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**A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY FOR
ESKOM'S PROPOSED CONSTRUCTION OF 132KV POWER LINES
BETWEEN THE DELAREYVILLE SUBSTATION AND THE PROPOSED
NEW KOPELA AND PHAHAMENG SUBSTATIONS IN THE NORTH
WEST 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 Delareyville Project near Delareyville in the North-West Province. The construction of the proposed Eskom Project is hereafter referred to as the Eskom Project whilst the footprint of the proposed Eskom Project is referred to as the Eskom Project Area.

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

- To determine if any of the types and ranges of heritage resources (the '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 establish the significance of these heritage resources.
- To establish the level of significance of any possible impact on these heritage resources.
- To propose appropriate mitigation measures for those types and ranges of heritage resources that may be affected by the proposed 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 the Project Area, namely:

- Two graveyards.

The graveyards were geo-referenced and mapped (Figure 13; Table 1). The significance of the graveyards as well as the significance of any impact on the graveyards is indicated (Tables 1 & 4). No mitigation measures are outlined as these graveyards will not be affected by the proposed Eskom Project.

The significance of the graveyards

All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 1). Legislation with regard to graves includes Section 36 of the National Heritage Resources Act (Act No 25 of 1999) whenever graves are older than sixty years. It seems as if both graveyards are older than sixty years. Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended).

Possible impact on the heritage resources

Both graveyards need not to be affected by the Eskom Project as both graveyards are located at safe distances from the proposed new power lines. GY01 is located on the shoulder of Road R507 within the build environment which is associated with the village of Madibogo. GY02 is located more than one hundred meters from the shoulder of the dirt road that runs between Majeng and Majaneng whilst the power line will only be constructed along the shoulder of the road.

The significance of any possible impact on the graveyards is low and requires no mitigation measures (Tables 3 & 4).

Mitigating the graveyard impacts

No mitigation measures are needed as both graveyards will not be affected by the proposed new power lines.

Summary

All the proposed 132kV Power line corridors as well as the substation sites and the alternatives for the substations are suitable from a heritage point of view for the implementation of the Eskom Project.

General (disclaimer)

It is possible that this heritage survey may have missed heritage resources in the Eskom Project Area considering the size of the area as well as due to various other reasons (e.g. occurring beneath the surface, unmarked, inconspicuous or eroded nature, covered by vegetation, human failure to recognise, etc.).

If any heritage resources of significance are 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 Archaeologists (ASAPA) should be notified in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from the 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 Delareyville Project near Delareyville in the North West Province.

Focused archaeological research has been conducted in the North West 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 North West 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 North West Province form a record of the heritage of most groups living in South Africa today.

Heritage resources in the North West Province therefore constitute a rich and wide diversified range (comprising the 'national estate') as outlined in Section 3 of the National Heritage Resources Act (Act 25 of 1999) (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 TERMS OF REFERENCE

Eskom intends to construct the proposed Eskom 132kV Delareyville – Kopela – Phahameng Project near Delareyville in the North West Province. This 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 pro-active measures with regard to any heritage resources that may be affected, damaged or destroyed when the Eskom Project is implemented. SRK Consulting (South Africa) (Pty) Ltd the environmental consultancy responsible for compiling the Basis Assessment Report for the Eskom Project therefore 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 determine if any of the types and ranges of heritage resources (the '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 establish the significance of these heritage resources.
- To establish the level of significance of any possible impact on these heritage resources.
- To propose appropriate mitigation measures for those types and ranges of heritage resources that may be affected by the proposed Eskom Project.

3 THE ESKOM PROJECT AREA

3.1 Location

Eskom's proposed Delareyville Project will be established near Delareyville in the North-West Province. The Eskom Project Area comprises a triangular piece of land approximately 30km to the north of the town of Delareyville between the proposed Phahameng and Kopela Substations. The Project Area stretches partly along the R507 and incorporates villages such as Madibogo., Majeng, Majaneng, Shaleng and Mofufutso 2 which are located further to the east (2625AC Madibogo, 2625AD Kraaipan, 2625CB Delareyville 1:50 000 topographical maps; Vryburg 1:250 000 map and Google imagery).



Figure 1- Regional map outlines the Eskom Project between the Delareyville, Phahameng and the Kopela Substations near Delareyville in the North-West Province (above).

3.2 Development components of the Eskom Project

The key development components of the Eskom Project include the following and are noticeable in Figure 13:

- The construction of the proposed new 132/22kV Kopela and Phahameng Substations. Both the Kopela Substation and the Phahameng Substation has three alternatives.
- The construction of 132kV power lines from the Kopela Substation and from the Phahameng Substation to a central point identified as Point D (purple lines). A short alternative is proposed for a stretch of the power line which runs between the proposed Phahameng Substation and Point D (yellow line).
- The construction of a 132kV power line between Point D and the Delareyville Substation (*via* Point A). The stretch between Point A and the Delareyville Substation (red line) has already received environmental authorisation and therefore no additional studies are required for this part of the power line (see Figure 13).

