead to its long-term decline, would not decrease its historical integrity or cultural significance and would ensure its continued use to meet the needs and aspirations of present and future generations of people.

APPENDIX B: CEMETERY BYLAWS & GRAVE REQUIREMENTS TO BE ADOPTED IN THE CONSTRUCTION OF THE CEMETRY.

Dimension of Graves:

- The excavation of a grave for an adult shall be at least 1820mm deep, 2300mm long and 760mm wide.
- The excavation of a grave for a child shall be at least 1370mm deep, 1520mm long and 610mm wide.
- In an event that a grave of a greater depth, length or width than those specified above is required, application in respect thereof, together with extra prescribed fees that are due, shall be made to the caretaker with the application to obtain permission for a burial.
- The excavation of an extra deep grave for the burial of two corpses shall be at least 2400mm deep 2300mm long and 760mm wide.
- Deviations from measurements of graves shall be as follows:
  - Extra wide: 2300mm long and 840 mm wide
  - Extra-long: 2530mm long and 760mm wide
  - Rectangular small: 2300mm long and 900mm wide
  - Brick nogging: 2600 mm long and 1050mm wide
- The area of a rectangular grave for an adult shall be 1500mm wide by 2600 mm long.
- The area of a grave for an adult shall be 1210mm wide by 2430mm long.
- The area of a grave of a child shall be 1210mm wide by 1520mm long. If a coffin is too large, an adult grave shall be used.

Covering of Earth

- There shall be at least 1 200mm of soil between the top of the adult coffin and the ground surface, and at least 900mm of the top of a child coffin and the ground surface.

Number of Bodies in One Grave

- Only one corpse may be buried in a grave with measurements as contemplated in this bylaw.
- Only two corpses may be buried in a grave with measurements as set out in sub-section
- 15(4): Provided that the application for the burial of two corpses has been made to the caretaker in writing by completing and submitting the required application form before the first corpse is buried.

APPENDIX C: DEFINITION OF VALUES

Value	Definition
Historic Value	Important in the community or pattern of history or has an association with the life or work of a person, group or organization of importance in history.
Scientific Value	Potential to yield information that will contribute to an understanding of natural or cultural history or is important in demonstrating a high degree of creative or technical achievement of a particular period
Aesthetic Value	Important in exhibiting particular aesthetic characteristics valued by a community or cultural group.
Social Value	Have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons
Rarity	Does it possess uncommon, rare or endangered aspects of natural or cultural heritage
Representivity	Important in demonstrating the principal characteristics of a particular class of natural or cultural places or object or a range of landscapes or environments characteristic of its class or of human activities (including way of life, philosophy, custom, process, land-use function, design or technique) in the environment of the nation, province region or locality.

APPENDIX D: RESOURCE LIKELY TO OCCUR WITHIN THESE CONTEXTS AND LIKELY SOURCES OF HERITAGE IMPACTS/ISSUES

HERITAGE CONTEXT	HERITAGE RESOURCES	SOURCES OF HERITAGE IMPACTS/ISSUES
A. PALAEONTOLOGICAL LANDSCAPE CONTEXT	Fossil remains. Such resources are typically found in specific geographical areas, e.g. the Karoo and are embedded in ancient rock and limestone/concrete formations.	Road cuttings Quarry excavation
B. ARCHAEOLOGICAL LANDSCAPE CONTEXT NOTE: Archaeology is the study of human material and remains (by definition) and is not restricted in any formal way as being below the ground surface.	Archaeological remains dating to the following periods: ▪ ESA ▪ MSA ▪ LSA ▪ LSA - Herder ▪ Historical ▪ Maritime history	▪ Subsurface excavations including ground leveling, landscaping, foundation preparation. ▪ In the case of maritime resources, development including land reclamation, harbor/marina/water front developments, marine mining, engineering and salvaging.
	Types of sites that could occur include: ▪ Shell middens	
	▪ Historical dumps	
	▪ Structural remains	
C. HISTORICAL BUILT URBAN LANDSCAPE CONTEXT	• Historical townscapes/streetscapes. • Historical structures; i.e. older than 60 years • Formal public spaces. • Formally declared urban conservation areas. • Places associated with social identity/displacement.	A range of physical and land use changes within this context could result in the following heritage impacts/issues: • Loss of historical fabric or layering related to demolition or alteration work. • Loss of urban morphology related to changes in patterns of subdivision and incompatibility of the scale, massing and form of new development. • Loss of social fabric related to processes of gentrification and urban renewal.

