

## BIOMENTAL SERVICES

**PHASE I ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENT  
SPECIALIST REPORT FOR THE PROPOSED MINING RIGHT ON THE FARM  
VILJOENSHOF 1655 IN BOSHOF WITHIN THE JURISDICTION OF  
TOKOLOGO LOCAL MUNICIPALITY OF LEJWELEPUTSWA DISTRICT  
MUNICIPALITY, FREE STATE PROVINCE.**

**November 2022**

### **ABILITY TO CONDUCT THE PROJECT**

Alvord Nhundu is a professional archaeologist. He completed his Bachelor of Science with honours degree in archaeology with the University of the Witwatersrand (Wits) and Masters in Archaeology with the University of Pretoria (UP). His research interest lies in old and new world archaeology, palaeoenvironmental and climatology, archaeological theory, Later Stone Age, rock art, hunter-gatherers, hunter-gatherer interactions, several aspects of Southern African Iron Age and Indigenous archaeologies. Alvord is an accredited Cultural Resource Management (CRM) member of the Association of Southern African Professional Archaeologists (ASAPA #338) with Field Director status in Iron Age and Stone Age, and Field Supervisor status in Rock Art. He is also affiliated to

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### **INDEPENDENCE**

I, Alvord Nhundu, declare that:

- I act as an independent specialist;
- I am conducting work relating to the proposed mall development in an objective manner, even if this results in views and findings that are not favourable to the client;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have the required experience in conducting the specialist report and I will comply with legislation, regulations and any guidelines that have relevance to the proposed activity;
- I have not, 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;
- All the details and particulars furnished by me in this declaration are true and correct;
- I will perform all other obligations as expected from a heritage practitioner in terms of the Act and the constitutions of my affiliated professional bodies; and
- I realise that a false declaration is an offence in terms of regulation 71 of the regulations and is punishable in terms of section 24F of the NEMA.



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## Acknowledgements

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## EXECUTIVE SUMMARY

The author was appointed by Biomental Services to conduct an Archaeological and Heritage Impact Assessment study for the proposed mining rights on the Farm Viljoenshof 1655 in a small town of Boshof within the jurisdiction of Tokologo Local Municipality of Lejweleputswa District Municipality in the Free State Province. As prescribed by SAHRA and stipulated by the legislation, an HIA is a pre-requisite for such a development. The main purpose of the study was to identify and document the archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the proposed development. The Heritage Impact Assessment was undertaken in terms of Section 38 of the National Heritage Resources Act (25 of 1999) (NHRA).

To understand the archaeology of the area, a background study was undertaken and relevant institutions were consulted. These studies entail the view of archaeological and heritage impact assessment studies that have been conducted in and around the proposed area thorough SAHRIS. The survey was conducted by the author on the **4<sup>th</sup> of November 2022**. A vehicle was used to reach the site. The land was investigated on both vehicle and foot for any traces of cultural material. Where excavation had taken place, soil heaps were examined for any material culture.

The Phase I Cultural-Heritage Impact Assessment study for the proposed mining right did not reveal any sites or cultural material dating to the Stone Age, Iron Age or Historical Age; neither did it identify any graves within the area proposed for the development. However, previous heritage studies in the greater wider area yielded some heritage resources; Archaeotrons Culture and Cultural Resources Consultants found some Later Iron Age stone walling and two graves in their study between Kimberley and Boshof (Vollenhoven 2014). HCAC Heritage Consultants found some weathered MSA material in the wider study area (Van der Walt 2013). Dreyer (2008) found some LSA tools. In his earlier study in Boshof he had found some LSA occurrences, a possible ash heap and a pump structure dating to 1982 (Dreyer 2004). Jaarsveld (2006) found some LSA tools and noted a battlefield site which is already known in the study area. Thembeni Cultural Heritage noted some Stone Age sites and battlefield sites (Schalkwayk 2003). All the Stone Age material found in the previous studies were of low significance as they were found out of context, and in some cases highly disintegrated. Another important point to note is that features older than 60 years old in the form of farmsteads can be expected in the study area and these cannot be demolished without relevant permits as they are protected by Section 34 of the NHRA (Act 25 of 1999).

Although no heritage resources were found within the footprint of development, it is important to note that unavailability of archaeological and cultural heritage materials does not mean absentee, archaeological material might be buried underground. In addition to that, as noted above, previous heritage studies have

revealed some heritage resources. Thus, the client is advised to take precautions during construction. If archaeological materials are unearthed, all the construction within the radius of at least 10m of such indicator should be stopped and the area be demarcated by a danger tape. A professional archaeologist or SAHRA officer should be contacted immediately. In the interim, it is the duty of the client and the contractor to protect the site from publicity until the mutual agreement is reached.

Since there were no heritage resources identified during the assessment, it is recommended that the developer proceed with the project subject to the recommendations given above.

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## ACRONYMS AND ABBREVIATIONS

AIA	Archaeological Impact Assessment
EMP	Environmental Management Plan
HIA	Heritage Impact Assessment
LIA	Late Iron Age
MIA	Middle Iron Age
EIA	Early Iron Age
HMP	Heritage Management Plan
LSA	Late Stone Age
MSA	Middle Stone Age
ESA	Early Stone Age
NASA	National Archives of South Africa
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Authority
PHRAG	Provincial Heritage Resources Authority Gauteng
SAHRA	South African Heritage Resources Agency

## GLOSSARY OF TERMS

The following terms used in this Archaeology are defined in the National Heritage Resources Act [NHRA], Act Nr. 25 of 1999, South African Heritage Resources Agency [SAHRA] Policies as well as the Australia ICOMOS Charter (*Burra Charter*):

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

**Artefact:** Any movable object that has been used, modified or manufactured by humans.

**Conservation:** All the processes of looking after a site/heritage place or landscape including maintenance, preservation, restoration, reconstruction and adaptation.

