



2017

**PHASE I HERITAGE IMPACT ASSESSMENT STUDY IN RESPECT OF AN APPLICATION FOR A MINING RIGHT (DIAMONDS) ON THE FARM PALMIETFONTEIN 208JP, NEAR PILANESBERG, MOSES KOTANE LOCAL MUNICIPALITY, BOJANALA DISTRICT, NORTHWEST**



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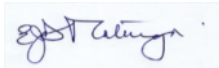
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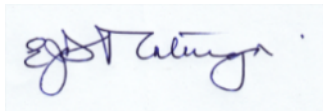
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**ABBREVIATIONS**

<b>DEA</b>	Department of Environmental Affairs
<b>EIA</b>	Environmental Impact Assessment
<b>HIA</b>	Heritage Impact Assessment
<b>LSA</b>	Late Stone Age
<b>LIA</b>	Later Iron Age
<b>PHRA</b>	Provincial Heritage Resources Authority
<b>PPM</b>	Pilanesberg Platinum Mine
<b>MSA</b>	Middle Stone Age
<b>NHRA</b>	National Heritage Resources Act
<b>NEMA</b>	National Environmental Management Act
<b>SAHRA</b>	South African Heritage Resources Agency
<b>UNESCO</b>	United Nations Educational and Scientific Organisation



## GLOSSARY

**Archaeology:** The study of the humans' past through their material remains.

**Archaeological material:** remains resulting from human activity left as evidence of their presence which, as proscribed by South African heritage legislation, are older than 100 years, which are in the form of artefacts, food remains and other traces such as rock paintings or engravings, burials, fireplaces and structures.

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

**Assemblage:** A group of artefacts recurring together at a particular time and place, and representing the sum of human activities.

**Catalogue:** An inventory or register of artefacts and/or sites.

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

**Culture:** A contested term, "culture" could minimally be defined as the learned and shared things that people have, do and think.

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

**Early Stone Age:** Predominantly the Oldowan and Acheulean hand axe industry complex dating to + 1Myr yrs – 250 000 yrs. before present.

**Early Iron Age:** Refers cultural period of the first millennium AD associated with the introduction of metallurgy and agriculture in Eastern and Southern Africa

**Later Iron Age:** Refers to the period after 1000AD marked by increasing social and political complexity. Evidence of economic wealth through trade and livestock keeping especially cattle

**Excavation:** A method in which archaeological materials are extracted, involving systematic recovery of archaeological remains and their context by removing soil and any other material covering them.

**Grave:** a place of burial which include materials such as tombstone or other marker such as cross etc.

**Historic material:** means remains resulting from human activities, which are younger than 100 years and no longer in use, which include artefacts, human remains and artificial features and structures.

**Intangible heritage:** Something of cultural value that is not primarily expressed in a material form e.g. rituals, knowledge systems, oral traditions, transmitted between people and within communities.

**Historical archaeology:** the study of material remains from both the remote and recent past in relationship to documentary history and the stratigraphy of the ground in which they are found; or archaeological investigation on sites of the historic period. In South Africa it refers to the immediate pre-colonial period, contact with European colonists and the modern industrial period.

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

**Later Iron Age:** The period from the beginning of the 2<sup>nd</sup> millennium AD marked by the emergence of complex state society and long-distance trade contacts.

**Late Stone Age:** The period from  $\pm 30\ 000$ -yr. to the introduction of metals and farming technology

**Middle Stone Age:** Various stone using industries dating from  $\pm 250\ 000$  yr. - 30 000 yrs. ago

**Monuments:** architectural works, buildings, sites, sculpture, elements or structures of an archaeological nature, inscriptions, cave dwellings which are outstanding from the point of view of history, art and science.

**Place:** means site, area, building or other work, group of buildings or other works, together with pertinent contents, surroundings and historical and archaeological deposits.

**Preservation:** means protecting and maintaining the fabric of a place in its existing state and retarding deterioration or change, and may include stabilization where necessary.

**Sherd:** ceramic fragment.

**Significance grading:** Grading of sites or artefacts according to their historical, cultural or scientific value.

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

**Site Recoding Template:** Site recording form.

## EXECUTIVE SUMMARY

The report is a Heritage Impact Assessment (HIA) study which has been undertaken in fulfilment of the requirements of Section 38 of the National Heritage Resources Act (25 of 1999) in respect of the proposed bulk sampling and mining right for diamonds on the Farm Palmietfontein 208JP near Pilanesberg in the Moses Kotane Local Municipality, Bojanala District, North-West Province.

The impact evaluation entailed a site visit and ground survey undertaken over two days from 13 to 14 July 2017. The following is a summary of the findings and recommendations of the study.