Additional infrastructure may include access roads to the substations.

The Eskom Project therefore comprises the construction of 132kV power lines from Point A to the respective new Kopela and Phahameng Substations as well as the construction of the proposed new Kopela and Phahameng Substations (each on a stand measuring 100mx100m) with access roads. The Eskom Project Area therefore comprises the footprints of the proposed new power lines, alternatives for the power lines and for the substations and possible access roads to the substation sites.

3.3 The nature of the Eskom Project Area

The larger region has been transformed during the last decades, firstly as a result of agricultural activities and secondly as a consequence of the growing and expansion of towns such as Madibogo, Majeng, Majaneng, Morena, Atamelang and Frisgewaagd which all fall within the ambits of the Eskom Project Area. The construction of roads and other infrastructure such as power lines, pipelines, dirt

roads and the local cooperation and its immediate surroundings also have altered the previous pristine nature of this part of the North-West Province.

The Eskom Project Area therefore incorporates both pristine as well as transformed pieces of land. Pristine land is usually associated with the higher, more rugged and uneven parts of the landscape such as the occurrence of low dolerite kopjes and ridges towards the northern part of the project area whilst the lower, flat area with softer soils have been transformed as a result of agricultural activities.

The larger Project Area has been subjected to heritage surveys in the past, namely:

- Van Schalkwyk, J.C.A. 2013. Mookodi Integration Project. Unpublished report for Eskom North-West Operational Unit.
- Pistorius, J.C.C. 2014. A Phase I Heritage Impact Assessment for Eskom's proposed Magopela-Pitsong Project near Taung in the North-West Province. Unpublished report for Landscape Dynamics.

A scoping heritage impact assessment study was also done for Eskom's Delareyville-Kopela Project, namely:

- Van Schalkwyk, J.C.A. 2013. Heritage scoping impact assessment report for the proposed Delareyville-Kopela power line development project in the North-West Province. Unpublished report for Eskom North-West Operational Unit.

These surveys have revealed that the region includes heritage resources such as the following:

- Sites from the Stone Age, e.g. the Taung Provincial Heritage Site which is an Early Stone Age site which is associated with *Australopthicus Africanus* as well as open air sites which are associated with large water courses, pans and rocky areas where suitable rock for stone tool manufacturing occur.
- Settlements which are associated with the Late Iron Age and with stone walled settlements.
- Historical settlements which range from farmstead complexes with associated infrastructure to structures and buildings in towns such as Vryburg, Delareyville,

Schweizer Reinecke as well as monuments and commemorative beacons in these and other towns in the larger region.

4 METHODOLOGY

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

4.1 Fieldwork survey

Due to the fact that the proposed Power line cover a long distance (approximately twenty five kilometre) the Power line corridor was surveyed by means of following the power line corridor with the help of a GPS instrument which was mounted in a vehicle. However, the power line corridor could only be followed where accessible roads existed and agricultural fields in particular were not traversed with the vehicle.

Short stretches of the Power line corridor were subjected to pedestrian surveys where this deemed to be necessary, e.g. where evidence for stone or mud constructions such as house foundations were observed or where occurrences of certain rock types such as dolerite dykes were noticed as stone tools may be found near these natural occurrences. Small streams and eroded dongas were also surveyed to establish the presence of any stone tools that may have been exposed by running water.

Long stretches of the power line corridors cross agricultural fields whilst the stretch that runs to the Phahameng Substation follows the main road that runs through the village.

The alternatives for the proposed Kopela and Phahameng Substations were surveyed on foot.

Fieldwork was done on 30 January 2014, 29 February 2014 and on 23 May 2014. The author was accompanied by several specialists from SRK Consulting and two Eskom officials during the first site visit.

The result of the field survey is described and illuminated with photographs which illustrates the nature and the characteristics of the Project Area (see Part 6.1 'The Fieldwork survey').

All coordinates were recorded with a Garmin Etrex hand set Global Positioning System (instrument) with an accuracy of < 15m.



Figure 2- A track log was registered during the survey for Eskom’s proposed Delareyville/ Kopela/ Phahameng 132kV power lines and substations near Delareyville in the North-West Province. The Project Area’s main characteristic comprises of an outstretched terrain which is covered with grass veld and agricultural fields. A few low dolerite randjes occur towards the northern part of the project area (above).

A track log which was recorded with a mounted GPS instrument outlines the Eskom Project Area and the terrain which is located between the proposed Kopela Substation and Delareyville in the east and south-east and the proposed Phahameng Substation near Madibogo in the North-West (Figure 2).

4.2 Databases, literature survey and maps

Literature relating to the pre-historical and the historical unfolding of the Delareyville area was reviewed. This review focused primarily on the pre-history as well as the Historical Period of the larger Delareyville region. It also provides 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 North-West 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.