APPENDIX E: PALEONTOLOGICAL IMPACT ASSESSMENT

Exemption Letter – The Proposed Construction Activities at the Existing Gilead Substation in Mokopane

Heidi Fourie – Palaeontological Impact Assessment

Mogalakwena Local Municipality, Waterberg District Municipality, Limpopo Province.
Farm: Ham 899-LR, Gilead 729-LR

Protocol for a Chance Fossil Find is included.

The applicant, Eskom SOC Holdings Ltd proposes to upgrade the infrastructure between the Chloe substation and the Gilead substation in order to improve the reliability of the existing electricity supply and also where possible provide new supply for any additional customers. Subsequently, a 66 kV powerline was constructed between Chloe and Gilead Substations.

Summary

This letter serves as a Letter of Exemption. It is in compliance with The Minimum Standards for Palaeontological Components of Heritage Impact Assessment Reports, SAHRA APMHOB, Guidelines 2012. The development is underlain by the rocks of the Bushveld Complex, Hout River Gneiss and Matlala Granite; Mokolian, Vaalian and Randian in age respectively, with a **VERY LOW** Palaeontological Sensitivity (Groenewald and Groenewald 2014*). This development will take place on igneous rocks, therefore, the impact will be **VERY LOW.**

Eskom seek to deviate one km of the existing 66 kV Chloe-Gilead powerline and have it connected to the new 66 kV feeder as well as dismantling the existing 66 kV Chloe-Gilead powerline.

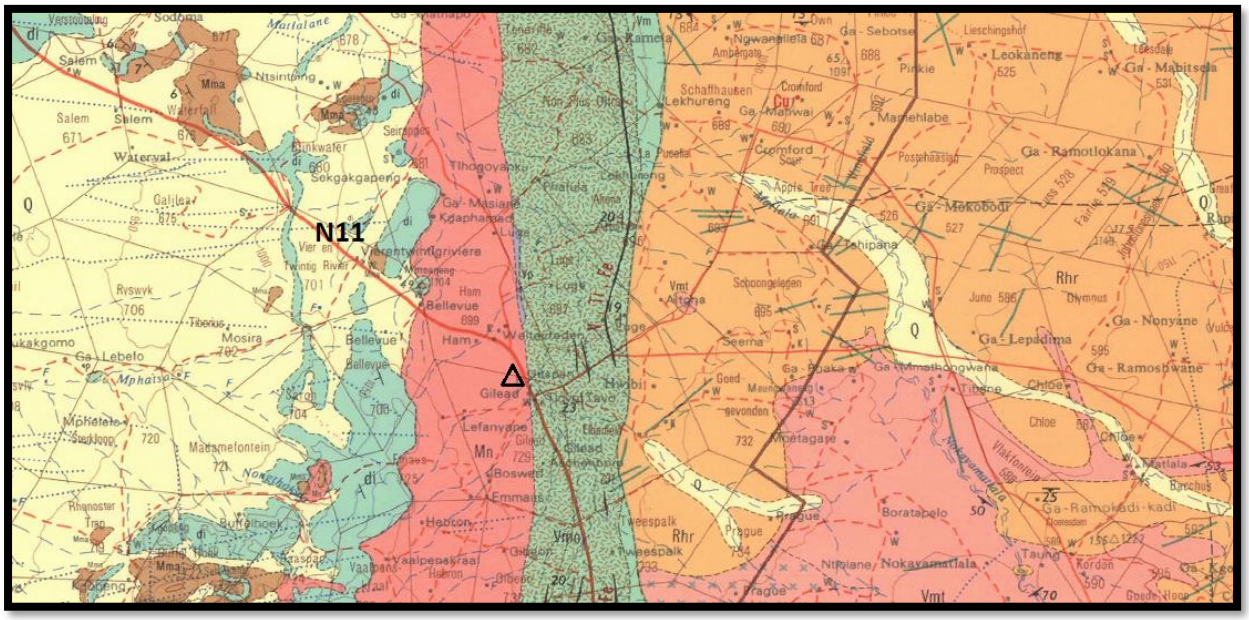


Figure 1: Geology of area (1:250 000 2328 Pietersburg, Brandl, G. 1985).
Legend to Map and short Explanation:
Mn – Coarse-grained red hornblende granite (red). Nebo Granite, Lebowa Granite Suite, Bushveld Complex. Mokolian.
Vmo – Magnetite gabbro, gabbro, anorthosite, olivine diorite; magnetite layer (green). Molendraai Magnetite Gabbro, Rustenburg Layered Suite, Bushveld Complex. Vaalian.
Vmt – Fine-grained grey to pink biotite granite; coarse-grained and in places porphyritic [xx] (dark orange). Matlala Granite.
Rhr – Leucocratic migmatite and gneiss, grey and pink hornblende-biotite gneiss, grey biotite gneiss; minor muscovite-bearing granite, pegmatite and gneiss (orange). Hout River Gneiss.
----- - - Concealed geological boundary.
----f--- - Fault
⊥ 20˚ - Strike and dip.
Δ – Approximate position of substation.