In previous heritage impact studies and other researches undertaken in the broader area, many stone walled sites were reported. We therefore alerted our field guides of the probability of stone walls of the Iron Age period occurring on the Farm Palmietfontein 208JP. However, no such sites were reported and we did not come across anything resembling rough walling except stone foundations of houses which are described below.

### *Iron Age/historical villages*

In two places there were scatters of stones some of which were arranged into rectangular shapes or lines (Sites S2 and S6). S1 is located around a cluster of boulders forming a small rocky feature on the western foot of the Pilanesberg hills, a distance of 200m. According to an oral tradition received from the informants, this was Mamotoko Village predating the establishment of the farm; the occurrence of pottery seemed to confirm this dating. People continued to live at the village on the arrival of the Voortrekkers and the partition of the land into farms. The occurrence of rectangular layouts marked by stones apparently betrays the modern influence of contacts with Europeans.

The second village (Site S6) is located 250m south of the hill also marked by a scatter of stones some of which form a square layout plan. Again the introduction of squares and rectangles into building plans is indicative of European influence, although the village is reported to date to the period before the establishment of farms.

### *Old cemeteries*

There are two large cemeteries located close to the villages described above, apparently where the residents were respectively interred. The first cemetery (S3) is located only 90m to the west of Village S2. There is random spread of stones which renders difficult the isolation and count of individual graves. We estimated that there might be  $\pm 40$  graves in an area approximately 70m x 60m in extent. A minimum of 8 headstones were counted.

The second cemetery (Site S7) in proximity to the second village (Site S6) is located to the south of the village only 70m distance. There are a number of clearly defined cairns with more than 11 headstones

being counted. Individual graves could number  $\pm 30$ . There are names engraved on some of the headstones, but largely illegible; on close examination there were three dates, 1907, 1913 and 1914.

#### *The pioneer Lutheran Church building*

Located one hundred metres (100m) east in the middle ground between the village (Site S4) and the Pilaansberg hills are the remains of an old Lutheran Church building of mud bricks and plaster. This remnant structure dates to the 19<sup>th</sup> century contact period when missionaries and traders entered the area ahead of the Voortrekkers. The walls stand up to 1.80m high and define a narrow rectangle 3.50m wide by 25.0m long. The church was located approximately in the middle ground between the two villages at 500m and 650m respectively, which might indicate contemporaneity of the two villages, and that the Church drew congregants from the two villages at the same time.

#### *Stone Age sites*

A stone tool, a possible flake/scrapper with a percussion platform, possibly dates to the Middle Stone Age. The site lies outside the proposed mining area.

#### *Significance ranking of findings*

This heritage impact evaluation is respectful of the sanctity of graves / burial grounds. It is therefore recommended that the two cemeteries and village sites be fenced off. In addition the natural woody vegetation should be retained as a buffer around the cemeteries. It is noted that the second cemetery (Site S7) and Village (Site S6) are situated on the edge of diggings and trial trenches. If it becomes necessary to extend mine operations to extract any possible mineral deposits in this area, mitigation strategies must be weighed carefully including the option of exhumation and relocation of the graves to a formal cemetery. Such a proposal will have to be discussed with local communities and relatives/descendants of deceased to reach consensus.

In the same vein consideration must be made for protection of the Lutheran Church. The oral traditions connected with the church reflect public sensibilities about the historical and heritage value of the site.

**Table 1: Site Significance Ranking**

	<b>RANKING</b>	<b>SIGNIFICANCE</b>	<b>No of sites</b>
1	High	National and Provincial heritage sites (Section 7 of NHRA). All burials including those protected under Section 36 of NHRA.	2 Cemeteries
2	Medium A	Substantial archaeological deposits, buildings protected under Section 34 of NHRA. These may be protected at the recommendations of a heritage expert.	(3) 2 old settlements, 1 remains of early Lutheran Church
3	Medium B	Sites exhibiting archaeological and historical characteristics of the area, but do not warrant further action after they have been documented.	1 MSA
4	Low	Heritage sites which have been recorded, but considered of minor importance relative to the proposed development.	1 mine plant
		<b>TOTAL</b>	<b>7</b>



**Table 2 : Location & Description of Heritage sites**

SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING
S1	25°17'14.20"S	26°55'40.40"E	MSA	Possible MSA flake tool showing a percussion platform.	Low
S2	25°17'47.80"S	26°57'2.50"E	LIA/Historical	Cluster of boulders forms a rocky feature on the western foot of the Pilanesberg. Remains of an old village indicated by rectangular stone foundations, upper grindstones and potsherds.	Medium A
S3	25°17'47.70"S	26°56'59.30"E	LIA/Historical	Old cemetery with ±40 graves, marked by cairns, at least 8 headstones and scatter of stones.	High
S4	25°18'0.90"S	26°57'13.80"E	Contact	Remains of the first Lutheran Church building. Rectangular mud brick structure measuring 3.50m x 25.0m and walls up to 1.80m high.	Medium A
S5	25°18'9.30"S	26°57'14.40"E	Industrial	Remains of mine processing plant.	Low
S6	25°18'17.90"S	26°57'28.00"E	LIA/Historical	Remains of an old village indicated by rectangular stone foundations.	
S7	25°18'19.80"S	26°57'28.49"E	LIA/Historical	Old cemetery with ±40 graves, marked by cairns, at least 11 headstones and scatter of stones. Some headstones with engraved names and dates 1907, 1913 and 1914 seen.	High