In addition, the Eskom Project Area was also studied by means of maps on which it appears (2625AC Madibogo, 2625AD Kraaipan, 2625CB Delareyville 1:50 000 topographical maps; Vryburg 1:250 000 map and Google imagery).

4.3 Assumptions and limitations

It is possible that this heritage survey may have missed heritage resources in the Project Area considering the size of the area as well as due to various other reasons (e.g. occurring beneath the surface, unmarked, inconspicuous or eroded nature, covered by vegetation, human failure to recognise, etc.).

If any heritage resources of significance are exposed during the 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 Archaeologists (ASAPA) should be notified in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from the SAHRA to conduct the mitigation measures.

4.4 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.

5 CONTEXTUALISING THE ESKOM STUDY AREA

The Eskom Project Area is located between the towns of Delareyville and Geysdorp in the North-West Province of South Africa. This area, considered from an archaeological and historical perspective, was once part of the spheres of influence of Tswana tribes who, for the past four to five centuries, occupied the area between Lichtenburg and Mahikeng as well as surrounding areas. The Tswana people were preceded, for thousands of years, by San hunter gatherers and during the last two millennia well into the historical period by Khoi Khoi pastoralist.

The Eskom Project Area has not yet to the knowledge of this author been subjected to a detailed archaeological survey. However, ethnographic surveys have pointed out the presence of stone walled sites dating from the Late Iron Age. The western and eastern borders of the Eskom Project Area also incorporates the towns of Lichtenburg and Mahikeng/Mmabatho which both have colourful historical backgrounds with Mahikeng particularly well remembered for the role it played in the establishment of Botswana and its siege by the British during the Anglo Boer War.

5.1 Prehistoric context

Very little is known about the pre-historical context of the Eskom Project Area. However, at a limestone working site in Taung palaeo-anthropological evidence for the emergence of humans' earliest ancestors were found when the fossilised skull of an *Australopithecus* (man-ape) child were brought to the surface, several decades ago. So far remains of *Australopithecine* and *Homo habilis* have also been found in the Blaauwbank region near Krugersdorp in the Gauteng Province. *Homo habilis*, one of the Early Stone Age hominids, is associated with Oldowan artefacts which include crude implements manufactured from bare pebbles. The earliest ancestors of modern humans emerged some two to three million years ago (Deacon & Deacon 1999; Keykendall & Strkalj 2007).

The Acheulian industrial complex replaced the Oldowan industrial complex during the Early Stone Age. This phase of human existence was widely distributed across the world and is associated with *Homo Erectus*, who manufactured hand axes and

cleavers from as early as one and a half million years ago (Deacon & Deacon 1999). It is unlikely that Acheulian sites will most probably be found in the larger Eskom study area.

Middle Stone Age (MSA) sites dating from as early as two hundred thousand years ago have been found all over South Africa. MSA hunter-gatherer bands must once have lived and hunted in the larger Eskom Project Area. MSA people, who probably looked like modern humans, occupied camp sites near water but also used caves as habitational sites. They manufactured a wide range of stone tools, including blades and points that may have been hafted by long wooden sticks and were used as spears (Deacon & Deacon 1999).

The Late Stone Age (LSA) commenced twenty thousand years ago or somewhat earlier. Various types of stone tools (industries) are scattered across the country and are associated with the historical San and Khoi-Khoi people. The San were renowned as formidable hunter-gatherers, while the Khoi-Khoi herded cattle and small stock during the last two thousand years. LSA people manufactured tools that were small but highly effective, such as arrow heads and knives (Deacon & Deacon 1999).

LSA people were also known for their rock art skills. Rock engravings and a few paintings occur on Bospan 68 and Zoutpan, Khunwanalokasie and Gestoptefontein 145 in Ottosdal. Images include the sun, lines and depictions of animals close to the Eskom study area. However, these types of heritage resources are limited in number in the North-West Province (Deacon & Deacon 1999; Breutz 1953).

5.2 Later pre-historical and early historical period

The western parts of Lichtenburg and Delareyville served as homeland for the Barolong and most notably to the boo Rapulana and the boo Ratlou sections as well as the boo Seleka who lived more towards Klerksdorp further to the east. The north-eastern corner of the district was occupied by the Bakwena ba Molotšwane although the Batlouw also lived on the farm Rietpan 113 from AD1750 to AD1820. The south-eastern part of the district was also home to the Bakwena ba Mare wa Phogole whose

capital was located in the south western part of the Klerksdorp district (Breutz 1953, 1955, 1957, 1986).

The western borders of the North-Western Province as well as the adjacent North Cape Province were severely disrupted during the early 1800's as a result of the actions of war lords such as the Tlokwa of Mantatisi, the Taung of Moletsane, Sebitwane's Makololo groupings and the Ndebele of Mzilikazi. Many of the indigenous people in the far western parts of the province fled to different parts of the former Transvaal and Orange Free State Provinces as well as to Botswana and Lesotho. According to indigenous groups they constructed the stone walled sites which occur on Hartbeesfontein (Breutz 1953, 1986).