The Bushveld Complex (surrounding area) is a massive body of igneous origin and it is intrusive in the Transvaal Supergroup (Kent, 1980). The Bushveld Complex extends over 440 km east-west, from Burgersfort to Nietverdiend; and for nearly 350 km north-south from Villa Nora to Bethal. It covers an area of 65 000 km² and is chrome and platinum rich (Visser, 1989). The age is Vaalian (2,100 – 1,920 Ma). The layered rocks of the Bushveld Complex are generally believed to be the result of crystals settling out of magma during slow cooling. The magmatic events petrogenetically related to and generally considered part of the whole magmatic evolution of the Complex are, the diabase sills and the Rooiberg Group. The Complex consists of three main units or suites of which the Rustenburg Layered Suite is one (Kent, 1980), the other two are the Rashoop Granophyre Suite and Lebowa Granite Suite (Visser, 1989). The region will be covered by 'Bushveld' vegetation. The weathering product is known as 'black turf' (Kent, 1980; Visser, 1989). There is a presence of mining past and present with iron ore and the Merensky Reef. Magnesite mines provide magnesium carbonate for making heat-resistant bricks (Norman and Whitfield 2006). The Layered Suite, the source of an immense wealth of platinum, chrome and vanadium, comprises six quite distinct zones.

The Matlala Granite is an almost rounded pluton, north of Mokopane with an age of 2 236 ± 55 to 2 458 ±60 my. (Visser 1989). Stretching from Mokopane in the south to the Soutpansberg in the north is the Hout River Gneiss. It contains inclusions from the Pietersburg Group with an age of 2 750 my. (Visser 1989).

