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**A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY FOR
ESKOM'S PROPOSED NEW VICTOR SWITCHING STATION AND
132kV POWER LINE IN THE GREATER TUBATSE LOCAL
MUNICIPALITY IN THE STEELPOORT VALLEY IN THE LIMPOPO
PROVINCE**

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EXECUTIVE SUMMARY

A Phase I Heritage Impact Assessment (HIA) study as required in terms of Section 38 of the National Heritage Resources Act (No 25 of 1999) was done for Eskom's proposed new Victor Switching Station and 132kV power line in the Greater Tubatse Local Municipality in the Steelpoort Valley in the Limpopo Province. The construction of the proposed new Victor Switching Station and the 132kV power line is hereafter referred to as the Eskom Project whilst the footprints of the proposed new development are referred to as the Eskom Project Area.

The aims with the Phase I HIA study were the following:

- To establish whether any of the types and ranges of heritage resources ('national estate') as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) do occur in the Eskom Project Area and, if so to determine the significance of these heritage resources, and
- To make recommendations regarding the mitigation and management of significant heritage resources that may be affected by the Eskom Project.

The Phase I HIA study for the Eskom Project revealed the following types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999), in and near the Eskom Project Area, namely:

- Isolated, scattered Middle Stone Age (MSA) tools which occur across the Eskom Project Area (and beyond).
- A limited number of undecorated potsherds, a few grinding stones and what seems like a piece of a lower grinding stone which may date from the Late Iron Age and/or Historical Period.

Possible impact on the heritage resources

It is highly likely that all the MSA tools and the Iron Age/Historical Remains (potsherds and other stone tools) will be affected (destroyed) when the proposed Victor Switching Station is constructed, operated or decommissioned.

The significance of these remains therefore has to be indicated.

The significance of the heritage resources

The significance of both the MSA tools and the Late Iron Age/Historical remains can be described as of low significance when considering the criteria outlined in Table 1.

The significance of the impact on the heritage resources

The significance of potential impacts on the MSA tools and the Iron Age/Historical Remains was determined using a ranking scale, based on different criteria.

The significance of the impact on the MSA tools is high (Table 2).

The significance of the impact on the Iron Age/Historical Remains is high (Table 3).

Mitigating the heritage resources

The MSA tools

The significance of the potential impact on the MSA tools is high. However, the MSA tools have low significance. Therefore the MSA tools need no mitigation measures.

The Iron Age/Historical Remains

The significance of the potential impact on the Iron Age/Historical Remains is high. However, the Iron Age/Historical Remains have low significance. Therefore the Iron Age/Historical Remains need no mitigation measures.

Conclusion

Alternative 01 as well as Alternative 02 for the proposed Victor Switching Station revealed the presence of scattered, isolated occurrences of MSA tools as well as the presence of scattered, isolated occurrences of undecorated potsherds and stone artefacts (such as lower grinding stones and grinders or hammer stones) which date from the Late Iron Age and/or Historical Period.

These remains have low significance, have been reported (documented) in this report and do not warrant further investigation or any mitigation measures due to the limited nature of the remains. The widely scattered nature of the remains will also ensure that some will survive unaffected beyond the Eskom Project Area.

Both Alternative 01 and Alternative 02 for the Victor Switch Station are therefore considered to be suitable from a heritage point of view for the Eskom Project.

General (disclaimer)

This Phase I HIA study may have missed other heritage resources in the Eskom Project Area as heritage sites may occur in thick clumps of vegetation while others may lie below the surface of the earth and may only be exposed once development commences.

If any heritage resources of significance is exposed during the Eskom Project the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notify in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.

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1 INTRODUCTION

This document contains the report on the results of the Phase I Heritage Impact Assessment (HIA) study that was done for Eskom's proposed new Victor Switching Station and 132kV power line in the Greater Tubatse Local Municipality in the Steelpoort Valley in the Limpopo Province.

Focused archaeological research has been conducted in the Limpopo Province for several decades. This research consists of surveys and of excavations of Stone Age and Iron Age sites as well as of the recording of rock art and historical sites in this area. The Limpopo Province has a rich heritage comprised of remains dating from the pre-historical and from the historical (or colonial) periods of South Africa. Pre-historical and historical remains in the Limpopo Province of South Africa form a record of the heritage of most groups living in South Africa today.

Various types and ranges of heritage resources that qualify as part of South Africa's 'national estate' (as outlined in the National Heritage Resources Act [No 25 of 1999]) occur in the Limpopo Province (see Box 1, next page).

Box 1: Types and ranges of heritage resources (the national estate) as outlined in Section 3 of the National Heritage Resources Act, 1999 (No 25 of 1999).

The National Heritage Resources Act (Act No 25 of 1999, Art 3) outlines the following types and ranges of 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 traditions are attached or which are associated with living heritage;
- (c) historical settlements and townscapes;
- (d) landscapes and natural features of cultural significance;
- (e) geological sites of scientific or cultural importance;
- (f) archaeological and palaeontological sites;
- (g) graves and burial grounds including-
 - (i) ancestral graves;
 - (ii) royal graves and graves of traditional leaders;
 - (iii) graves of victims of conflict;(iv) graves of individuals designated by the Minister by notice in the Gazette;
 - (v) historical graves and cemeteries; and
 - (vi) other human remains which are not covered by in terms of the Human Tissues 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) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - (ii) objects to which oral traditions are attached or which are associated with living heritage;
 - (iii) ethnographic art and objects;
 - (iv) military objects;
 - (v) objects of decorative or fine art;
 - (vi) objects of scientific or technological interest; and
 - (vii) books, records, documents, photographs, positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No 43 of 1996).

The National Heritage Resources 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;
- (a) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- (b) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- (c) 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 particular period;
- (g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons; (h)
- (h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa;
- (i) sites of significance relating to the history of slavery in South Africa

2 AIMS WITH THIS REPORT

Eskom intends to construct the proposed Victor Switching Station and 132kV power line in the Greater Tubatse Local Municipality in the Steelpoort Valley in the Limpopo Province. The Eskom Project may have an influence on any of the types and ranges of heritage resources which are listed in Section 3 of the National Heritage Resources Act (No 25 of 1999).