**Cultural Heritage Resources:** refers to physical cultural properties such as archaeological sites, palaeontological sites, historic and prehistorical places, buildings, structures and material remains, cultural sites such as places of rituals, burial sites or graves and their associated materials, geological or natural features of cultural importance or scientific significance. This include intangible resources such religion practices, ritual ceremonies, oral histories, memories indigenous knowledge.

**Cultural landscape:** “the combined works of nature and man” and demonstrate “the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both internal and external”.

**Cultural Resources Management (CRM):** the conservation of cultural heritage resources, management, and sustainable utilization and present for present and for the future generations

**Cultural Significance:** is the aesthetic, historical, scientific and social value for past, present and future generations.

**Chance Finds:** means Archaeological artefacts, features, structures or historical cultural remains such as human burials that are found accidentally in context previously not identified during cultural heritage scoping, screening and assessment studies. Such finds are usually found during earth moving activities such as water pipeline trench excavations.

**Compatible use:** means a use, which respects the cultural significance of a place. Such a use involves no, or minimal, impact on cultural significance.

**Conservation** means all the processes of looking after a place so as to retain its cultural significance.

**Expansion:** means the modification, extension, alteration or upgrading of a facility, structure or infrastructure at which an activity takes place in such a manner that the capacity of the facility or the footprint of the activity is increased.

**Grave:** A place of interment (variably referred to as burial), including the contents, headstone or other marker of such a place, and any other structure on or associated with such place.

**Heritage impact assessment (HIA):** Refers to the process of identifying, predicting and assessing the potential positive and negative cultural, social, economic and biophysical impacts of any proposed project, plan, programme or policy which requires authorisation of permission by law and which may significantly affect the cultural and natural heritage resources. The HIA includes recommendations for appropriate mitigation measures for minimising or avoiding negative impacts, measures enhancing the positive aspects of the proposal and heritage management and monitoring measures.

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

**Impact:** the positive or negative effects on human well-being and / or on the environment.

**In situ material:** means material culture and surrounding deposits in their original location and context, for instance archaeological remains that have not been disturbed.

**Interested and affected parties Individuals:** communities or groups, other than the proponent or the authorities, whose interests may be positively or negatively affected by the proposal or activity and/ or who are concerned with a proposal or activity and its consequences.

**Interpretation:** means all the ways of presenting the cultural significance of a place.

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

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

**Mitigate:** The implementation of practical measures to reduce adverse impacts or enhance beneficial impacts of an action.

**Place:** means site, area, land, landscape, building or other work, group of buildings or other works, and may include components, contents, spaces and views.

**Protected area:** means those protected areas contemplated in section 9 of the NEMPAA and the core area of a biosphere reserve and shall include their buffers.

**Public participation process:** A process of involving the public in order to identify issues and concerns, and obtain feedback on options and impacts associated with a proposed project, programme or development. Public Participation Process in terms of NEMA refers to: a process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to specific matters.

**Setting:** means the area around a place, which may include the visual catchment.

**Significance:** can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgments and science-based criteria (i.e. biophysical, physical cultural, social and economic).

**Site:** a spatial cluster of artifact, structures, organic and environmental remains, as residues of past human activity.

## 1. INTRODUCTION

At the request of Biometal, the author conducted a Phase I Archaeological and Heritage Impact Assessment Study for the proposed mining rights on the farm Viljoenshof in a small town of Boshof within the jurisdiction of Tokologo Local Municipality of the Lejweleputswa District Municipality in Free State Province. The survey was conducted in accordance with the SAHRA Minimum Standards for the Archaeology and Palaeontology. The minimum standards clearly specify the required contents of the report of this nature. The study aim to identify and document archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the proposed construction, these will in turn assist the developer in ensuring proper conservation measure in line with the National Heritage Resource Act, 1999 (Act 25 of 1999).

## 2. SITES LOCATION AND DESCRIPTION

The proposed development is located on the farm Viljoenshof in the small town of Boshof within the jurisdiction of Tokologo Local Municipality of Lejweleputswa District Municipality in the Free State Province. The project area is situated approximately 27.9km North-east of Kimberley and 120km west of the provincial capital, Bloemfontein. In terms of topography, the land is mostly natural veld. The slope of the area is relatively flat 0.2% with the occurrence of the plateau. The site is situated on a Highveld of the inland plateau at an altitude of 1200m

above sea level. The project area is located within the loxtonsdal kimberlite cluster which hosts two historical diamond mines. All known kimberlites in this cluster are of Group II variety. The soil is mostly red and grey Aeolian sand. In terms of vegetation the project area is part of the Savannah Biome. The vegetation is described by Acocks (1988) as Kimberley Thorn Bushveld.