Stone walled sites have also been reported near Lichtenburg and Mahikeng. In fact, Mahikeng may have been established on Late Iron Age stone walled sites considering the fact that this name refer to 'the place of stone walls'.

After the Ndebele of Mzilikazi was driven from the North West in 1837 the district was occupied by the first Voortrekkers who settled in Lichtenburg. They were followed by indigenous groups such as the Kolobeng who settled on Doornhoek 39 (Bodumatau) (AD1850 to 1870) and in 1871 moved to Rooijantjiesfontein; the Tloung settled on Gruisfontein (AD1850 to 1870) and later on Putfontein; the Barolong boo Rapulana settled under Matlabe on Polfontein (1872) and the Barolong boo Ratlou under Mošwêê in the ZAR (1868) (later Khunwana Location). The baNogeng occupied Rietfontein and De Hoop. Both the Ratlou chiefs supported the Voortrekkers against Mzilikazi during the Ndebele wars (Breutz 1953, 1955, 1957, 1986)..

5.3 Early Colonial settlement

Lichtenburg and Mahikeng are the two most important towns closest to Delareyville and Geysdorp (Eskom's Project Area). Lichtenburg was established on the farms Middelbosch and Doornfontein in 1873. Hendrik Greef, father-in-law of Gen. J.H. de la Rey, donated these farms to the Zuid Afrikaansche Republiek (ZAR) so that the land could be developed into a town. It is uncertain from where the name Lichtenburg originates. One story claims that with the proclamation of the town on 25 July 1873

Pres T.F. Burgers named the town 'Lichtenburg' in the hope that it would serve as a 'beacon of light' in the far Western Transvaal. Another version states that Hendrik Greeff named the town 'Lichtenburg' in memory of the farm in Cape Town where he used to live. The initial development of the town was slow and it only received municipal status in 1904.

Important historical events that are associated with Lichtenburg include:

- General J.H. de la Rey, the infamous Boer General which was nicknamed 'Lion of the Western Transvaal' and who lead several successful campaigns against the British during the Anglo Boer War, was buried in the town in 1914. His house which was torched during the Anglo Boer War was rebuilt after the war.
- The residential house of Hendrik Greeff, founder of Lichtenburg, was built on the farm Manana in 1875. It is still standing today.
- The 'Nederduitsch Gereformeerde' Church which was built in 1890 is a national monument.
- The Molopo Oog ('eye') which is a natural wonder and which consists of a sustainable fountain is situated to the north-west of Lichtenburg on route to Zeerust.
- The Gruisfontein battlefield where several Boers perished during the Anglo Boer War is located to the east of Lichtenburg.
- The farmer's statue in Lichtenburg symbolises the history of agriculture which played a pivotal role in the development of this part of the North-West Province.

Lichtenburg is also known for the most 'insane diamond rush in the history of South Africa'. While digging holes for a fence on the farm Elandsputen, Johan Voorendijk discovered a diamond on 13 March 1929. This led to the biggest diamond rush in South Africa's history. This event took place at Bakerville, 25km north-west of Lichtenburg on route to Zeerust. Thousands of fortune seekers from all over descended on Elandsputen with at least 150 000 people digging, washing and panning for diamonds on any given day during the first three years of mining. (At one occasion 30 000 potential diggers participated in a rush to state their claims). Ten

years after the diamond rush receded, approximately seven million carats of diamonds were mined (Erasmus 1995).

The events which lead to the establishment of Mahikeng and Vryburg during the late 19th century were remarkably similar. During a dispute between two Barolong chiefs in 1881, Boers and other independent adventurers were recruited by the two chiefs. For services rendered the men each received a farm as payment. The new settlers with their 140 farms established the independent Republic of Goosen with Rooigrond as capital 15km to the south-east of Mahikeng. (The capital was first called Vrywilligersrust and later Heliopolis).

Both the Republics of Stellaland (near Vryburg) and Goosen were disabled by a British expeditionary force in 1885 and incorporated in British Bechuanaland. The British commander, Sir Charles Warren laid out a new town on a place which the Tswana's called 'Mahikeng' – 'the place of stones'. Members of the Bechuanaland border police were stationed at this place to maintain order amongst the various ethnic groups who gradually developed into a stable community. The town's name was gradually corrupted to an English version of Mahikeng, namely 'Mafiking'. Mahikeng later became the administrative capital of the Bechuanaland Protectorate.

Mafeking was besieged for 217 days (October 1899-May 1901) during the Anglo-Boer War (1899-1902). The British garrisoned the town and with the help of the Barolong and Fingoes fought against the Boers. The British also took up various positions around the town, and like the Boers, erected forts, layers and stone bulkwarks.

Sol Plaatjes participated in the siege of Mafikeng. Because of his linguistic talent he became the intermediary between the British forces under Colonel RSS Baden-Powell and the Barolong population of some 5 000 who lived near the town.