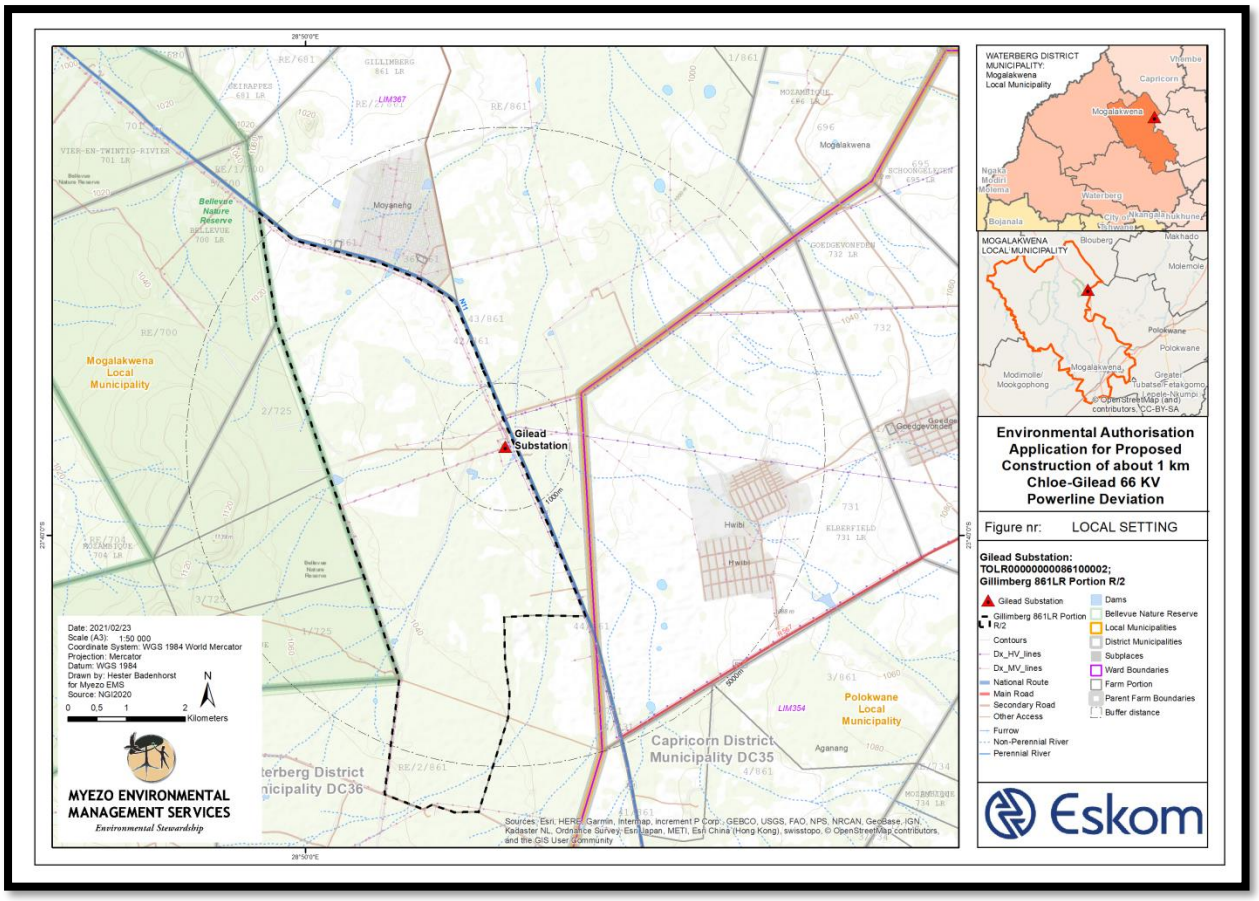


Figure 2: Location map (Myezo).

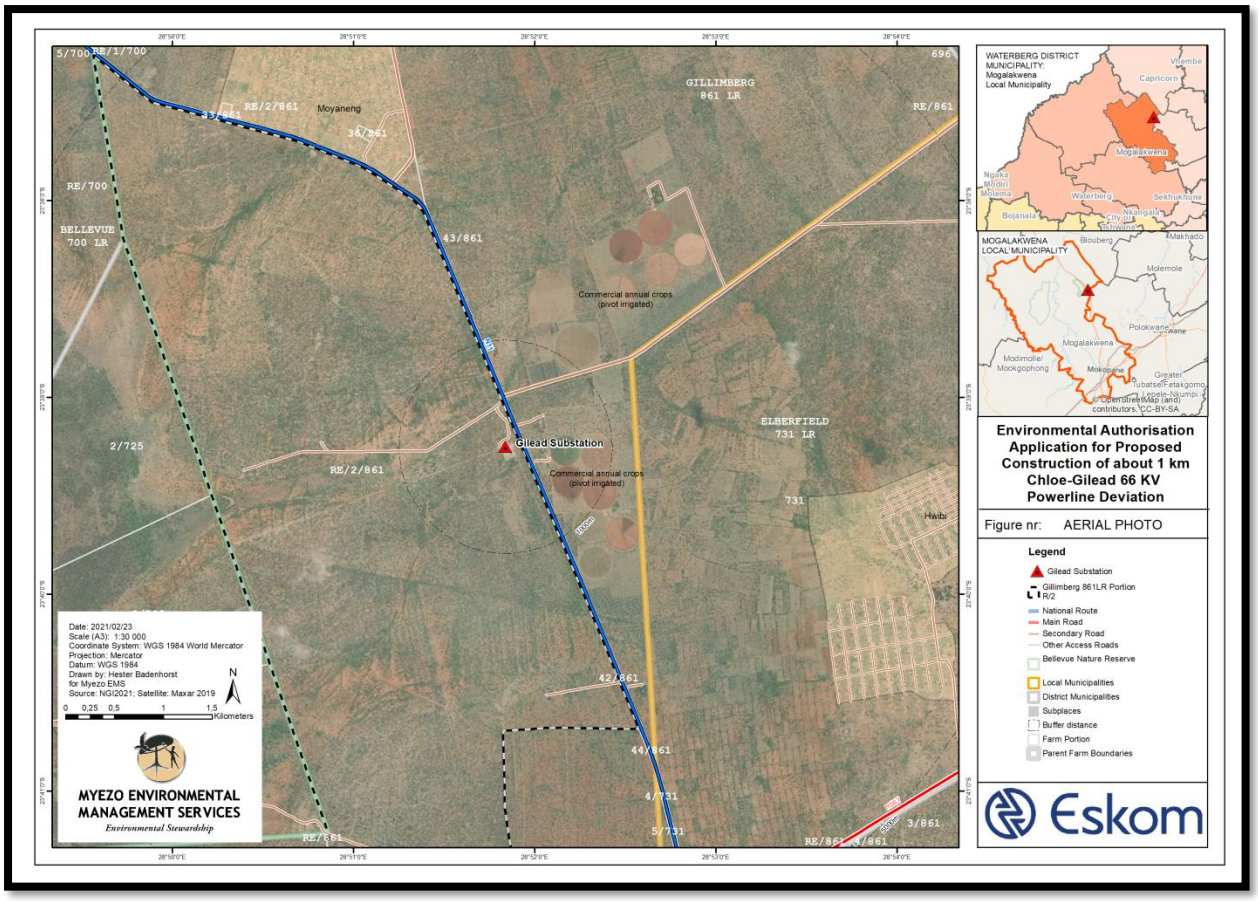


Figure 3: Aerial view (Myezo).