### Summary of Project Location Details

Province:	Free State
Municipality:	Tokologo
District:	Lejweleputswa
Proposed development:	Proposed mining rights



**Figure 1: Google Earth view of the study area.**

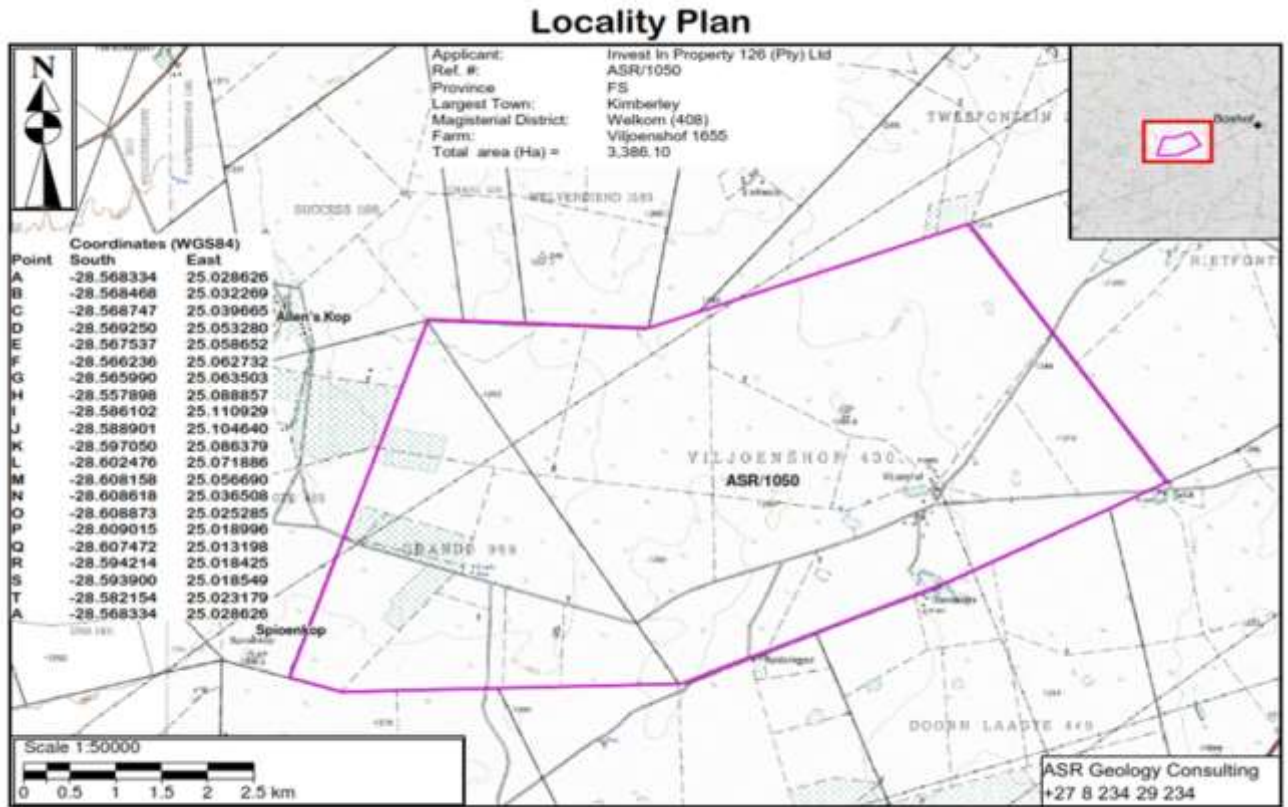


Figure 2: Locality map of the study area showing the farm where the proposed development will take place.



Figure 3: View of the wind mill and some related farm infrastructure on the proposed site of development.



**Figure 4: Another view of the site proposed for the development, note the grass that define the area.**



**Figure 5: Another view of the site proposed for the development.**



Figure 6: Another portion of the site proposed for the development.





**Figure 7: Another portion of the site where some vegetation has been eaten by animals on the farm.**



**Figure 8: View of the vegetation thickets in the proposed site of development.**

### **3. NATURE OF THE PROPOSED PROJECT**

Invest in Property intends to develop a mine for Diamond kimberlites (DK) and Diamond General (DG) over the farm Viljoenshof 1655 in the town of Boshof within the jurisdiction of Tokologo Local Municipality of Lejweleputswa District Municipality of Free State Province. The proposed development will commence and be implemented through a pilot mining phase for a duration of a period of 1 year. Earth Moving machines will be used in the process. The development will occur in three phases;

Phase1: visual and geo-physical assessment;

Phase 2: Limited drilling where the land owner is entitled for a daily entrance fee of R350;

Phase3: bulk sampling where the landowner is entitled for a daily entrance fee of R450.

In essence, the development will open, complete area of the kimberlite body and cut first two benches into kimberlite. As with any mining activity in any part of the world, the development

will come with associated infrastructural developments. These will include, but not limited to access roads, security, fencing, social beams, processing plants, stockpiles, open pits, ablution facilities (portable toilets), clean and dirty water trenches, water management pumps, vehicle parking areas, workshop stores, chemical stores, jojo tanks, stockpile yards, generator, lighting.

**Table 1: Summary of project details**

Items	Details
Type of mineral	Diamond Kimberlite Diamond General
Mining method	Open pit
Depth of mining	600m
Life of mine	32 years

#### **4. PURPOSE OF THE CULTURAL HERITAGE STUDY**

The purpose of this Archaeological and Cultural Heritage study was to entirely identify and document archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the proposed upgrade of the road, these will in turn assist the developer in ensuring proper conservation measure in line with the National Heritage Resource Act, 1999 (Act 25 of 1999). Impact assessments highlight many issues facing sites in terms of their management, conservation, monitoring and maintenance, and the environment in and around the site. Therefore, this study involves the following:

- Identification and recording of heritage resources that maybe affected by the proposed development of the mall.
- Providing recommendations on how best to appropriately safeguard identified heritage sites. Mitigation is an important aspect of any development on areas where heritage sites can be identified.