In order to comply with heritage legislation Eskom requires knowledge of the presence, relevance and the significance of any heritage resources that may be affected by the Eskom Project. Eskom needs this knowledge in order to take proactive measures with regard to any heritage resources that may be affected, damaged or destroyed when the Eskom Project is implemented. Nzumbululo Heritage Solutions, the environmental company responsible for compiling the Environmental Impact Assessment (EIA) for the Eskom Project commissioned the author to undertake a Phase I HIA study for the Eskom Project Area.

The aims with the Phase I HIA were the following:

- To establish whether any of the types and ranges of heritage resources ('national estate') as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) do occur in the Eskom Project Area and, if so to determine the significance of these heritage resources, and
- To make recommendations regarding the mitigation and management of significant heritage resources that may be affected by the Eskom Project.

3 METHODOLOGY

This Phase I HIA study was conducted by means of the following:

3.1 Fieldwork survey

The proposed new power line and its alternative as well as the stands for the Victor Switching Station were surveyed with a vehicle (where access existed) and/or were surveyed on foot. The nature and extend of field survey is illuminated in some photographs in this report which also illustrates the nature and the characteristics of the Project Area ('Part 6.1 The field survey').

A route was recorded with a mounted GPS instrument which outlines the main pathway which was followed with a vehicle. Pedestrian surveys were undertaken from the main pathway. The total length of the route was not surveyed as the signal was temporary lost during the survey (Figure 1).

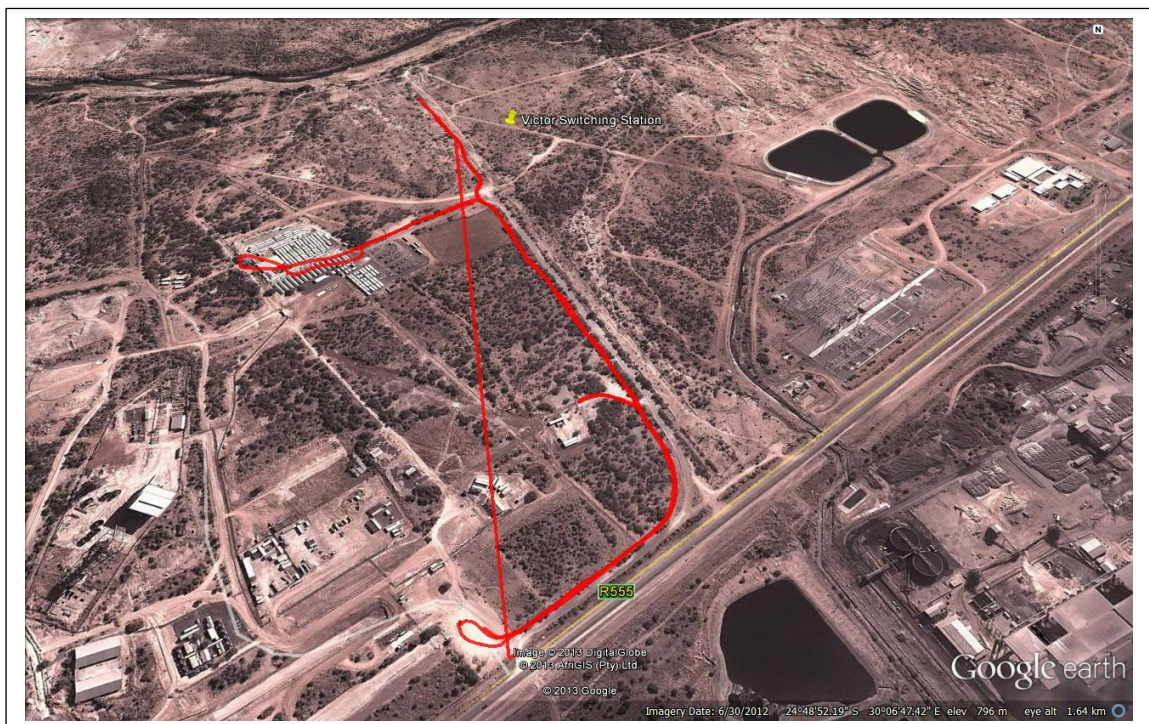


Figure 1- Part of the pathway that was followed during the survey for Eskom's proposed new switching Station and 132kV power line (above).

3.2 Databases, literature survey and maps

Literature relating to the pre-historical and the historical unfolding of the Steelpoort Valley was reviewed. This review focused primarily on the pre-history as well as the Historical Period on the Steelpoort area. It also provided a chronological history of the region stretching from the pre-historical to the historical period which contributes to a better understanding of the identity and meaning of heritage sites which occur in and near the Eskom Project Area.

The desktop study also involved consulting heritage data banks maintained at institutions such as the Limpopo Provincial Heritage Resources Agencies, the Archaeological Data Recording Centre at the National Flagship Institute (Museum Africa) in Pretoria and the national heritage resources register at the South African Heritage Resources Agency (SAHRIS) in Cape Town.

A number of Phase I HIA studies were done near the Eskom Project Area during the past decade, the results of which were published in several reports (see 'Select Bibliography', Part 8).

In addition, the Eskom Project Area was also studied by means of maps on which it appears (2430CA Steelpoort; 1: 50 000 topographical map, 1:250 000 map & Google imagery).

3.3 Assumptions and limitations

It is possible that this Phase I HIA study may have missed heritage resources in the Eskom Project Area as heritage sites may occur in thick clumps of vegetation while others may lie below the surface of the earth and may only be exposed once development commences.

If any heritage resources of significance is exposed during the Eskom Project the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist

(ASAPA) should be notified in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorization (permits) from SAHRA to conduct the mitigation measures.