**Table 3 : Risk assessment of the findings**

EVALUATION CRITERIA	RISK ASSESSMENT
Description of potential impact	Negative impacts range from partial to total destruction of surface and under-surface movable/immovable relics.
Nature of Impact	Negative impacts can both be direct or indirect.
Legal Requirements	Sections 34, 35, 36, 38 of National Heritage Resources Act No. 25 (1999)
Stage/Phase	Bulk sampling and mining operations
Nature of Impact	Negative, both direct & indirect impacts
Extent of Impact	Site preparation, trenching, open cast mining have potential to damage heritage resources above and below the surface not seen during the survey
Duration of Impact	Any accidental destruction of surface or subsurface relics is not reversible, but can be mitigated.
Intensity	Uncertain.
Probability of occurrence	Medium.
Confidence of assessment	High.
Level of significance of impacts before mitigation	High.
Mitigation measures	Fencing off the cemeteries and village sites. Archaeological salvage of Village Site (Site S6) and Cemetery (Site S7) if necessary.
Level of significance of impacts after mitigation	Low.
Cumulative Impacts	None.
Comments or Discussion	None.

*Recommendations and conclusions*

The two cemeteries must be protected. In the same vein consideration must be given for the protection of the two village sites and the remains of the pioneer Lutheran Church in view of extant oral traditions connected with these sites. Since there is likelihood of mine operations extending to the second cemetery and village site, archaeological salvage must be considered in consultation with the local communities / historically interested and affected parties and consensus reached. It is further advised that these recommendations be incorporated in the Environmental Management Plan for the operation phase of the mine project. If in the future any archaeological or historical material of significance are found all activities should temporarily be stopped in the specific area for inspection by an archaeologist or other specialists appointed by SAHRA or the provincial heritage authority.



## 1. INTRODUCTION

This document is a Heritage Impact Assessment (HIA) report prepared in terms of Section 38 of the National Heritage Resources Act (25 of 1999) for mining right and bulk sampling operations on the farm Palmietfontein 208JP near Pilanesberg in the Moses Kotane Local Municipality, Bojanala District, North-West Province.

### 1.1. Locational details of the receiving environment

**Table 4 : Location of the Receiving environment**

LATITUDE	LONGITUDE	NOTES
25°18'32.64"S	26°57'29.27"E	Approximate centre of the farm Palmietfontein

The Farm Palmietfontein 208JP is located on the south-western foot of the Pilanesberg Mountains. The Pilanesberg is a remnant volcano forming an alkaline ring complex, a prominent feature in the landscape standing out in stark contrast to the surrounding bushveld plain. This unique ring dyke is one of the best preserved extinct volcanic landforms in the world. It is a circular cluster of mountains/hills representing the resistant parts of an isolated circular alkaline volcanic structure, 1 250 million years old (Figs 1-4). It is 27km in diameter and is surrounded by six rings of mountains. Several streams run through the valleys and faults, though most are of a seasonal intermittent nature. The circular dyke represents several phases of geologic activity spanning hundreds of millions of years. It is postulated that magma pooled up near the surface in a large hot spot that bulged with immense pressure. Over time, tubes of magma radiated outward from the main magma chamber beneath the volcano. This created massive radial cracks in the Earth's surface around the volcano at regular intervals, which would have looked in cross-section like the branches of a tree extending from a common trunk. As volcanic activity subsided, the remaining magma cooled in the cracks as circular bands (dykes) of volcanic rock (mainly syenites and foyaites). The rate of cooling and the composition of the magma affected the type of rock that formed in each dike. Significantly there is erosion resistant white foyaite formed when lava cools slowly. Red syenite forms when magma contains plenty of water. Outcrops of white and green foyaite and of red syenite make up the ridges in the south-western part of the park.<sup>1</sup>

The Pilanesberg National Park was established in 1979 in and around this extinct volcano and covers a surface area of 500km<sup>2</sup> (Fig 4). It now contains examples of most southern African mammals and some 300 bird species. The central feature of the park is a man-made lake known as Mankwe on the river by the same name. Sun City, the brainchild of businessman, Sol Kerzner, was built on the Pilanesberg, featuring a casino, holiday resort and world-class golf course. It was significant at the time in being one of the few major investment projects with a direct benefit on the homelands, i.e. Bophuthatswana (Fig 5).