#### **5. METHODOLOGY AND APPROACH**

The methods utilised in this study are informed by the 2012 SAHRA Policy Guidelines for impact assessment. To achieve the purpose and objectives sources were used, this includes;

##### **I. Literature review**

Relevant literatures were consulted through the SAHRIS website, with an intention to review previous Cultural Heritage Impact Assessments conducted in and around the area of the proposed development. Various archaeological, historical sources and recently published and unpublished books were used to aid this study.

## **II. Field survey**

The field survey was undertaken by the author on the **4<sup>th</sup> of November 2022**. The survey made use of the vehicle to get to the site, and a vehicular survey was mainly employed to traverse the site, but some sections were walked through. The survey covered the entire farm area. It was surveyed through farm tracks, access roads and public roads which cut across the site. The pedestrian survey focussed on parts of the project area where it seemed as if disturbances may have occurred in the past.

## **III. Documentation**

In line with the appropriate legislation, the site was documented by taking photographs using a camera 10.1 mega pixel Sony Cybershort Digital Camera and plotting of finds using a Garmin etrex Venture HC.

## **IV. Restriction and assumption**

A number of factors contributed to the potential disturbance of the archaeological remains, namely surface clearing, sporadic stockpiles associated with constructions and some dilapidated structures on site. The farm tracks and footpath may also have had a negative impact on the preservation and context of the material culture. However, on inspecting these no heritage resources were noted. Underground heritage may not be represented on the surface making the identification difficult. This serves as considerable limitation. Should any cultural material be identified when the development begins, a specialist must be consulted to examine the finds.

## **6. APPLICABLE HERITAGE LEGISLATION**

Several legislations provide the legal basis for the protection and preservation of both cultural and natural resources. These include the National Environment Management Act (No. 107 of

1998); Mineral Amendment Act (No 103 of 1993); Tourism Act (No. 72 of 1993); Cultural Institution Act (No. 119 of 1998), and the National Heritage Resources Act (Act 25 of 1999). Section 38 (1) of the National Heritage Resources Act requires that where relevant, an Impact Assessment is undertaken in case where a listed activity is triggered. Such activities include:

- (a) *the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- (b) *the construction of a bridge or similar structure exceeding 50 m in length; and*
- (c) *any development or other activity which will change the character of an area of land, or water -*
  - (i) *exceeding 5 000 m<sup>2</sup> in extent;*
  - (ii) *involving three or more existing erven or subdivisions thereof; or*
  - (iii) *involving three or more erven or divisions thereof which have been consolidated within the past five years;*
- or*
- (iv) *the costs of which will exceed a sum set in terms of regulations by SAHRA or a Provincial Heritage Resources Authority;*
- (d) *the re-zoning of a site exceeding 10 000 m<sup>2</sup> in extent; or*
- (e) *any other category of development provided for in regulations by SAHRA or a Provincial Heritage Resources Authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.*

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

- (a) *Places, buildings structures and equipment of cultural significance*
- (b) *Places to which oral traditions are attached or which are associated with living heritage*
- (c) *Historical settlements and townscapes*
- (d) *Landscapes and natural features of cultural significance*
- (e) *Geological sites of scientific or cultural importance*
- (f) *Archaeological and paleontological sites*
- (g) *Graves and burial grounds including-*
  - (i) *ancestral graves*
  - (ii) *royal graves and graves of traditional leaders*
  - (iii) *graves of victims of conflict*
  - (iv) *graves of individuals designated by the Minister by notice in the Gazette*
  - (v) *historical graves and cemeteries; and*
  - (vi) *other human remains which are not covered by in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983)*
- (h) *Sites of significance relating to the history of slavery in South Africa*
  - (i) *moveable objects, including -*
    - (i) *objects recovered from the soil or waters of South Africa, including archaeological and paleontological objects and material, meteorites and rare geological specimens*
    - (ii) *objects to which oral traditions are attached or which are associated with living heritage*
    - (iii) *ethnographic art and objects*

- (iv) military objects*
- (v) objects of decorative or fine art*
- (vi) objects of scientific or technological interest; and*
- (vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1 of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).*

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

- (a) Its importance in the community, or pattern of South Africa’s history*
- (b) Its possession of uncommon, rare or endangered aspects of South Africa’s natural or cultural heritage*
- (c) Its potential to yield information that will contribute to an understanding of South Africa’s natural or cultural heritage*
- (d) Its importance in demonstrating the principal characteristics of a particular class of South Africa’s natural or cultural places or objects*
- (e) Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group*
- (f) Its importance in demonstrating a high degree of creative or technical achievement at particular period*
- (g) Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons*
- (h) Its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and*
- (i) Sites of significance relating to the history of slavery in South Africa.*

***Other sections of the Act with a direct relevance to the AIA are the following:***

***Section 34(1)*** No person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

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

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

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

- *destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside formal cemetery administered by a local authority; or*

- *bring onto or use at a burial ground or grave any excavation equipment, or any equipment which assists in detection or recovery of metals.*

## 7. ARCHAEOLOGY AND HISTORY OF THE AREA

The archaeology of southern Africa is broadly divided into Stone Age, Iron Age and the Historical Age, and South Africa fits well into this periodisation.