Palaeontological Sensitivity

BUSHVELD MAGMATIC PROVINCE / BUSHVELD COMPLE diabase (Vdl) unnamed granophyre (VC) Rashoop Granophyre Suite (Vra) Croydon Subsuite (Vc) Dwars River Subsuite (Vdr) Dsjate Subsuite (Vds) Roossenekal Subsuite (Vrs) Lebowa Granite Suite (Vlg) Shelter Norite (Vsn)	Vdl; VC; Vra; Vc; Vdr; Vds; Vrs; Vlg; Vsh; Vsh1; Vmn; Vme; Vzo; Z; Z23; Z26; Vcr; Vdj; Vds; Vmt1;					Intrusive igneous rocks Late Vaalian / Early Proterozoic 2.06 Ga Mafic intrusives of Rustenberg Layered Suite Intrusive granites granophyres	No fossils recorded	Bushveld Complex has been described as "One of the great geological wonders of the world" – the largest layered igneous complex in the world with the richest reserves of platinum group metals known anywhere. Intruded between Magaliesberg Fm quartzites (Pretoria Group) and the Rooiberg Group volcanics.

*Groenewald, G. and Groenewald, D., 2014. SAHRA Palaeotechnical Report: Palaeontological Heritage of the Limpopo Province (Pp 22), South African Heritage Resources Agency.

No fossils recorded due to the igneous nature.

Recommendation

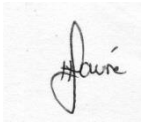
That Exemption from a Desktop Study for the proposed Eskom Gilead Development be granted to the applicant taking into consideration all the above stated information.

Declaration (disclaimer)

I, Heidi Fourie, declare that I am an independent consultant and have no business, financial, personal or other interest in the proposed development project for which I was appointed to do a palaeontological assessment. There are no circumstances that compromise the objectivity of me performing such work. I accept no liability, and the client, by receiving this document, indemnifies me against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by the use of the information contained in this document.

It may be possible that the Exemption Letter may have missed palaeontological resources in the project area as outcrops are not always present or visible on geological maps while others may lie below the overburden of earth and may only be present once development commences.

This report may not be altered in any way and any parts drawn from this report must make reference to this letter.



Heidi Fourie
2021/02/28

Protocol for Chance Finds and Management plan

This section covers the recommended protocol for a Phase 2 Mitigation process as well as for reports where the Palaeontological Sensitivity is **LOW;** this process guides the palaeontologist / paleobotanist / ECO on site and should not be attempted by the layman / developer.

- As part of the Environmental Authorisation conditions, an Environmental Control Officer (ECO) will be appointed to oversee the construction/prospecting/mining activities in line with the legally binding Environmental Management Programme (EMPr) so that when a fossil is unearthed they can notify the relevant department and specialist to further investigate.
- All fossil finds must be placed in a safe place for further investigation.
- The ECO should familiarise him- or herself with the applicable formations and its fossils.
- Most Universities and Museums have good examples of fossils.
- The EMPr already covers the conservation of heritage and palaeontological material that may be exposed during construction/prospecting/mining activities. For a chance fossil find, the protocol is to cease all construction activities, construct a 30 m no-go barrier, and contact SAHRA for further investigation.
- It is recommended that the EMPr be updated to include the involvement of a palaeontologist when necessary, either for pre-construction training of ECO or for pre-determined site visits. The ECO must visit the site after clearing, drilling, excavations and blasting and keep a photographic record.
- The developer may be asked to survey the areas affected by the development and indicate on plan where the construction / development / mining will take place. Trenches may have to be dug to ascertain how deep the sediments are above the bedrock (can be a few hundred

metres). This will give an indication of the depth of the topsoil, subsoil, and overburden, if need be trenches should be dug deeper to expose the interburden.

The palaeontological impact assessment process presents an opportunity for identification, access and possibly salvage of fossils and add to the few good localities. Mitigation can provide valuable onsite research that can benefit both the community and the palaeontological fraternity. A Phase 2 study is very often the last opportunity we will ever have to record the fossil heritage within the development area. Fossils excavated will be stored at a National Repository.