3.4 Some remarks on terminology

Terms that may be used in this report are briefly outlined below:

- **Conservation:** The act of maintaining all or part of a resource (whether renewable or non-renewable) in its present condition in order to provide for its continued or future use. Conservation includes sustainable use, protection, maintenance, rehabilitation, restoration and enhancement of the natural and cultural environment.
- **Cultural resource management:** A process that consists of a range of interventions and provides a framework for informed and value-based decision-making. It integrates professional, technical and administrative functions and interventions that impact on cultural resources. Activities include planning, policy development, monitoring and assessment, auditing, implementation, maintenance, communication, and many others. All these activities are (or will be) based on sound research.
- **Cultural resources:** A broad, generic term covering any physical, natural and spiritual properties and features adapted, used and created by humans in the past and present. Cultural resources are the result of continuing human cultural activity and embody a range of community values and meanings. These resources are non-renewable and finite. Cultural resources include traditional systems of cultural practice, belief or social interaction. They can be, but are not necessarily identified with defined locations.
- **Heritage resources:** The various natural and cultural assets that collectively form the heritage. These assets are also known as cultural and natural resources. Heritage resources (cultural resources) include all human-made phenomena and intangible products that are the 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 lifestyles of the people or groups of people of South Africa.

- In-Situ Conservation: The conservation and maintenance of ecosystems, natural habitats and cultural resources in their natural and original surroundings.
- Iron Age: Refers to the last two millennia and 'Early Iron Age' to the first thousand years AD. 'Late Iron Age' refers to the period between the 16th century and the 19th century and can therefore include the Historical Period.
- Maintenance: Keeping something in good health or repair.
- Pre-historical: Refers to the time before any historical documents were written or any written language developed in a particular 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 to the Eastern Highveld by the first Colonists who settled here from the 1840's onwards.
- Preservation: Conservation activities that consolidate and maintain the existing form, material and integrity of a cultural resource.
- 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, in the near future, qualify as heritage resources.
- Protected area: A geographically defined area designated and managed to achieve specific conservation objectives. Protected areas are dedicated primarily to the protection and enjoyment of natural or cultural heritage, to the maintenance of biodiversity, and to the maintenance of life-support systems. Various types of protected areas occur in South Africa.

- Reconstruction: Re-erecting a structure on its original site using original components.
- Replication: The act or process of reproducing by new construction the exact form and detail of a vanished building, structure, object, or a part thereof, as it appeared at a specific period.
- Restoration: Returning the existing fabric of a place to a known earlier state by removing additions or by reassembling existing components.
- Stone Age: Refers to the prehistoric past, although Late Stone Age peoples lived in South Africa well into the Historical Period. The Stone Age is divided into an Earlier Stone Age (3 million years to 150 000 thousand years ago) the Middle Stone Age (150 000 years to 40 000 years ago) and the Late Stone Age (40 000 years to 200 years ago).
- Sustainability: The ability of an activity to continue indefinitely, at current and projected levels, without depleting social, financial, physical and other resources required to produce the expected benefits.
- Translocation: Dismantling a structure and re-erecting it on a new site using original components.
- Project Area: refers to the area (footprint) where the developer wants to focus its development activities (refer to Figure 3).
- Phase I studies refer to surveys using various sources of data in order to establish the presence of all possible types and ranges of heritage resources in any given Project Area (excluding paleontological remains as these studies are done by registered and accredited palaeontologists).
- Phase II studies include in-depth cultural heritage studies such as archaeological mapping, excavating and sometimes laboratory work. Phase II work may include the documenting of rock art, engraving or historical sites and dwellings; the sampling of archaeological sites or shipwrecks; extended

excavations of archaeological sites; the exhumation of human remains and the relocation of graveyards, etc. Phase II work involve permitting processes, require the input of different specialists and the co-operation and approval of SAHRA.

4 THE ESKOM PROJECT AREA

4.1 Location

The Eskom Project is situated approximately twenty-five kilometres to the south-west of the village of Steelpoort in the Steelpoort Valley in the Limpopo Province. The Eskom Project Area is situated near the Steelpoort River and the road that runs between Stoffberg and Steelpoort (R555). The Project Area falls near Kennedy's Vale 361 and Spitskop 333 and is wedged on a degraded piece of land which is situated between Eskom's Senakangwedi Substation and the Steelpoort River (Kennedy's Vale 2430CC 1: 50 000 topographic map & 2430 Pelgrimsrust 1: 250 000 map) (Figures 3-8).

The Steelpoort Valley's name is derived from the Steelpoort (Tubatse) River, one of the main geographical features in this valley. The Steelpoort River is a southern tributary of the Olifants River. It flows from an altitude higher than 1 800m on the Highveld near Wonderfontein in the Belfast district northwards and then north-eastwards to join the Olifants River before the latter cuts through the Drakensberg to enter the Lowveld. Other prominent landmarks in the wider study area include the imposing Leolo mountain range which runs to the west of the Project Area and which features as an important beacon in the origin history of the Pedi.

4.2 The developed nature of the Eskom Project Area

The Eskom Project is located in the central part of the Steelpoort Valley. This region used to be part of the heartland of the pre-historical and the historical Pedi chiefdom. However, the Eskom Project Area is not a pristine piece of land any longer as various development activities have occurred in the area during the last few decades. This include the establishment of mining related infrastructure as well as roads which criss-cross the area whilst some of Eskom's existing power lines also run across this area. The archaeological and historical significance of this cultural landscape therefore is briefly outlined before the results of the Phase II HIA study is discussed (see Part 5, 'Contextualising the Project Area').

4.3 The nature of the Eskom Project

The key development components of the proposed Eskom Project include the following:

- The construction of the proposed Victor Switching Station. Two Alternatives are proposed for the switching station, namely Alternative 01 (north) and Alternative 02 (south) which are located opposite each other.
- The construction of a proposed \pm 1.0km 132kV power line between the existing 132kV Jane Furse/Merensky power line and the Victor Switching Station. Two alternatives are proposed for the power line namely Alternative 01 (green) and Alternative 02 (yellow) which runs parallel with each other (Figure 2).

The construction of the proposed new Victor Switching Station and the 132kV power line is hereafter referred to as the Eskom Project whilst the footprints of the proposed new development are referred to as the Eskom Project Area.