The Stone Age is the first period in a series of cultural developments in the history of evolution. It refers to the earliest culture in which people utilised the stone to make tools (Clark 1970). In South Africa, in line with the picture in southern Africa, the Stone Age is divided into three categories namely the Early Stone (ESA), The Middle Stone Age (MSA) and the Later Stone Age (LSA). ESA dates between 2.6 million and 250 000 years ago. It is characterised by two archaeological industries, the Oldowan and the Acheulean. (Clarke; Kuman 2000; Klein 2000; Lombard *et al.*, 2012). The Oldowan industry is the oldest known stone industry and dates to 2.6 million ya. It is characterised by cobbles cores, pebble choppers and percussive tools (Klein 2000; Toth & Schick 2007). Oldowan tools have not been found in any other continent outside Africa (Esterhuysen & Smith 2007). It was completely replaced by the Acheulian around 1.7 million years ago.

Homo ergaster was probably responsible for the manufacture of Acheulian tools in South Africa (Esterhuysen & Smith 2007). Acheulian tools were longer with sharper edges which suggest they could be used for a variety of activities ranging from cutting meat from large animals such as elephants, rhinoceros and hippopotamus that would have died from natural causes. Other functions include chopping of wood, digging roots and cracking bones for marrow. The most diagnostic tools of this period are the handaxes and the cleaver, and some other bifacial tools (Klein 2000). The Acheulean tool industry is known to be the longest running stone tool industry which first appeared about 1.7 million ya and survived until the period between 350 000 to 250 000 ya (Klein 2000; Phillipson 2005).

The transition from ESA to MSA took place around 250 000 years ago and it is characterised by a change in technology as handaxes and cleavers were replaced by smaller blades and flakes (Kuman *et al.*, 2005). In contrast to the ESA technique of removing flakes from a core, MSA tools were flakes to start with (Mitchell 2002). There were of a predetermined size and shape

and were made by preparing a core of suitable material and striking off the flake so that it was flaked according to a shape which the toolmaker desired (Esterhuysen & Smith 2007). The stone toolkit of the MSA comprise of unifacial and bifacial points, blades, flakes, scrapers and pointed tools that could have been hafted and used as spears or arrowheads (Volman 1984). The repeated use of caves indicates that MSA people had developed the concept of a home base and that they could make fire. These were two important steps in cultural evolution (Deacon & Deacon 1999). Besides the occupation of caves and introduction of fire, the widespread use of red ochre, probably as body paint, also shows that MSA behaviour had become more human (Wadley 2015). The recent finds of decorated ochre at Blombos and decorated ostrich eggshells at Diepkloof also in the Cape further cement the point.

The LSA dates to between 40 000 and 25 000 to recently, 100 years ago. It was a period when man refined small blade tools conversely abandoning the MSA prepared-core technique (Deacon 1984). The LSA is associated with the San people. Thus, the tool assemblage of this period consists of thumbnails, convex –edge scrapers, crescents, and bladelets. Other tools of the period are hammers, adzes, bores, grooved stones, hafted tools, points. These San people relied to a larger extent on bow-and-arrow hunting with poisoned tips and also snaring. Ceramics were produced and used by hunters and Khoikhoi herders towards the terminal phase of the LSA (Sadr & Sampson 2006). During the LSA, human behaviour was undoubtedly modern with unique human traits such as rock art and purposeful burials with ornaments (Villa *et al.*, 2012).

No Stone Age sites were found within the footprint of the area proposed for the development. Although no Stone Age sites were found, the region has evidence to suggest that the area was inhabited by Stone Age people in the past. The wider study area have yielded a lot of tools cutting across the Stone Age period. Most ESA and MSA tools have been found in open sites. The earliest ESA industry is the Victoria West Stone industry which was first defined and recorded by Smith in 1915. These tools have been found along the Vaal River. Smith called this culture “Tortoise cores”, the idea being that he made a parallel to the tortoise shell in which individuals shells can be chipped off from a single shell making tools such as handaxes. Later the “Tortoise –Cores” was regarded as a cultural marker in the transition from the ESA to the MSA (Goodwin 1935). The MSA is clearly marked by the appearance of the prepared core technique. In the Free State the Florisband is the dominant culture (Benneman *et al.* 2011).

Open air sites seem to have been preferred in the eastern Free State. Rose Cottage is the only cave site that have yielded MSA tools. LSA tools have been found in many caves sites and open sites in the wider study area. There are many paintings in the study region with faded paintings at Lelihoek shelter and De Hoop, and some well executed ones at Tandjiesberg shelter. Just like in the Limpopo, the rock art of the study area indicate a lot of contact between different cultural groups. At De Hoop cave there are poorly preserved paintings depicting Europeans, horses and elands (Wadley 1995).

### **The Iron Age**

Bantu-speaking people moved into eastern and southern Africa about 2000 years ago (Mitchell 2002). These people came with their cultural package. The primary technology used by the Bantu farming communities was the iron hoe, hence the advent of the 'Iron Age' to designate this period. The Iron Age of South Africa is divided into the Early Iron Age (EIA) AD200 - 1000) and the Later Iron Age (LIA) (AD1000-1840). However, Huffman (2007:361) proposed for an additional Middle Iron Age between the two phases. So according to him, the Iron Age of South Africa is divided into three phases namely, the Early Iron Age (EIA) (AD200-900), the Middle Iron Age (MIA) (AD900-1300) and the Late Iron Age (LIA) (AD1300-1840). Other researchers argue that the Middle Iron Age should only be confined to the Shashe Limpopo Basin, as it is not clear outside the Limpopo Basin.