<sup>1</sup> <https://phys.org/news/2015-07-geology-pilanesberg-dike-complex.html#jCp>

The chromite and platinum belt in the Bushveld Igneous Complex is well known occurring as layers in the piroxinite, norite and anorthosite units and to a certain extent also in the harzburgiet unit. A Western Zone stretches for approximately 200km from Brits to Rustenburg, and passing immediately west of the Pilanesberg, and from there trending northwards, with some interruptions of seven to thirteen kilometres, to near the Crocodile River.<sup>2</sup> Diamonds also occur possibly washed out from kimberlite formations in the Pilanesberg and deposited over a long period of time on the edge of the hills.



**Figure 1 : Google map of the project area, showing the Pilanesberg ring dyke complex**

<sup>2</sup> Pistorius, J. 2013. An updated Phase I Heritage Impact Assessment (HIA) study for Pilanesberg Platinum Mine (PPM) near the Pilanesberg in the North-West Province of South Africa, p31.

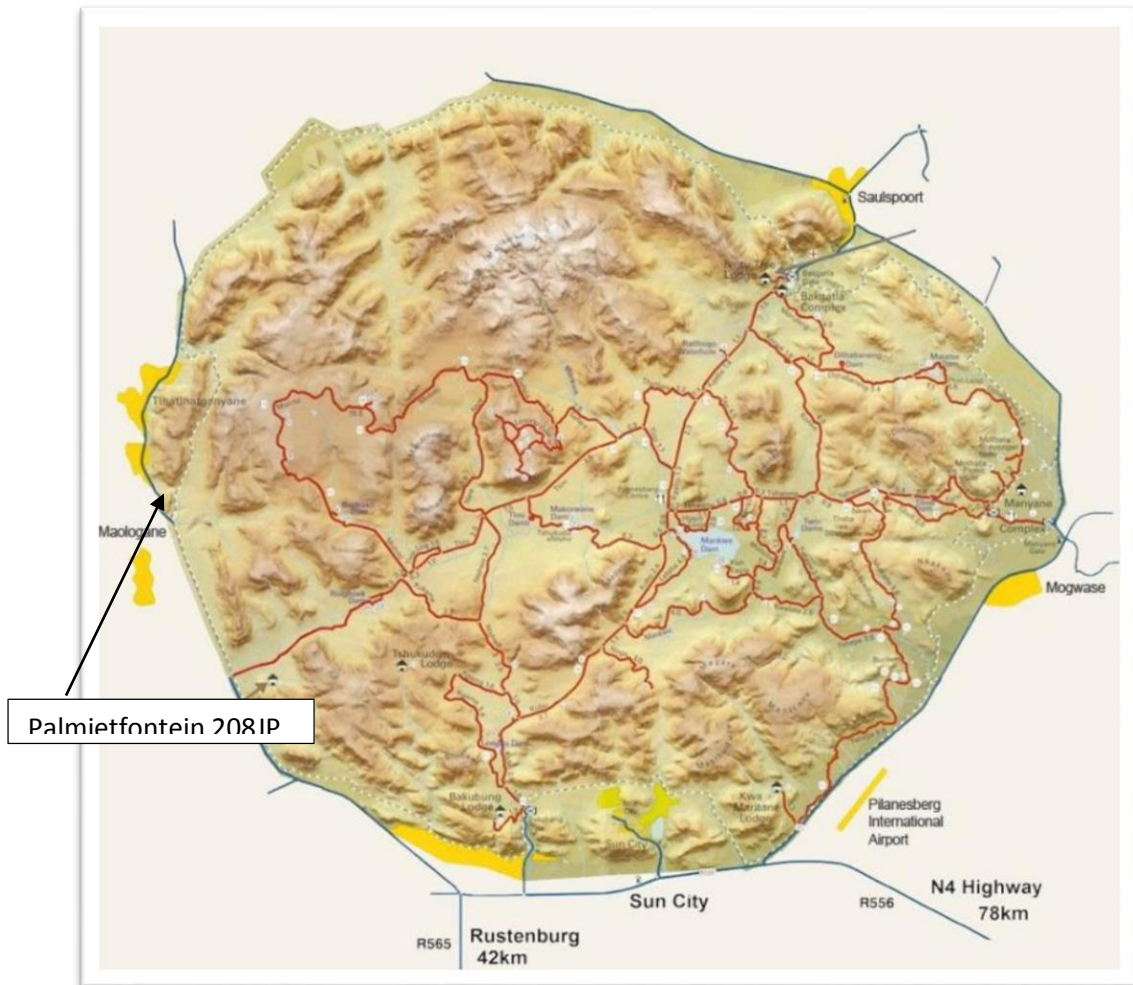
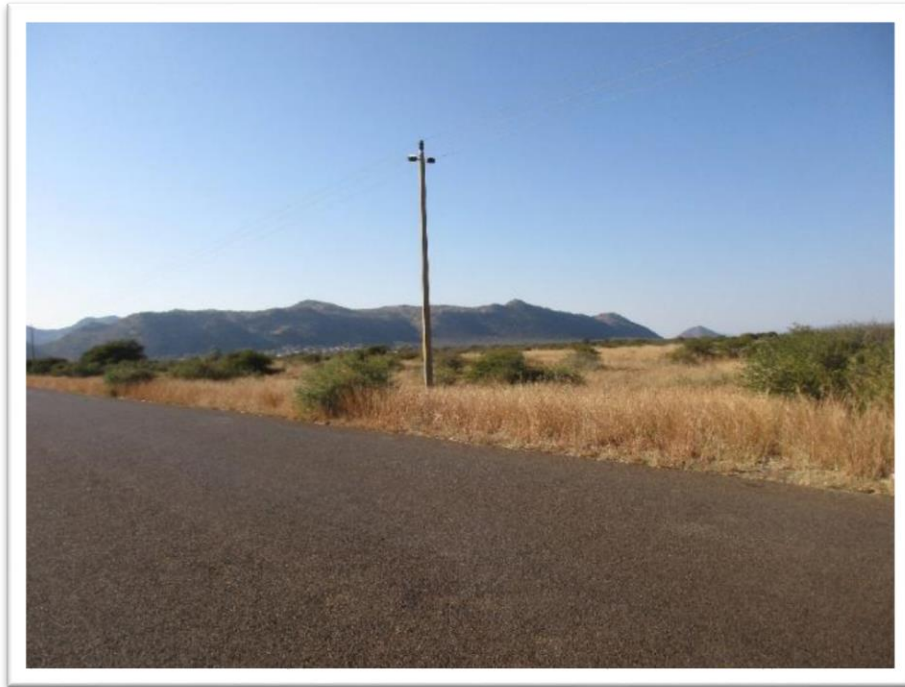