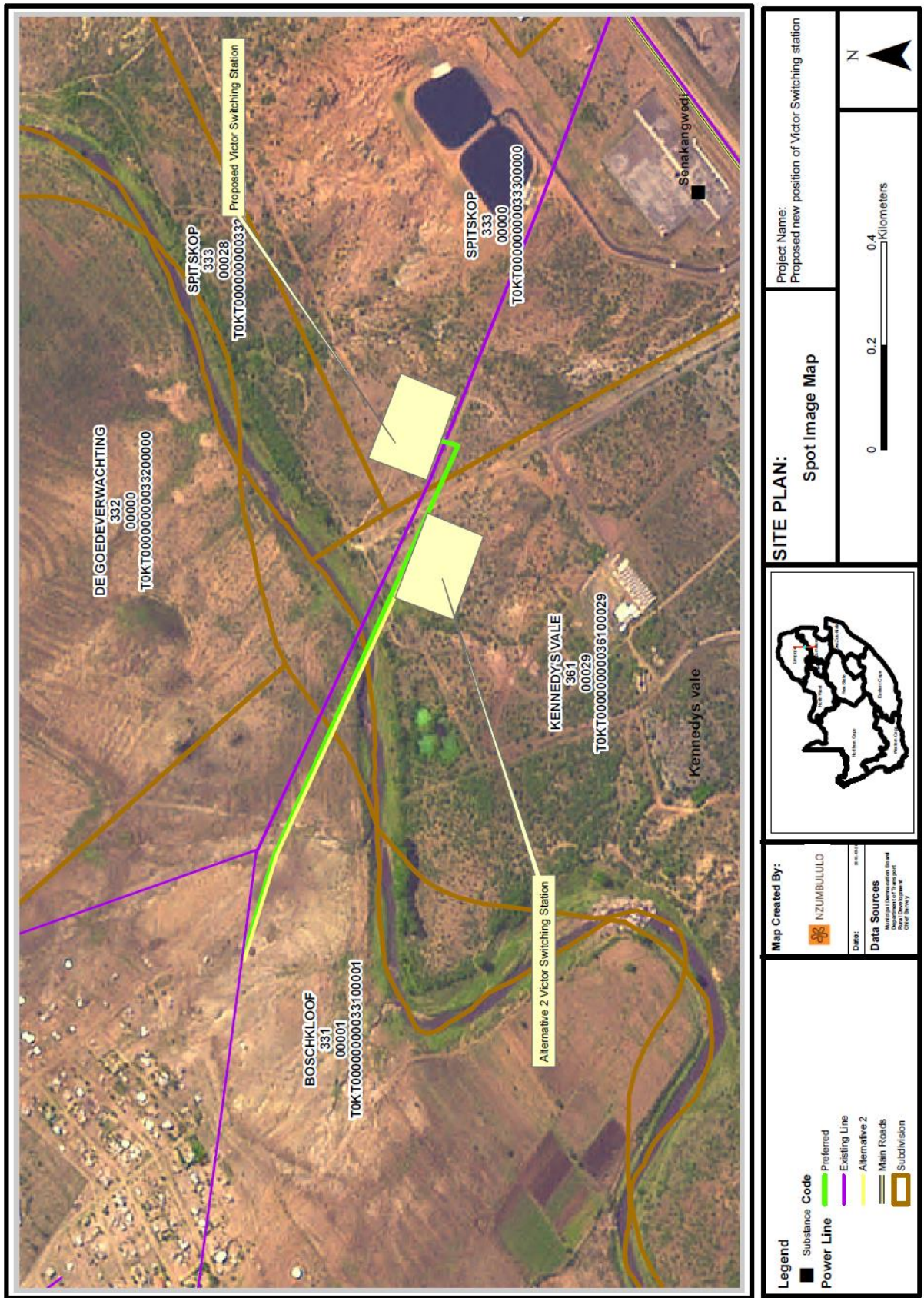


Figure 2- The Eskom Project involving the Victor Switching Station and 132kV power line with alternatives in the Steelpoort Valley of the Limpopo Province.

5 CONTEXTUALISING THE ESKOM PROJECT AREA

The Eskom Project Area is located in the heartland of the Steelpoort Valley which is renowned for its rich and diverse range of heritage resources. The following background information is aimed at contextualising the Eskom Project Area with regard to the presence of certain types and ranges of heritage resources that may occur in or near the Eskom Project Area.

5.1 Pre-historical context

Stone Age sites are scattered in the extensive network of dongas which occur across the wide valleys floors between the Leolo and other mountain ranges in the northern part of the Steelpoort Valley. Some sites have been observed by the author on farms such as Hendriksplaats 281, Derde Gelid 278, Onverwacht 292, Winterveld 293, Annex Grootboom 335 and Apiesboomen 295 (Pistorius 2005a, 2005b). These stone tools date from the Early Stone Age (500 000 to 200 000 years ago), the Middle Stone Age (200 000 to 40 000 years ago) and from the Late Stone Age (40 000 to 200 years ago).

However, no archaeological survey for Stone Age sites as part of any extensive or in-depth Stone Age research project has to the knowledge of this author been done in the Steelpoort River Valley as yet.

5.2 Pre-historical and early Historical Period

The origins of the first Bantu-Negroid farming communities who practised agriculture, live-stock herding and metal working can be traced to the Steelpoort Valley. These Early Iron Age farming communities whose settlements have been recorded on amongst others Hendriksplaats 281 and Derde Gelid 278 were related to Early Iron Age communities who, contemporaneously, AD500 to AD900, settled further towards the east in the Lydenburg Valley (Pistorius 2005a). One of the settlements belonging to the Early Iron Age Lydenburg culture won international acclaim as the Lydenburg

clay masks were discovered at this site near the Sterkspruit, south of Lydenburg (Inskeep 1978, Whitelaw 1996).