The first settlement in southern Africa is known as the Early Iron Age (Mitchell 2002). Early Iron Age communities in eastern and southern Africa share a common culture called Chifumbaze Complex (Philipson 1994). The Chifumbaze Complex contains evidence of the first farmers who cultivated crops, domesticated cattle, used iron and made pots (Philipson 1994). Some researchers classify Early Iron Age pottery traditions into different streams or trends in pot types and decoration that emerged over time in southern Africa. These streams are identified as the Kwale Branch (east), the Nkope Branch (central) and the Kalundu Branch (west). Early Iron Age pottery display features such as large and prominent inverted rims, large neck areas and fine elaborate decorations. Inskeep (1977: 124) describes it as 'thick, pale (pink, buff or reddish) in colour and freely, boldly decorated'.

The Middle Iron Age stretches from AD900 to 1300 and it marks the origins of the Zimbabwe culture (Huffman 2007: xiii). During this period, cattle domestication appeared to play an



important role in society. The period was also characterised by extensive international trade that boasted the economy resulting sweeping socio-economic changes in the landscape (Huffman 2000). A remarkable change was the development of class distinction and sacred leadership which was witnessed in the Shashe-Limpopo Basin (Huffman 2007).

The Late Iron Age roughly dates from AD1300 to 1840. The LIA was characterised by greater focus on economic growth and the increased importance of trade. Specialisation in terms of natural resources also started to play a role, as can be seen from the distribution of iron slag which tends to occur only at certain localities compared to wider distribution during the earlier times (Huffman 2000, 2007). There is also a marked increase in stonewalling (Huffman 2007).

No Iron Age sites were noted in the study area. In wider study area, the earliest Iron Age settlement is OU1, between the modern towns of Vrede and Frankfurt, and is dated to AD 505. The other EIA site is OND2. When these Iron Age people entered the region, local Khoisan people already possessed grass-tempered and grit-tempered pottery and domestic stock (Wadley 1995:578). There is no Middle Iron Age in the Free State. It is clear in the Limpopo where it is associated with the Zimbabwe culture (Huffman 2007). Other sites with well documented Iron Age artefacts include the Caledon River Valley known to have been occupied by the Fokeng group of the Sotho culture. Later this group migrated to settle in Matlaeeng, between Frankfurt and Vrede (Huffman 2007). In the study area, there is some rock art which is linked to the Iron Age by interaction; it is not directly executed by the San people. In the south eastern Orange Free State, for example cattle paintings are found with some Sotho shields which some researchers such as Binneman *et al.* (2011) argue could be referring to the time of trouble, *mfecane*. One interesting painting is of a man walking with hunting dogs (Wadley 1995).

### **Historical Period**

Bartholomeo Dias was the first European to sail around the southern point of Africa in 1488 (Sadr 1998), and he named it the 'Cape of Good Hope.' He was followed by Vasco da Gama who arrived 9 years later. The Portuguese seafarers were not actually interested in southern Africa, they were just explorers. The start of a significant chapter would be when Jan Van Riebeck arrived in Table Bay with his 3 ships on 6 April 1652. At first his aim was not to colonise the Cape but to establish a station at Table Bay to supply passing ships with fresh

meat. The events turned when they granted mine company servants freedom in 1657 to establish private farms in Rondebosch area below the eastern slopes of Table Mountains. By settling at the Cape, the Dutch also aimed to access the herds of cattle kept by the Khoikhoi. At first it was a friendly arrangement, however, disputes erupted over land when the Free Burghers began to encroach into traditional communal lands. By the 1700s, the Dutch colonists had prevailed. These new white settlers would influence the context and content of South Africa starting with the development of Cape Town into an urban centre (Wright & Hamilton 1989).

The British took control of the Cape colony in 1795 after the battle of Muizenberg. This triggered a process of disintegration within many European locals unwilling to contribute to the British government and crown. Between 1803 and 1806, the Dutch gained control temporarily. In 1832, Dr. Andrew Smith, a Briton and William Berg, a Boer embarked on an exploring tour in KZN. When they came back they convinced the Boer leaders of the potential of the land in terms of farming, livestock and settlement. This triggered the beginning of the Great Trek. (Ross 1989; Wright & Hamilton 1989). The first wave of trekkers left the Cape in 1835, and more followed in 1836. About 12 000 people left on the trek being led by renowned figures such as Louis Trichadt, Hans Van Rensburg and Hendrik Potgieter among others. In time, these voortrekkers who were escaping the British policies started to build a unique identity, and started calling themselves Afrikaners. They also developed a hybrid language called Afrikaans which stemmed from the Dutch, but incorporated other languages such as German, French and Black African influences. The Afrikaans descendants of these people would later be called the 'Boere', meaning a farmer ([www.sa.history.co.za/](http://www.sa.history.co.za/))

The early history of South cannot be complete without mentioning the Mfecane/ difaqane. This was the time of trouble when the great Zulu and Sotho tribes fought each other for space and domination throughout southern Africa, killing and displacing hundreds of thousands of people across the subcontinent. A key figure in these wars was the great Zulu king, Shaka. In the early 1860s, many African states weakened as they lost their tradition and culture due to Christianity. During this time, Europeans further weakened African states by grabbing fertile land from them, exploited them as a source of cheap labour and made them to pay taxes (Wright & Hamilton 1989; Shillington 1989).