Mahikeng is particularly remembered for the following events:

- The disastrous Jameson invasion which commenced at Pitswe, a few kilometres to the north-west of Mahikeng on 29 December 1895, The Jameson column was stopped and captured near Krugersdorp on 2 January 1896.

- ZAR forces besieged Mahikeng during the Anglo Boer War from 14 October 1899 to 17 May 1900. General Baden Powell's defensive garrison resisted the Boer onslaught for 271 days when the siege was lifted with the arrival of military support from the south.
- The Boy Scout movement was born during the siege of Mahikeng. Young men were organised in non-combatant groups who were responsible for various administrative and emergency services.
- After the Anglo Boer War the town's economy was based on cattle farming, dairy products, maize agriculture, cement manufacturing and employment in the large railway shunting yards (Erasmus 1995).

Mahikeng remained the seat of the British administration of the Bechuanaland Protectorate until 1965 when the 'independent' Republic of Bophuthatswana came into being. Gaborone became the capital of the new state. The administrative quarters and buildings were located in the Imperial Reserve for more than seventy years and were only used by the British.

Mahikeng's original name was restored in 1980 when the town was incorporated in the newly founded Bophuthatswana homeland. After independence Mmabatho ('mother of the nation'), a new capital, was developed in the veldt next to Mahikeng. Heritage resources associated with Mahikeng include:

- Kanonkoppie, south east of Mafikeng was one of the important British forts during the siege of Mafikeng.
- Wondergat, which is a natural sinkhole filled with groundwater. The theory is that it is the collapsed dome of a dolomitic compartment. It is a public site where recreational diving takes place. It is 70 metres in diameter and between 38 and 55 meters deep. It is located 30km to the south-east of the town. The hole was reportedly used many years ago as a drinking place for cattle when the hole was filled to ground level. The hole contains bass and other freshwater fish.
- The Anglican Church of St John was designed by Herbert Baker and was built with stone from Zimbabwe. It serves as a commemorative beacon for those who have died during the siege (Erasmus 1995).

Delareyville was founded in 1914 primarily to provide accommodation for people who were worked the many salt pans in the area. The town was named for General J.H. de la Rey the Boer leader during the Anglo Boer War (1899–1902) (Erasmus 1995).

Sannieshof was established when a post office was opened here in 1920 for the convenience of the local farmers. John Voorendijk the controlling post master in Lichtenburg named it Sannieshof in honour of his wife Sannie. The area developed rapidly from 1928 onwards as a result of the branch railway line from Pudimong on the Cape Town- Zimbabwe line and was named Roosville for Tielman Roos, the member for parliament for Lichtenburg. However, the politician's name found no favour amongst the locals and the official name was officially restored in 1952 (Erasmus 1995).

Geysdorp was established in 1895 on Paardefontein (then part of the Lichtenburg District) and was probably named after N.C. Gey van Pittius the administrator of the Republic of Goossen which existed from 1882 to 1855 (Erasmus 1995).

Economic activities which are important in the larger Eskom Project Area include crop planting with agricultural produce such as maize, sunflowers and peanuts. Cattle herding is common. Cement manufacturing occur near Lichtenburg and limestone that is needed in the cement manufacturing process is mined in the district.

6 THE PHASE I HERITAGE SURVEY

6.1 The field survey

The following discussion and range of photographs illuminate the nature and extent of the Project Area and the observations that were made during the survey.

6.1.1 The proposed 132kV power lines

The following stretches for the proposed new 132kV power lines were surveyed, namely:

6.1.1.1 The power line between Point D and Point G

This stretch runs eastwards across Kukana 4-IO through the village of Shaleng and Mofufutso 2 to the proposed Kopela Substation.



Figure 3- The first stretch of the power line between Point D and the Kopela Substation primarily crosses open sand veld (above).

Stretch DG crosses the Khunwana stream and the first part of this stretch crosses open veld whilst the second part between Mofufutso 2 and the village of Diretsane runs through agricultural fields.



Figure 4- The second stretch of the power line between Point D and the Kopela Substation primarily runs across agricultural fields (above).

6.1.1.2 The power line between Point D and Point P

This stretch runs westwards across Kunana 4-IO until it joins the R507. At the T junction with Road R507 the power line bends to the north-west and follows the eastern shoulder of the R507 to the proposed new Phahameng Substation.

Stretch DP skirts the southern perimeters of the villages of Morena and Majeng whilst running along the main road of Madibogo to the Phahameng Substation.

The first half of Stretch DP follows the southern shoulder of a dirt road whilst the second half runs along the northern shoulder of Madibogo's main road.



Figures 5, 6 & 7 - The power line between Point D and the Phahameng Substation runs across sand veld and follows the shoulder of a dirt road (above), skirts the perimeters of villages such as Majeng (centre) and runs along the main road of Madibogo (below).