The historical period in the Steelpoort Valley is associated with the second millennium AD when a predominantly Northern Sotho-speaking population occupied the Steelpoort. These people are part of a larger Northern Sotho-speaking community who occupy a vast area between the Limpopo River in the north, the Drakensberg in the east and the Sekhukhune Mountains in the west. Numerous divisions and groups or clans therefore occupy this vast region. The history of the people of this area can be divided into several periods (Mönnig 1978, Delius 1984, 2007):

The earliest period of settlement is characterized by small groups of Bantu people who started to drive the San and Khoi Khoi from the area and who are difficult to identify. From approximately AD1700 ancestral groupings of the present inhabitants of the land began to arrive in the area. Groups that can be distinguished include:

- A large group of Sotho who came from the north-eastern parts of the Lowveld and who settled on the plateau to the north and to the south of the Strydpoortberge.
- Small groups of Kgatla and Huruthshe-Kwena origin moved from the Tswana area (Brits and Rustenburg) into the territory. Amongst them were the present Pedi (or Rota) who moved into what is now Sekhukhuneland, where they subjected the Sotho already living there.
- During these times Sekhukhuneland was also penetrated by Sotho arriving from the south-east.
- After AD1600 the Northern Ndebele arrived from the south-east and settled in what is now the Mokerong district.

It is assumed that during the period from AD1700 to AD1826 the Pedi took political control over the territory previously known as Lebowa, but to the south of the Strydpoortberge. The Pedi chiefdom reached its zenith during the reign of Thulare who died in 1824.

During the disruption of the *difaqane* (AD1822 to AD1828) Mzilikazi attacked the Pedi from the south-east in 1826 and in 1827/1828. This caused large-scale depopulation of the southern part of the Northern-Sotho territory. The Pedi sought refuge in the Soutpansberg in 1822 and only returned in 1828.

After the wars with Mzilikazi there were wars with the Swazi. The Voortrekkers arrived in the Steelpoort area in the late 1840's. Several armed struggles between the Voortrekkers and the Pedi ensued.

5.3 The Historical Period

After the British annexed the Transvaal (AD1877 to AD1881) the Pedi was subjugated by the British who were supported by the Swazi during the war of Sekhukhune in 1879 (see more detail below).

In 1842 Andries Hendrik Potgieter wished to move from the British sphere of influence and to establish trade relations with Delagoa Bay. He moved with his followers from Potchefstroom to the Eastern Transvaal and founded Andries Ohrigstad (named after himself and Gergios Gerhardus Ohrig, a merchant from Amsterdam who was well disposed towards the Voortrekkers). The name was later abbreviated to Ohrigstad. The town also served as the seat of the Volksraad (Erasmus 1995).

During 1848 to 1849 Ohrigstad was abandoned when many people died of malaria. The town of Lydenburg was founded further to the south near the confluence of the Sterkspruit and the Spekboom River. This area was located on higher ground and was therefore healthier than Ohrigstad.

The railway line between Steelpoort and Lydenburg was constructed in 1924 due to an increase in the mining of chrome and magnetite. The name Steelpoort is derived from a hunting expedition that took place either in the late 19th century or the early 20th century. When a group of Voortrekkers from Natal under Frans Joubert had settled there, a man called Scholtz shot an elephant at dusk and on returning next morning found that the tusks had been removed. When the wagons were searched,

the tusks were found in the possession of a man called Botha, after which the farm Bothashoek was named. Because an elephant had been killed there, the poort was named Olifantspoort. The river flowing through the poort was called Steelpoort River ('steel' meaning steal).

The Pedi were governed by Thulware until his death in 1824. His main village was Monganeng on the banks of the Tubatse River. His son, Sekwati, fled to the Soutpansberg in the north during the raids of Mzilikazi in 1822. He returned in 1828 and occupied the mountain fortress Phiring, his capital from where he united the Pedi.

The Pedi initially maintained good relations with the Voortrekkers who arrived in Ohrigstad from 1845. However, after a clash with Andries Hendrik Potgieter in 1852 Sekwati moved his capital to Thaba ya Mosego. Border disputes with the Zuid-Afrikaansche Republiek (ZAR) were settled in 1857 with an accord that stated that the Steelpoort River served as the border between Pedi land and the Lydenburg Republic.

Sekwati gave the Berlin Missionary Society permission to establish the Maandagshoek missionary station in Pedi territory. After Sekwati's death in 1861, his son Sekhukhune succeeded his father and also established his village at Thaba Mosego. He ordered the Berlin Missionary Society to discontinue their work and the mission station was burn down. Alexander Merensky, one of the missionaries, thereafter established the well-known Botšabelo missionary station at Middelburg.

The good relationship between the ZAR and the Pedi was gradually weakened. The period from 1876 to 1879 was one of conflict and war, first with the ZAR and then with the British who annexed the Transvaal in 1877. During the First Sekhukhune War in August 1876, the Voortrekkers attacked Thaba Mosego and partly destroyed the settlement.

The Second Sekhukhune War followed in November 1879 during which Sekhukhune was captured in the Mamatamageng cave and sent to prison in Pretoria. Two

divisions attacked the Pedi. The main division, comprised of 3 000 whites and 2 500 black allies, attacked from the north-east. The Lydenburg division consist of 5 000 to 8 000 Swazi *impi*, 400 other black allies and 400 white soldiers who attacked from Burgersfort in the south. The Second Sekhukhune War is associated with the settlements of Thaba Mosego and Tšate, a new village established by Sekhukhune close to Thaba Mosego (Mönnig 1978, Delius 1984, 2007).

5.4 The early mining period

The Eskom Project Area is located on the eastern limb of the Merensky Reef in the northern part of the Steelpoort Valley. Today it is known that the Merensky Reef is composed of the crescent-shaped Bushveld Complex that stretches across the central part of South Africa. This Reef is known for its wealth of mineral resources, generally referred to as the platinum-group metals (PGM's).

The first discovery of the eastern limb of the Merensky Reef can be traced back to the early decades of the 20th century when the reef was exposed from the Leolo Mountain range in the north to where the Steenkampsberg, west of the Dwars River (Dwars River range), commences as a continuation of the Leolo Mountain range in the south.

The norite zone in which the Merensky Reef outcrops is a rugged mountainous terrain, except in the extreme north-western sector. The area is dominated by high, rough-looking scrub-covered hills and ridges that alternate with flat-bottomed valleys. Four perennial streams, the Olifants, Tubatse, Dwars and Moopetsi Rivers traverse the platinum fields with a number of powerful springs in them (Wagner 1973, Viljoen and Reimold 1999).