In time, tensions between the British and the Boers states arose with the discovery of gold and diamonds the British saw it fit to attempt to take over two states in order to protect the people living under Boer rule and also to thwart a German attempt at taking control of large parts of Africa. These tensions led to the Anglo-Boer War of 1899-1902. The war claimed the lives of probably, 50 000 Boers, as well as Blacks and some British soldiers. The Boers ceded in May 1902, and the British formed the South African Republic. Boers continued to live in the new Republic although many resisted and wished to continue fighting. The 1902 Peace Treaty in Vreeniging ended the Anglo-Boer War. This gave Black South African Peace Treaty as they hope for better opportunities after the suppression and domination by white minority. Unfortunately this did not bring any meaningful changes as far as human rights for black people were concerned, actually the process of segregation in South Africa intensified (Wright & Hamilton 1989).

In the Free State the town of Bloemfontein, which is currently the provincial capital is one of the most significant interior towns that were established by the European settlers of the Dutch origin. This was after the Voortrekkers had trekked from the Cape colony to avoid British administration (Hall, 1993). Other towns within the close proximity to the study area are; Kestell, Bethlehem, Phuthaditjhaba and Harrismith. The historical archaeology of the study region is rich in monuments, statues and memorials. There are also other buildings demonstrating various architectural styles and venarcular. The footprints of the Anglo-Boer War are clearly visible in the research area. The study area is based in the small town of Boshof

#### The history of the town of Boshof

The town of Boshof was established on a farm bought from a local Geiqua called Dawid Danster. The farm was bought by D.S Fourie and sold to the Nederduitse Gereformeerde Kerk under the instruction of Reverend Andrew Murray. The town was named after the 2nd President of the Orange Free State, Jacobus Nicolas Boshof who was born in 1808, and died in 1881. Boshof was established as a municipality in 1872, in 1874, the Dutch Reformed church was built. It was enlarged in 1913, and renovated in 1954 (<http://www.boshof.co.za>).

The town of Boshof boasts of a number of historical buildings such as town hall, high school and the powder magazine. The powder magazine is a provincial heritage site and the town hall, a Grade III site.

There are no historical structures that were found within the footprint of the proposed development.

## 8. PREVIOUS HERITAGE IMPACT STUDIES

A number of CRM projects were conducted in and around the small town of Boshof. The studies include power line, heritage studies in the greater wider area yielded some heritage resources; HACA Heritage consultants in their desktop study for Boshof did not find anything (Van der Walt 2019), Archaeotrons Culture and Cultural Resources Consultants found some Later Iron Age stone walling and two graves in their study between Kimberley and Boshof (Vollenhoven 2014). HCAC Heritage Consultants found some weathered MSA material in the wider study area (Van der Walt 2013). Dreyer (2008) found some LSA tools. In his earlier study in Boshof he had found some LSA occurrences, a possible ash heap and a pump structure dating to 1982 (Dreyer 2004). Jaarsveld (2006) found some LSA tools and noted a battlefield site which is already known in the study area. Thembeni Cultural Heritage noted some Stone Age sites and battlefield sites (Schalkwayk 2003). All the Stone Age material found in the previous studies were of low significance as they were found out of context, and in some cases highly disintegrated. Another important point to note is that features older than 60 years old in the form of farmsteads can be expected in the study area and these cannot be demolished without relevant permits as they are protected by Section 34 of the NHRA (Act 25 of 1999). housing developments and prospecting mining rights. These studies present the nature and character of heritage resources in the area. However, no such occurrences were discovered during the assessment of the site proposed for the development.

Below is a table summarising previous HIA studies undertaken in and around the area proposed for development, as well as the findings.

**Table 2: Previous heritage impact assessment studies in the proposed project area.**

Author/Year	Local Municipality	Farm name	Findings

Wan der Walt (2019)	Tokoloko	Portions O, 2, 4 and 6 of the farm Aswegens & portions O, 1 and 2 of farm Greylingslyn	None
Van Vollenhoven (2014)	Tokoloko	.....	LIA stone walling and two graves
Van Schalwyk (2013)	Mogalakwena	.....	Low significance Stone Age sites, and noted some battlefield sites.
Van der Walt (2013)	Tokoloko	Les Marais 137	Weathered MSA tools
Jaarsveld (2006)	Tokoloko	.....	Stone Age sites of low significance, and noted a known battlefield site
Dreyer (2008)	Tokoloko	Serfonteinshoop 43 Napier 662 Garvoch 367	LSA scatters of low significance
Dryer (2004)	Tokoloko	.....	Material culture of the Anglo-Boer War, LSA occurrences, a possible ash heap and a pump house structure dating to 1982.
Van Schalkwyk (2003)	Tokoloko	.....	Stone Age sites of low significance, and noted some battlefield sites.

## 9. DEGREE OF SIGNIFICANCE

Assessment of significance is important in this study as it provides rating of the impact prompted by the proposed development on heritage resources. The assessment of significance

gives mitigation measures to limit the effects of the impact that could result as the cause of the development on heritage resources.