Figure 2 : Map of the Pilanesberg ring dyke and location of the project area.



**Figure 3 : View of the Pilanesberg Mountains from the west. Moalogane Village is located on the western foot of the hills.**



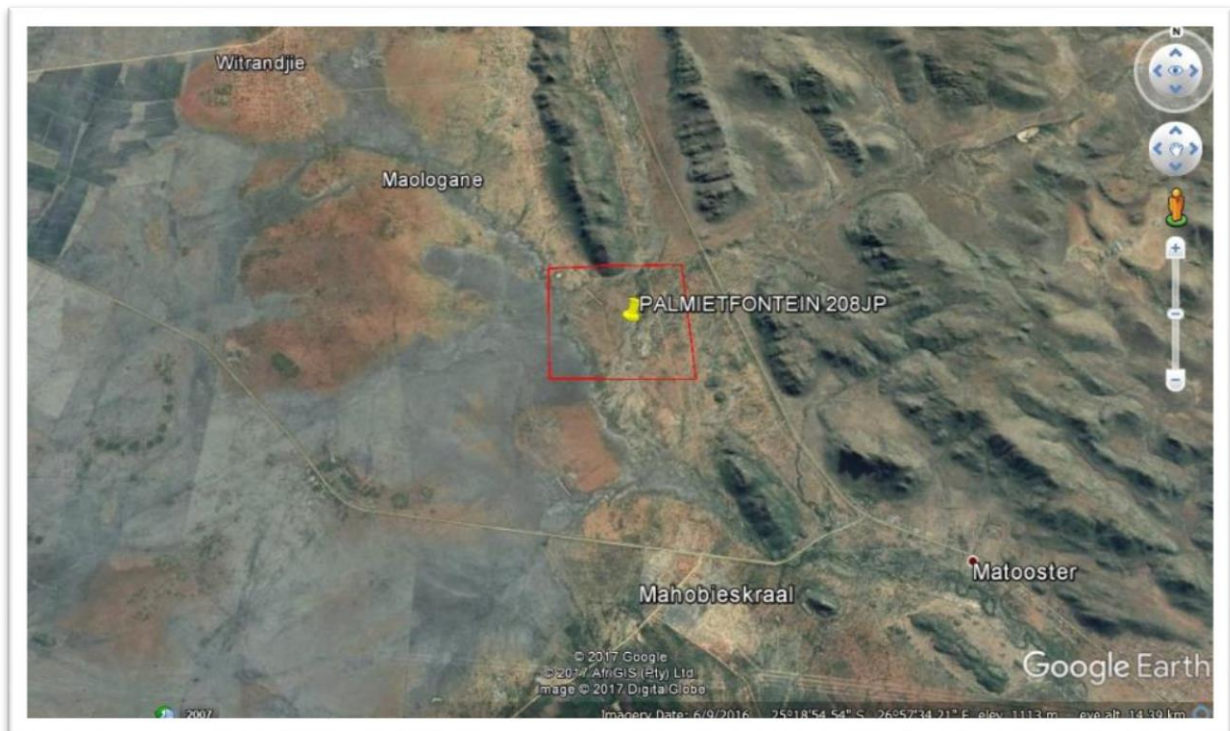
**Figure 4 : Pilanesberg Nature Reserve.**