5.5 The discovery of platinum

The first reference to platinum is found in a narrative published in 1748 by Don Antonio de Ullou y Gracia de la Torre, in which he mentioned that a heavy silvery metal occurred together with gold in New Granada (now called Columbia). The metal was described by Sir William Watson, an English physicist, as a semi-metal or

metalloid in 1750. Experiments showed that platinum-rich grains consist of a mixture of several metals, namely platinum (Pt), palladium (Pd), iridium (Ir), ruthenium (Ru) and osmium (Os).

The discovery of platinum in South Africa dates back to the late 19th century. In 1892, William Bettel identified osmium-iridium alloy particles in concentrate from the Witwatersrand gold mines. Bettel and Hall and Humphrey also recorded the presence of platinum in the chromitite layers of the Bushveld Complex. Wagner reported the presence of sperrylite in the ore bodies at Vlakfontein near the Pilanesberg. However, none of these discoveries were considered to be of any economic significance. The first deposits that were economically viable, called the Waterberg Platinum, were found by Adolf Erasmus in the Rooiberg fellsites between Nylstroom and Potgietersrust. These deposits did not prove to be significant. Andries Lombaard's discovery of platinum nuggets in the Moopetsi River on the farm Maandagshoek in the Steelpoort area in 1924 can be considered the initial discovery of the Merensky Reef (Lombaard 1945).

The Merensky Reef occurs, geographically, in the westerly and the easterly parts of the Bushveld Complex. These two limbs of the Complex are confined to the North-West Province and to the Northern and the Mpumalanga Provinces of South Africa.

The Merensky Reef has been traced for a total distance strike extent of 283km, 138 kilometres of which is in the eastern limb and 145 kilometres in the western limb of the Bushveld Complex. Vertical depths of 1 900m have been registered along the Reef, which also indicates its continuity. The eastern limb of the Reef is geologically less well known than the eastern limb, because mining activities in this part of the Reef have been limited.

6 THE PHASE I HERITAGE IMPACT ASSESSMENT STUDY

6.1 The field survey

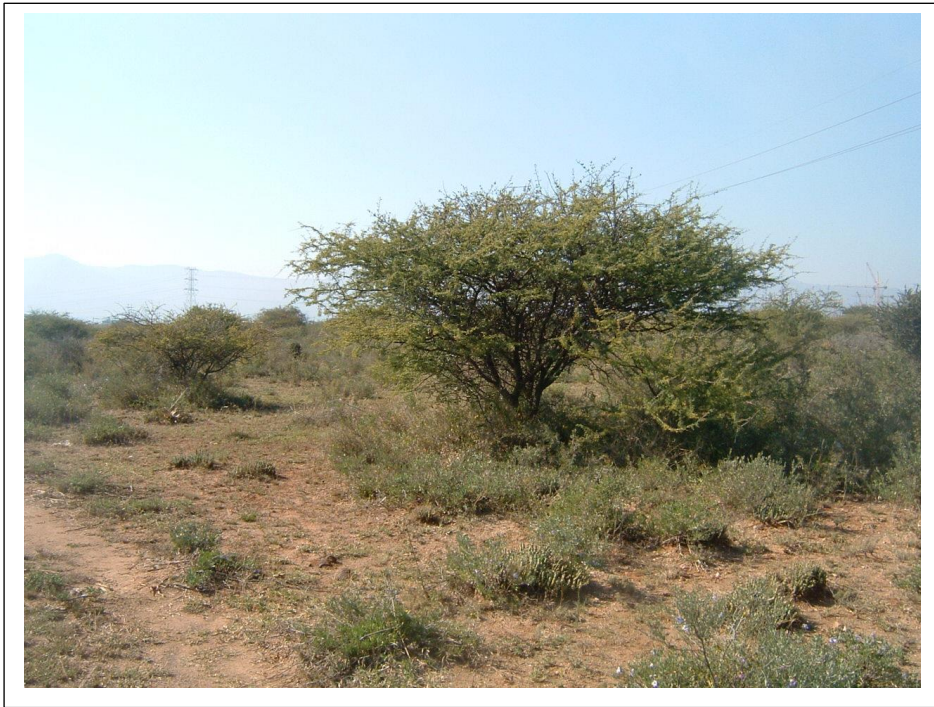


Figures 3 & 4- The rugged nature of the Eskom Project Area across which Alternative 01 and Alternative 02 for the proposed 132kV power line will run. The establishment of infrastructure and other pressures such as deforestation and grazing have degraded the Eskom Project Area and any heritage resources that may have existed. Both alternatives also follow one of Eskom's existing 132kV power lines (above and below).



Figures 5 & 6- Alternative 01 for the proposed Victor Switching Substation is located on a degraded piece of land which is criss-crossed with dirt roads whilst some of Eskom's existing 33kV power lines have been established in this part of the project area (above and below).





Figures 7 & 8- Alternative 02 for the proposed Victor Switching Station is located in rugged veld which have been eroded as water ran from this higher area into dongas that feed into the Steelpoort River further to the west (above and below).



6.2 Types and ranges of heritage resources

The Phase I HIA study for the Eskom Project revealed the following types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999), in and near the Eskom Project Area, namely:

- Isolated, scattered Middle Stone Age (MSA) tools which occur across the Eskom Project Area (and beyond).
- A limited number of undecorated potsherds, a few grinding stones and what seems like a piece of a lower grinding stone which may date from the Late Iron Age and/or Historical Period.

6.2.1 The MSA tools

The stone tools were not geo-referenced as they occur as widely scattered occurrences across the Eskom Project Area and possibly beyond as well; the stone tools occur in isolation and therefore in very low numbers (or densities). The provenance of the stone tools is the eroded and degraded surface of the land. The stone tools therefore occur in an open and not in a sealed context.

It is highly likely that stone tools may be found all along the banks of the Steelport River as the water attracted game and the vegetation along the higher banks of the river provided edible plants and fruits which were possibly in an abundance when hunters-gatherers utilised this eco-zone in the past.

6.2.2 The Iron Age and/or Historical Remains

Approximately five eroded potsherds with no diagnostic features were observed in the Eskom Project Area. A piece of what may be a lower grinding stone which was manufactured from gneiss was also observed. At least five grinding and /or hammer stones were observed roughly where Alternative 01 and 02 for the Victor Switch Station will be established. These remains probably date from the Late Iron Age (AD1600 to AD1880) and/or the Historical Period (AD1880 to AD1930). These artefacts therefore also occurred as isolated, scattered finds across the Eskom Project Area.