**Table 3: Impact criteria of significance.**

<b>Status of Impact</b>
The impacts are assessed as either having a: negative effect (i.e., at a `cost' to the environment), positive effect (i.e., a `benefit' to the environment), or Neutral effect on the environment.
<b>Extent of the Impact</b>
(1) Site (site only), (2) Local (site boundary and immediate surrounds), (3) Regional (within the City of Johannesburg), (4) National, or (5) International.
<b>Duration of the Impact</b>
The length that the impact will last for is described as either: (1) immediate (<1 year) (2) short term (1-5 years), (3) medium term (5-15 years), (4) long term (ceases after the operational life span of the project), (5) Permanent.
<b>Magnitude of the Impact</b>
The intensity or severity of the impacts is indicated as either: (0) none, (2) Minor, (4) Low, (6) Moderate (environmental functions altered but continue), (8) High (environmental functions temporarily cease), or (10) Very high / Unsure (environmental functions permanently cease).
<b>Probability of Occurrence</b>

<p>The likelihood of the impact actually occurring is indicated as either:</p> <p>(0) None (the impact will not occur),</p> <p>(1) improbable (probability very low due to design or experience)</p> <p>(2) low probability (unlikely to occur),</p> <p>(3) medium probability (distinct probability that the impact will occur),</p> <p>(4) high probability (most likely to occur), or</p> <p>(5) Definite.</p>
<p><b>Significance of the Impact</b></p>
<p>Based on the information contained in the points above, the potential impacts are assigned a significance rating (<b>S</b>). This rating is formulated by adding the sum of the numbers assigned to extent (<b>E</b>), duration (<b>D</b>) and magnitude (<b>M</b>) and multiplying this sum by the probability (<b>P</b>) of the impact.</p> <p><math>S=(E+D+M)P</math></p>
<p><b>The significance ratings are given below</b></p>
<p>(&lt;30) low (i.e., where this impact would not have a direct influence on the decision to develop in the area),</p> <p>(30-60) medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),</p> <p>(&gt;60) high (i.e., where the impact must have an influence on the decision process to develop in the area).</p>

**Table 4: Grading system for identified heritage resources in terms of the NHR (Act 25 of 1999).**

Level	Significance	Possible action
National (Grade I)	Site of National Value	Nominated to be declared by SAHRA
Provincial (Grade II)	Site of Provincial Value	Nominated to be declared by PHRA

Local Grade (IIIA)	Site of High Value Locally	Retained as heritage
Local Grade (IIIB)	Site of High Value Locally	Mitigated and part retained as heritage
General Protected Area A	Site of High to Medium	Mitigation necessary before destruction
General Protected Area B	Medium Value	Recording before destruction
General Protected Area C	Low Value	No action required before destruction

## 10. SURVEY FINDINGS

The Phase I Cultural-Heritage Impact Assessment study for the proposed mining right did not reveal any sites or cultural material dating to the Stone Age, Iron Age or Historical Age; neither did it identify any graves within the area proposed for the development. However, previous heritage studies in the greater wider area yielded some heritage resources; Archaeotrons Culture and Cultural Resources Consultants found some Later Iron Age stone walling and two graves in their study between Kimberley and Boshof (Vollenhoven 2014). HCAC Heritage Consultants found some weathered MSA material in the wider study area (Van der Walt 2013). Dreyer (2008) found some LSA tools. In his earlier study in Boshof he had found some LSA occurrences, a possible ash heap and a pump structure dating to 1982 (Dreyer 2004). Jaarsveld (2006) found some LSA tools and noted a battlefield site which is already known in the study area. Thembeni Cultural Heritage noted some Stone Age sites and battlefield sites (Schalkwayk 2003). All the Stone Age material found in the previous studies were of low significance as they were found out of context, and in some cases highly disintegrated. Another important point to note is that features older than 60 years old in the form of farmsteads can be expected in the study area and these cannot be demolished without relevant permits as they are protected by Section 34 of the NHRA (Act 25 of 1999).



Table 5: Anticipated Impact Rating

<b>Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological material or objects.</b>		
	<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Low (2)	Low (2)
<b>Probability</b>	Not Probable (2)	Not probable (2)
<b>Significance</b>	Low (16)	Low (16)
<b>Status</b>	Negative	Negative
<b>Reversibility</b>	Not irreversible	Not irreversible
<b>Irreplaceable loss of resources</b>	No loss of resources	No loss of resources
<b>Mitigation:</b> Exercise caution during the construction phase as the archaeological and cultural heritage resources might be buried underground.		

## 11. RECOMMENDATIONS AND CONCLUSION

Although no heritage resources were found within the footprint of development, it is important to note that unavailability of archaeological and cultural heritage materials does not mean absentee, archaeological material might be buried underground. In addition to that, as noted above, previous heritage studies have revealed some heritage resources. Thus, the client is advised to take precautions during construction. If archaeological materials are unearthed, all the construction within the radius of at least 10m of such indicator should be stopped and the area be demarcated by a danger tape. A professional archaeologist or SAHRA officer should be contacted immediately. In the interim, it is the duty of the client and the contractor to protect the site from publicity until the mutual agreement is reached.

In conclusion, since there are no archaeological objects identified during the assessment, it is recommended that the developer proceed with the project subject to the recommendations given above.

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## APPENDIX 1: SITE SIGNIFICANCE

The following guidelines for determining site *significance* were developed by SAHRA in 2003. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.

### (a) Historic value

- Is it important in the community, or pattern of history?
  - Does it have strong or special association with the life or work of a person, group or organization of importance in history?
  - Does it have significance relating to the history of slavery?
- (b) Aesthetic value**
- Is it important in exhibiting particular aesthetic characteristics valued by a community or cultural group?
- (c) Scientific value**
- Does it have potential to yield information that will contribute to an understanding of natural or cultural heritage?
  - Is it important in demonstrating a high degree of creative or technical achievement at a particular period?
- (d) Social value**
- Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons?
- (e) Rarity**
- Does it possess uncommon, rare or endangered aspects of natural or cultural heritage?
- (f) Representivity**
- Is it important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects?
  - What is the importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class?
  - Is it important in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province, region or locality?