The farm Palmietfontein 208JP is located on a plain southwest of the Pilanesberg including a portion of the hill in the outer ring of the dyke. On the plains immediately west of the hills, light brown soils support mixed woody vegetation of medium density. Moving further west towards Witrandjie Village there are



red-brown soils with acacia woodland. On the edge of a stream running SSE from Witrandjie Village there is a density of short canopy acacia trees thriving on black soils and exposures of quartz stone. On the southern part of the property the stream joins two other streams setting off from the Pilanesberg hills. These are the headwaters of the Wolwespruit River which continues on a SSE trend to the Elands River (Figs 5-8).

There are a number of rural villages located to the west of Pilanesberg. These include Mahobieskraal located to the south of the farm, Witrandjie Village located to the west and Moalogane bordering the farm to the north.



**Figure 5 : Location of Palmietfontein 208JP on western foot (outer ring) of the Pilanesberg Mountains.**



**Figure 6: View of the Farm Palmietfontein 208JP on the foot of the Pilanesberg from Mahobieskraal 2.6km distance from the south.**



**Figure 7 : Farm Palmietfontein 208JP. Acacia scrub.**



**Figure 8 : Farm Palmietfontein 208JP. View west towards a stream shows low canopy acacia..**

## **1.2. Nature of Development**

Fidulex (Pty) Ltd intends to prospect for and mine diamonds on the Farm Palmietfontein 208JP. This entails clearance of vegetation, excavation, removal and stockpiling of topsoil cover. Infrastructural components to be introduced will require space and hence clearance of vegetation and excavations to varying depths. These components include:

- (i) Processing Plant (with screening, scrubber and sorter);
- (ii) Clean storm water dam and drains channelling water to the dam, as well as a return water dam;
- (iii) Septic Tank and associated infrastructure for containment/storage and transportation of sewage waste from the ablution facilities;
- (iv) Maintenance workshop;
- (v) Salvage yard for temporal storage and screening of waste miscellaneous material; and
- (vi) Perimeter fencing.

The nature and scale of proposed activities require that a pre-development impact assessment be undertaken to pre-empt potential disturbance or destruction of heritage resources if they exist in and around the footprint of the proposed development.

## 2. LEGAL APPLICATION

### 2.1. Section 38(3) of NHRA

Under Section 38 of the National Heritage Resources Act (No 25 1999), the terms and conditions of an HIA are stated as follows:

38. (1) *Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—*

(a) *the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*

(b) *the construction of a bridge or similar structure exceeding 50m in length;*

(c) *any development or other activity which will change the character of a site—*

*(i) exceeding 5 000m<sup>2</sup> in extent; or*

*(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.*

The relevant clause in respect of this proposed development is underlined and highlighted in blue above.

### 2.2. Definition of Heritage (National Estate)

Section 3 lists a wide range of cultural phenomena which could be defined as heritage, or the *National Estate* (3(2)). Section 3(3) outlines criteria upon which heritage value is ascribed. This Section is useful as a field checklist for the identification of heritage resources.

### 2.3. Protection of Buildings and Structures Older than 60 years

Section 34 provides provisional protection of buildings and structures more than 60 years old:

*(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.*

### 2.4. Protection of Archaeological Sites

Section 35 (4) of the NHRA prohibits the destruction of archaeological, palaeontological and meteorite sites:



No person may, without a permit issued by the responsible heritage resources authority—

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;

(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;

(c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or

(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

## **2.5. Protection of graves and burial grounds**

Section 36 of the NHRA gives priority for the protection of Graves and Burial Grounds of victims of conflict and graves and burial grounds more than 60 years old. Cautious approaches are considered including managed exhumations and re-interment to pave way for development. International ethical standards as set out in the World Archaeological Congress Vermillion Accord (USA, Dakota, 1989) favor this position and recommend decisions informed by consultation with communities who by association might have strong feelings for protection *in situ* and may argue that a development project is better moved to an alternative site.

## **2.6. The Burra Charter on Conservation of Places of Cultural Significance**

Some generic principles and standards for the protection of heritage resources in South Africa are drawn from international charters and conventions. In particular South Africa has adopted the **Australia Charter for the Conservation of Places of Cultural Significance (the Burra Charter 1999)** as a benchmark best practice in heritage management.

## **2.7. Concept of cultural landscapes**

Cultural landscapes are defined in Paragraph 47 of the *Operational Guidelines for the Implementation of the World Heritage Convention (2015 edition)* as “cultural properties that represent the combined works of nature and of man” .... They are illustrative of 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 external and internal.