Figures 9 & 10- MSA artefacts consisting of points (top row) and various kinds of scrapers (middle and bottom rows) occur across the Eskom Project Area and beyond. These tools revealed a well-developed prepared surface technique according to which blades were struck from a core (above). A piece of a lower grinding stone manufactured from gneiss. The grinding surface measures 8cm from the rim of the grinding stone to its centre (above).





Figure 11- Two pebble that were collected from the Steelpoort River was used as grinders or as hammer stones. The artefact on the left is 11cm in length and the one on the right is 7cm in diameter (above).

6.3 Possible impact on the heritage resources

It is highly likely that all the MSA tools and the Iron Age/Historical Remains (potsherds and other stone tools) will be affected (destroyed) when the proposed Victor Switching Station is constructed, operated or decommissioned.

The significance of these remains therefore has to be indicated.

6.4 The significance of the heritage resources

The significance of both the MSA tools and the Late Iron Age/Historical remains can be described as of low significance when considering the criteria outlined in Table 1.

Significance rating	Criteria for significance rating	Mitigation/Management Measures
High (3)	National/provincial value Educational, research, aesthetical conservation value Future use	Conserve unaffected for posterity (preferably) <i>in situ</i>
Medium (2)	Provincial value Medium educational, research, aesthetical conservation value No future use	Phase II investigation before demolishing. Permitting required
Low (1)	Local and site specific value Low educational, research, aesthetical conservation value No future use	Document (report) during Phase I HIA Demolish during construction. No permitting required

Table 1- Significance rating for MSA tools and Iron Age/Historical Remains in the Eskom Project Area (above).

6.5 The significance of the impact on the heritage resources

The significance of potential impacts on the MSA tools and the Iron Age/Historical Remains was determined using a ranking scale, based on the following:

- Occurrence
 - Probability of occurrence (how likely is it that the impact may/will occur?), and
 - Duration of occurrence (how long may/will it last?)
- Severity
 - Magnitude (severity) of impact (will the impact be of high, moderate or low severity?), and
 - Scale/extent of impact (will the impact affect the national, regional or local environment, or only that of the site?)

Each of these factors has been assessed for each potential impact using the following ranking scales:

<p>Probability:</p> <p>5 – Definite/don't know</p> <p>4 – Highly probable</p> <p>3 – Medium probability</p> <p>2 – Low probability</p> <p>1 – Improbable</p> <p>0 – None</p>	<p>Duration:</p> <p>5 – Permanent</p> <p>4 - Long-term (ceases with the operational life)</p> <p>3 - Medium-term (5-15 years)</p> <p>2 - Short-term (0-5 years)</p> <p>1 – Immediate</p>
<p>Scale:</p> <p>5 – International</p> <p>4 – National</p> <p>3 – Regional</p> <p>2 – Local</p> <p>1 – Site only</p> <p>0 – None</p>	<p>Magnitude:</p> <p>10 - Very high/don't know</p> <p>8 – High</p> <p>6 – Moderate</p> <p>4 – Low</p> <p>2 – Minor</p>

The environmental significance of each potential impact was assessed using the following formula:

$$\text{Significance Points (SP)} = (\text{Magnitude} + \text{Duration} + \text{Scale}) \times \text{Probability}$$

The maximum value is 100 Significance Points (SP). Potential environmental impacts are rated as very high, high, moderate, low or very low significance on the following basis:

- More than 80 significance points indicates VERY HIGH environmental significance.
- Between 60 and 80 significance points indicates HIGH environmental significance.
- Between 40 and 60 significance points indicates MODERATE environmental significance.
- Between 20 and 40 significance points indicates LOW environmental significance.
- Less than 20 significance points indicates VERY LOW environmental significance.

6.5.1 The significance of the impact on the MSA tools

The significance of the potential impact on the MSA tools is high (Table 2).

MSA tools	Probability of impact on tools	Magnitude of impact on tools	Duration of impact	Scale of impact	Significance points	Significance of the impact
MSA tools	5	10	5	1	80	High

Table 2: The significance of the potential impact on the MSA tools in the Eskom Project Area (above).

6.5.2 The significance of the impact on the Iron Age/Historical Remains

The significance of the potential impact on the Iron Age/Historical Remains is high (Table 3).

Iron Age/ Historical remains	Probability of impact on remains	Magnitude of impact on remains	Duration of impact	Scale of impact	Significance points	Significance of the impact
IA/HR	5	10	5	1	80	High

Table 3: The significance of the potential impact on the Iron Age/Historical Remains in the Eskom Project Area (above).

6.6 Mitigating the heritage resources

6.6.1 The MSA tools

The significance of the potential impact on the MSA tools is high. However, the MSA tools have low significance. Therefore the MSA tools need no mitigation measures.

6.6.2 The Iron Age/Historical Remains

The significance of the potential impact on the Iron Age/Historical Remains is high. However, the Iron Age/Historical Remains have low significance. Therefore the Iron Age/Historical Remains need no mitigation measures.

Conclusion

Alternative 01 as well as Alternative 02 for the proposed Victor Switching Station revealed the presence of scattered, isolated occurrences of MSA tools as well as the presence of scattered, isolated occurrences of undecorated potsherds and stone artefacts (such as lower grinding stones and grinders or hammer stones) which date from the Late Iron Age and/or Historical Period.

These remains have low significance, have been reported (documented) in this report and do not warrant further investigation or any mitigation measures due to the limited nature of the remains. The widely scattered nature of the remains will also ensure that some will survive unaffected beyond the Eskom Project Area.

Both Alternative 01 and Alternative 02 for the Victor Switch Station are therefore considered to be suitable from a heritage point of view for the Eskom Project.

7 CONCLUSION AND RECOMMENDATIONS

The Phase I HIA study for the Eskom Project revealed the following types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999), in and near the Eskom Project Area, namely:

- Isolated, scattered Middle Stone Age (MSA) tools which occur across the Eskom Project Area (and beyond).
- A limited number of undecorated potsherds, a few grinding stones and what seems like a piece of a lower grinding stone which may date from the Late Iron Age and/or Historical Period.