Two graveyards were encountered along this stretch, namely GY01 and GY02 (see Part 6.2 'Types and ranges of heritage resources').

6.1.1.2.1 A short alternative stretch

A short alternative stretch runs along the eastern perimeter of Madibogo which avoids the build environment which is associated with the stretch between Point D and P which runs along the R507 through the village of Madibogo.



Figure 8- The short alternative stretch between Point D and the Phahameng Substation skirts the eastern perimeter of the village of Madibogo where it runs across sand veld with sparse vegetation cover (above).

6.1.1.3 The power line between Point D and Point A

This stretch of the power line runs to the south across the farm Kukana 4-IO and then bends to the south-east in order to cross Drieangle 168JQ, Schuinsvlakte 166JQ and Marotzi 167IO.

The first half of Stretch DA mainly crosses flat, open grass veld whilst skirting the

western perimeter of the village of Mokope and the Mokope Dam. The second half of the power line crosses agricultural fields until it ends at the village of Frischgewaad on Gannapan 11-IO.

6.1.2 The proposed substations

6.1.2.1 The Phahameng Substation

Three options are proposed for this substation.

6.1.2.1.1 Option 01 for the Phahameng Substation

This option is located near the eastern shoulder of the main road (R507) that runs through the village of Madibogo.

Option 01 is located on a flat piece of sand veld which is covered with a dense stand of Vaalbos (*Terminalia Sericea*).



Figure 9- Option 01 for the proposed Phahameng Substation is located near the eastern shoulder of the R507 on a piece of sand veld which is covered with *Terminalia Sericea* (Vaalbos) (above).

6.1.2.1.2 Option 02 for the Phahameng Substation

This option is located approximately 150m from the western shoulder of the main road that runs through the village of Madibogo. The area is characterised by a gentle western slope which is covered with grass veld.



Figure 10– Option 02 for the proposed Phahameng Substation is also located to the east of the R507 and directly to the north of the expanding village of Madibogo (above).

6.1.2.1.3 Option 03 for the Phahameng Substation

This option is located several hundred meters to the west of the main road (R507) that runs through the village of Madibogo.

Option 02 is located in close proximity to where the village of Madibogo is expanding in a northerly direction.

Option 02 is located on sand veld between several streams and on veld which have been deforested as a result of firewood collecting.



Figures 11– Option 03 for the proposed Phahameng Substation is located directly to the north of the expanding village of Madibogo (above).



Figure 12- All three options for the proposed Kopela Substation are located on sandveld where agricultural fields used to exist. Option 01 on the outskirts of Diretsane serves as an illustration of the flat sandy plain where agricultural activities are practised and where the substation may be established (above).

6.1.2.1.4 The Kopela Substation

All three options for the proposed Kopela Substation are located in sand veld which has been utilized for agricultural activities in the past.

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 the Project Area, namely:

- Two graveyards.