A cultural landscape is as "a geographic area including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values. There are several types of cultural landscapes including historic sites, historic vernacular landscapes, and ethnographic landscapes. Historic landscapes include villages, rural communities and cemeteries. They are composed of a number of character-defining features which, individually or collectively contribute to the landscape's physical appearance as they have

evolved over time. In addition to vegetation and topography, cultural landscapes may include artificial elements such as roads, paths, and buildings. A Historic Vernacular Landscape is a landscape that evolved through use by the people whose activities or occupancy shaped that landscape. Through social or cultural attitudes of an individual, family or a community, the landscape reflects the physical, biological, and cultural character of those everyday lives. Function plays a significant role in vernacular landscapes. Examples include rural villages and agricultural landscapes.<sup>3</sup>

There are a number of villages situated to the south, west and north of the farm Palmietfontein 208JP which form typical rural cultural landscapes. These include notably Mahobieskraal to the south, Bapong and Tweelagte to the west, Witrandjie to the northwest and Moalogane immediately to the north of the farm. A majority of the population descends from pre-colonial Tswana communities and to an extent people of Nguni descent either splinters from Mzilikazi's brief occupation or earlier Nguni spreading from east of the Crocodile River. Meanwhile over the last 120 years there has been an infusion of mine labour population. Rural settlements typically have scattered homesteads of simple rectangular brick structures/ flat corrugated iron roofs, some temporary structures and nucleated settlements with some permanent and elaborate buildings (Fig 9). Because there so many such villages in the Northwest Province and in other provinces there is no urgency to urge preservation of archetypal examples, and there is no legislation or policy yet to that effect.



<sup>3</sup> Protecting Cultural Landscapes: Planning, Treatment and Management of Historic Landscapes: <https://www.nps.gov/TPS/how-to-preserve/briefs/36-cultural-landscapes.htm>

**Figure 9 : Moalogane Village located on the western foot of the Pilanesberg and bordering on Palmietfontein 208JP.**

### **3. METHODOLOGY**

#### **3.1. Literature Review**

A preliminary picture of the heritage potential of the area was inferred from a review of literature which relates to ethno-history, geography and archaeology as well as previous Heritage Impact Assessments. In particular we have noted several mining impact studies in the broader area undertaken by Dr Julius Pistorius, of which some reports are available on internet. Literature survey encompasses reading and understanding the relevant legislation. Sections 3, 34, 35, 36 and 38 of the National Heritage Resources Act (No 25, 1999) form the legal context in which Heritage Impact Assessments are prescribed. As statutory reference they guided fieldwork and preparation of this report.

#### **3.2. Fieldwork**

A ground survey was conducted 12-13 July 2017 to locate and document heritage elements of the receiving environment. A ground survey is a systematic procedure for the identification and documentation of archaeological, historical and heritage sites. Systematic foot surveys were undertaken in accordance with standard archaeological practice by which heritage elements can be observed and documented.

#### **3.3. Site Recording Template**

A Heritage Site Recording Template is used as a framework for recording sites that were discovered.

#### **3.4. Limitations**

Initially we had received reports that the local communities residing in nearby villages were hostile to the proposed mining, fearing the prospect of exclusion and loss of pasture for their stock. Approaching the local police station at Sun City, we could not obtain names of community leaders or civic bodies in the villages. It took time and tactful diplomacy to eventually meet with the local councillor, who turned out to be helpful and expressed support for the project provided that there was transparency and communication.

### 3.5. Significance Ranking of findings

The significance ranking (with a colour scheme) refers to perceived impacts and risk of the proposed development. Appropriate interventions and mitigation strategies are also proposed.

**Table 5: Heritage Sites Significance Ranking**

	<b>RANKING</b>	<b>SIGNIFICANCE</b>	<b>No of sites</b>
1	High	National and Provincial heritage sites (Section 7 of NHRA). All burials including those protected under Section 36 of NHRA.	
2	Medium A	Substantial archaeological deposits, buildings protected under Section 34 of NHRA. These may be protected at the recommendations of a heritage expert.	
3	Medium B	Sites exhibiting archaeological and historical characteristics of the area, but do not warrant further action after they have been documented.	
4	Low	Heritage sites which have been recorded, but considered of minor importance relative to the proposed development.	
		<b>TOTAL</b>	

#### 4. ARCHAEOLOGICAL AND HISTORICAL CONTEXT

An outline of the cultural sequence in South Africa is given here to provide context for the identification of heritage resources in the study area.