6.3 Possible impact on the heritage resources

It is highly likely that all the MSA tools and the Iron Age/Historical Remains (potsherds and other stone tools) will be affected (destroyed) when the proposed Victor Switching Station is constructed, operated or decommissioned.

The significance of these remains therefore has to be indicated.

6.4 The significance of the heritage resources

The significance of both the MSA tools and the Late Iron Age/Historical remains can be described as of low significance when considering the criteria outlined in Table 1.

6.5 The significance of the impact on the heritage resources

The significance of potential impacts on the MSA tools and the Iron Age/Historical Remains was determined using a ranking scale, based on different criteria.

The significance of the impact on the MSA tools is high (Table 2).

The significance of the impact on the Iron Age/Historical Remains is high (Table 3).

6.6 Mitigating the heritage resources

6.6.1 The MSA tools

The significance of the potential impact on the MSA tools is high. However, the MSA tools have low significance. Therefore the MSA tools need no mitigation measures.

6.6.2 The Iron Age/Historical Remains

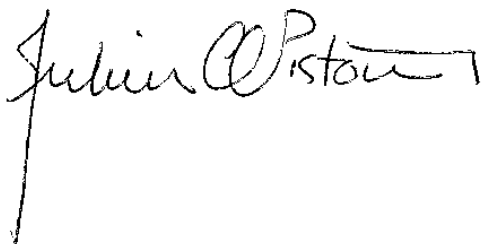
The significance of the potential impact on the Iron Age/Historical Remains is high. However, the Iron Age/Historical Remains have low significance. Therefore the Iron Age/Historical Remains need no mitigation measures.

Conclusion

Alternative 01 as well as Alternative 02 for the proposed Victor Switching Station revealed the presence of scattered, isolated occurrences of MSA tools as well as the presence of scattered, isolated occurrences of undecorated potsherds and stone artefacts (such as lower grinding stones and grinders or hammer stones) which date from the Late Iron Age and/or Historical Period.

These remains have low significance, have been reported (documented) in this report and do not warrant further investigation or any mitigation measures due to the limited nature of the remains. The widely scattered nature of the remains will also ensure that some will survive unaffected beyond the Eskom Project Area.

Both Alternative 01 and Alternative 02 for the Victor Switch Station are therefore considered to be suitable from a heritage point of view for the Eskom Project.

A handwritten signature in black ink, reading "Julius CC Pistorius". The signature is written in a cursive style with a long vertical line extending downwards from the end of the name.

DR JULIUS CC PISTORIUS

Archaeologist and Heritage Consultant

Member ASAPA

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APPENDIX A: DETAILS OF THE SPECIALIST

Profession: Archaeologist, Museologist (Museum Scientists), Lecturer, Heritage Guide Trainer and Heritage Consultant

Qualifications:

BA (Archaeology, Anthropology and Psychology) (UP, 1976)

BA (Hons) Archaeology (distinction) (UP, 1979)

MA Archaeology (distinction) (UP, 1985)

D Phil Archaeology (UP, 1989)

Post Graduate Diploma in Museology (Museum Sciences) (UP, 1981)

Work experience:

Museum curator and archaeologist for the Rustenburg and Phalaborwa Town Councils (1980-1984)

Head of the Department of Archaeology, National Cultural History Museum in Pretoria (1988-1989)

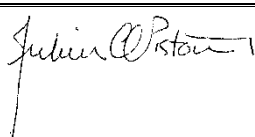
Lecturer and Senior lecturer Department of Anthropology and Archaeology, University of Pretoria (1990-2003)

Independent Archaeologist and Heritage Consultant (2003-)

Accreditation: Member of the Association for Southern African Professional Archaeologists. (ASAPA)

Summary: Julius Pistorius is a qualified archaeologist and heritage specialist with extensive experience as a university lecturer, museum scientist, researcher and heritage consultant. His research focussed on the Late Iron Age Tswana and Lowveld-Sotho (particularly the Bamalatji of Phalaborwa). He has published a book on early Tswana settlement in the North-West Province and has completed an unpublished manuscript on the rise of Bamalatji metal workings spheres in Phalaborwa during the last 1 200 years. He has written a guide for Eskom's field personnel on heritage management. He has published twenty scientific papers in academic journals and several popular articles on archaeology and heritage matters. He collaborated with environmental companies in compiling State of the Environmental Reports for Ekurhuleni, Hartbeespoort and heritage management plans for the Magaliesberg and Waterberg. Since acting as an independent consultant he has done approximately 800 large to small heritage impact assessment reports. He has a longstanding working relationship with Eskom, Rio Tinto (PMC), Rio Tinto (EXP), Impala Platinum, Angloplats (Rustenburg), Lonmin, Sasol, PMC, Foskor, Kudu and Kelgran Granite, Bafokeng Royal Resources etc. as well as with several environmental companies.

APPENDIX B: DECLARATION OF INDEPENDENCE

<p>I, Julius CC Pistorius, declare that:</p> <ul style="list-style-type: none"> • I act as the independent environmental practitioner in this application • I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant • I declare that there are no circumstances that may compromise my objectivity in performing such work; • I have expertise in conducting environmental impact assessments, including knowledge of the National Heritage Resources Act (No 25 of 1999) and any guidelines that have relevance to the proposed activity; • I will comply with the Act, regulations and all other applicable legislation; • I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application; • I have no, and will not engage in, conflicting interests in the undertaking of the activity; • I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority; • I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application; • I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report; • I will keep a register of all interested and affected parties that participated in a public participation process; and • I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not • all the particulars furnished by me in this form are true and correct; • will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and • I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act. <p>Disclosure of Vested Interest</p> <p>I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2010.</p>
<p></p> <p>_____ Signature of the environmental practitioner: Private Consultant</p> <p>_____ Name of company: 5 January 2012</p> <p>_____ Date:</p>
<p>_____ Signature of the Commissioner of Oaths:</p> <p>_____ Date:</p> <p>_____ Designation:</p>