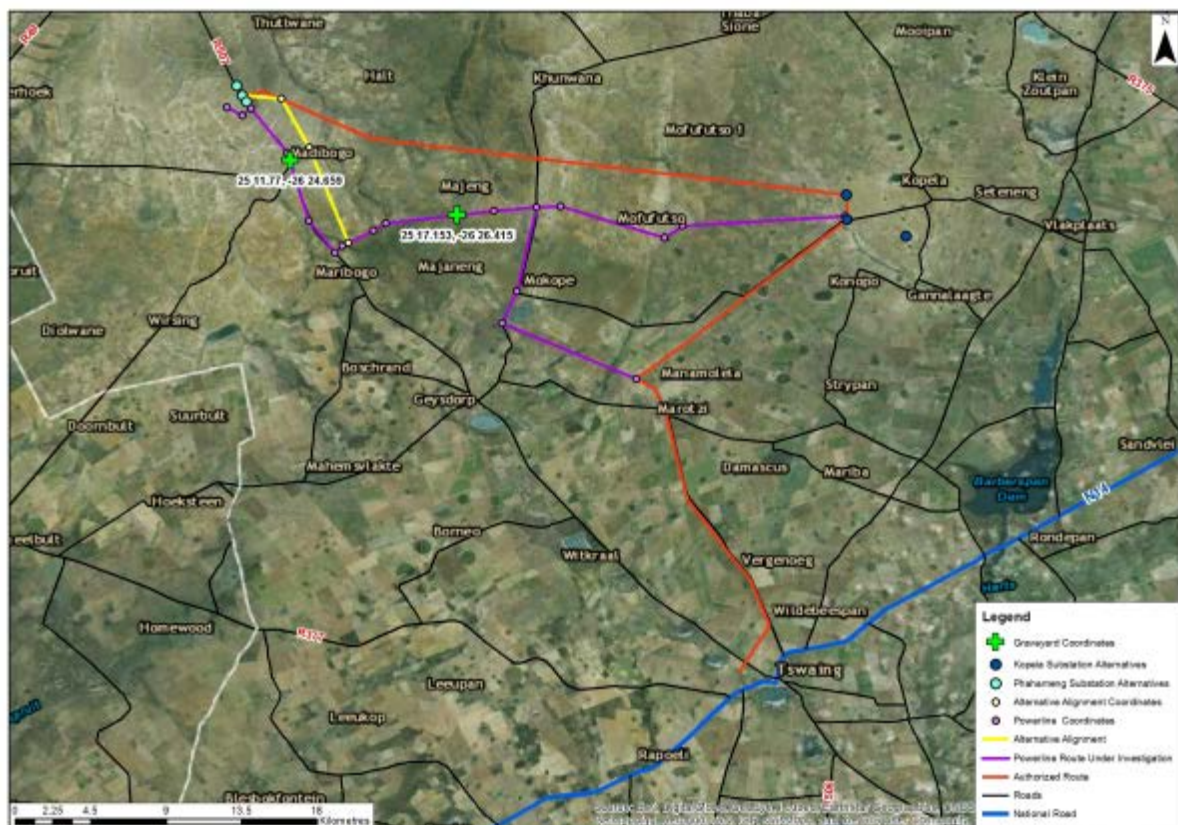


Figure 13 - The Eskom Delareyville Project involves the construction of new power lines and the Phahameng and Kopela Substations near Delareyville in the North West Province.

Note the presence of two graveyards in the Project Area (above).

The graveyards were geo-referenced and mapped (Figure 13; Table 1). The significance of the graveyards as well as the significance of any impact on the graveyards is indicated (Tables 1 & 4). No mitigation measures are outlined as these graveyards need not to be affected by the proposed Eskom Project.

6.2.1 Graveyards

Two graveyards were recorded in the Project Area, namely:

6.2.1.1 Graveyard 01

GY01 is a large graveyard which is located in the main road which runs through the village of Madibogo. It holds a large number of graves.

GY01 is on the western shoulder of the road and therefore need not to be affected by the proposed new power lines.



Figure 14- GY01 is located on the western shoulder of the road that runs through Madibogo and needs not to be affected by the proposed new power lines (above).

GY01 holds graves which are older than sixty years.

6.2.1.2 Graveyard 02

This graveyard (GY02) comprises two graves which are both fitted with cement headstones. The inscriptions on the headstones read as follow:

- Makhobosi Chaba Born 1944 Died 1966 RIP
- Magdeline Chaba Born 53 Died 1970 RIP

GY02 is older than sixty years.



Figure 15 - GY02 is located along the eastern shoulder of the dirt road that runs between the villages of Morena and Majeng. The graveyard is located at a safe distance from the shoulder of the road and needs not to be affected by the proposed new power lines.

6.3 Tables

The coordinates and levels of significance for the heritage resources which were recorded in the Project Area are as follow:

Graveyards	Coordinates	Significance
GY01. Graveyard along the main road that runs through Madibogo. Older than sixty years. Large number of graves.	26° 24.659'S 25° 11.770'E	HIGH
GY02. Located along the dirt road that runs between Morena and Majeng, Older than sixty years. Two graves.	26° 26.415'S 25° 17.153'E	HIGH

Table 1- Coordinates and significance rating for graveyards near the Eskom Project Area (above).

6.4 The significance of the graveyards

All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 1). Legislation with regard to graves includes Section 36 of the National Heritage Resources Act (Act No 25 of 1999) whenever graves are older than sixty years. It seems as if both graveyards are older than sixty years. Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended).

6.5 Possible impact on the heritage resources

Both graveyards need not to be affected by the Eskom Project as both graveyards are located at safe distances from the proposed new power lines. GY01 is located on the shoulder of Road R507 and within the build environment of the village of Madibogo.

GY02 is located more than one hundred meters from the shoulder of the dirt road that runs between Majeng and Majaneng whilst the power line will only be constructed along the shoulder of the road.

6.6 The significance of the impact on the graveyards

The anticipated impacts associated with the proposed project have been assessed according to SRK's standardised impact assessment methodology which is presented below. This methodology has been utilised for the assessment of environmental impacts where the consequence (severity of impact, spatial scope of impact and duration of impact) and likelihood (frequency of activity and frequency of impact) have been considered in parallel to provide an impact rating and hence an interpretation in terms of the level of environmental management required for each impact.

The first stage of any impact assessment is the identification of potential environmental activities aspects and impacts which may occur during the commencement and implementation of a project. This is supported by the identification of receptors and resources, which allows for an understanding of the impact pathway and an assessment of the sensitivity to change. Environmental impacts (social and biophysical) are then identified based on the potential interaction between the aspects and the receptors/resources.

The significance (degree to which the impact may cause irreplaceable loss of resources) of the impact is then assessed by rating each variable numerically according to defined criteria as outlined in Table 2. The purpose of the rating is to develop a clear understanding of influences and processes associated with each impact. The severity, spatial scope and duration of the impact together comprise the consequence of the impact and when summed can obtain a maximum value of 15. The frequency of the activity and the frequency of the impact together comprise the likelihood of the impact occurring and can obtain a maximum value of 10. The values for likelihood and consequence of the impact are then read off a significance rating matrix table as shown in Table 3. This matrix thus provides a rating on a scale of 1 to

150 (low, medium low, medium high or high) based on the consequence and likelihood of an environmental impact occurring.

Natural and existing mitigation measures, including built-in engineering designs, are included in the pre-mitigation assessment of significance. Measures such as demolishing of infrastructure, and reinstatement and rehabilitation of land, are considered post-mitigation.

<p>Severity:</p> <p>1 – Insignificant/not harmful 2 – Small/potential harmful 3 – Significant/slightly harmful 4 – Great/harmful 5 – Disastrous</p>	<p>Spatial scope:</p> <p>1 – Activity specific 2 – Project Area specific 3 – Local area (5km radius) 4 – Regional (District) 5 – National</p>
<p>Duration:</p> <p>1 – One day to one month 2 – One month to two years 3 – 01 to 10 years 4 – Life of operation 5 - Permanent/post closure</p>	<p>Frequency of activity/Duration of aspect:</p> <p>1 – Annually or less/low 2 – 6 monthly/temporary 3 – Monthly/infrequent 4 – Weekly/life of operation 5 – Daily/permanent/high</p>
<p>Frequency of impact:</p> <p>1 – Almost never 2 – Very seldom/highly unlikely 3 – Infrequent/unlikely/seldom 4 – Often/regularly/likely/possible 5 – Daily/highly likely/definitely</p>	

Table 2- The significance of the impact is assessed by rating variables numerically according to criteria outlined in the table (above).

		Consequence													
Likelihood	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45
	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105
	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150

High	76 to 150	Improve current management
Medium High	40 to 75	Maintain current management
Medium Low	26 to 39	
Low	1 to 25	No management required

SIGNIFICANCE = CONSEQUENCE x LIKELIHOOD

Table 3- Significance rating matrix table for the likelihood and consequence of impacts (above).

Grave-yard	Severity	Spatial scope	Duration	Frequency of impact	Frequency of activity	Significance rating	Significance after mitigation
GY01	1	1	1	1	1	1= Low	No management
GY01	1	1	5	1	16	1=Low	No management

Table 4: The significance of potential impacts on the graveyard before and after mitigation (below).

The significance of any possible impact on the graveyards is low and requires no mitigation measures (Tables 3 & 4).

6.7 Mitigating the graveyard impacts

GY01 and GY02 will not be affected by the Eskom Project and therefore need not to be mitigated.

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 the Project Area, namely:

- Two graveyards.

The graveyards were geo-referenced and mapped (Figure 13; Table 1). The significance of the graveyards as well as the significance of any impact on the graveyards is indicated (Tables 1 & 4). No mitigation measures are outlined as these graveyards will not be affected by the proposed Eskom Project.

The significance of the graveyards

All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 1). Legislation with regard to graves includes Section 36 of the National Heritage Resources Act (Act No 25 of 1999) whenever graves are older than sixty years. It seems as if both graveyards are older than sixty years. Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended).

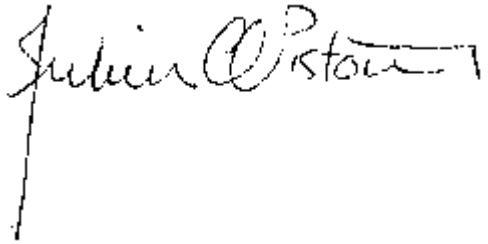
Possible impact on the heritage resources

Both graveyards need not to be affected by the Eskom Project as both graveyards are located at safe distances from the proposed new power lines. GY01 is located on the shoulder of Road R507 within the build environment which is associated with the village of Madibogo. GY02 is located more than one hundred meters from the shoulder of the dirt road that runs between Majeng and Majaneng whilst the power line will only be constructed along the shoulder of the road.

The significance of any possible impact on the graveyards is low and requires no mitigation measures (Tables 3 & 4).

Mitigating the graveyard impacts

No mitigation measures are needed as both graveyards will not be affected by the proposed new power lines.

A handwritten signature in black ink, appearing to read "Julius C. Pistorius". The signature is written in a cursive style with a long vertical line extending downwards from the start of the name.

DR JULIUS CC PISTORIUS
Archaeologist & 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)

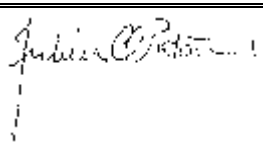
Lecturer and Senior lecturer Department of Anthropology and Archaeology, University of Pretoria (1990-2003)

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, Hartebeespoort 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; • I 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: July 2014</p> <p>_____ Date:</p>
<p>_____ Signature of the Commissioner of Oaths:</p> <p>_____ Date:</p> <p>_____ Designation:</p>