##### 4.1. Cultural sequence summary

**Table 6 : Cultural sequence summary<sup>4</sup>**

PERIOD	EPOCH	ASSOCIATED CULTURAL GROUPS	TYPICAL MATERIAL EXPRESSIONS
Early Stone Age 2.5m – 250 000 YCE	Pleistocene	Early Hominids: <i>Australopithecines</i> <i>Homo habilis</i> <i>Homo erectus</i>	Typically large stone tools such as hand axes, choppers and cleavers.
Middle Stone Age 250 000 – 25 000 YCE	Pleistocene	First <i>Homo sapiens</i> species	Typically smaller stone tools such as scrapers, blades and points.
Late Stone Age 20 000 BC – present	Pleistocene / Holocene	<i>Homo sapiens</i> including San people	Typically small to minute stone tools such as arrow heads, points and bladelets.
Early Iron Age / Early Farmer Period c300 – 900 AD (or earlier)	Holocene	Iron Age Farmers	Typically distinct ceramics, bead ware, iron objects, grinding stones.
Later Iron Age 900ADff	Holocene	Iron Age Farmers, emergence of complex state systems	Typically distinct ceramics, evidence of long distance trade and contacts
(ii) Mapungubwe (K2)	1350AD		Metals including gold, long distance exchanges
(ii) Historical period	Tswana / Nguni people	Iron Age Farmers	Mfecance / Difaqane
(iii) Colonial period	19 <sup>th</sup> Century	European settlers / farmers / missionaries/ industrialisation	Buildings, Missions, Mines, metals, glass, ceramics

##### 4.2. Appearance of Hominids

Important fossil evidence of hominids occurs in South Africa dating to 3million years ago. The hominid site at Sterkfontein lies 110km southeast of Pilanesberg and is one of the most famous hominids sites in the world featuring the genus *Australopithecus africanus*. The site was inscribed on the UNESCO World Heritage list as a serial nomination together with Taung in the Northwest Province and Cradle Humankind near Krugersdorp in Gauteng Province.

<sup>4</sup> Adapted from Kruger N. 2013. Archaeological Impact assessment (AIA) of areas demarcated for the proposed establishment of Nkandla Extension 2 Township on a Portion of Erf 258 Nkandla, Frances Baard District Municipality, Northern Cape Province (Exigo Sustainability Consultancy)

### 4.3. The Stone Age

The Stone Age dates back more than 2 million years, and marks a more diagnostic appearance of the cultural sequence divided into three epochs, the Early, Middle and Late Stone Ages. Stone and bone implements manifest the technology of the time and fall into distinct typologies indicating chronological development. Material evidence of human activities has been found in caves, rock-shelters and riverside sites, and very rarely seen in open country.<sup>5</sup> The Late Stone Age is also associated with the execution of paintings mostly in rock shelters and caves.

#### 4.3.1. The Early Stone Age [2 million – 250 000 yrs BP]

The Early Stone Age marks the earliest appearance of stone artefacts about 1.4 million years ago. Such tools bore a consistent shape such as the pear-shaped handaxe, cleavers and core tools (Deacon & Deacon, 1999). These tools, which have been called Oldowan and Acheulian were probably used to butcher large animals such as elephants, rhinoceros and hippopotamus. ESA artefacts are usually found near sites where they were manufactured and thus in close proximity to the raw material or at butchering sites. The early hunters are classified as hominids or proto-humans, meaning that they had not evolved to the present human form.

#### 4.3.2. Middle Stone Age (MSA) [250 000 yrs – 30 000 yrs BP]

The Middle Stone Age (MSA), which appeared ca250 000 years ago, is marked by the introduction of a new tool kit which included prepared cores, parallel-sided blades and triangular points hafted to make spears. By then humans had become skilful hunters, especially of large grazers such as wildebeest, hartebeest and eland. It is also believed that by then, humans had evolved significantly to become anatomically modern. Caves were used for shelter suggesting permanent or semi-permanent settlement. Furthermore there is archaeological evidence from some of the caves indicating that people had mastered the art of making fire. These were two remarkable steps in human cultural advancement.<sup>6</sup>

It is to be noted that the recent discovery of hominid fossils in the area assigned to the genus *Homo Naledi* and dated to between 335 000 and 236 000 MYA add an interesting puzzle to the status of these primates in the development of the stone tool technologies as the dating overlap between the Early Stone Age and Middle Stone Age (The Star, 10 May 2017, p1 & 12).

#### 4.3.3. Later Stone Age (LSA)[40 000 yrs to ca 2000 yrs BP]

By the beginning of the LSA, humans are classified as *Homo sapiens* which refer to the modern physical form and thinking capabilities. Several behavioural traits are exhibited, such as rock art and purposeful burials with ornaments, became a regular practice. The practitioners of rock art are definitely the ancestors of the San and sites abound in the whole of Southern Africa. LSA technology is characterised by microlithic scrapers and segments made from very fine-grained rock. Spear hunting continued, but

<sup>5</sup> <http://archaeology.about/od/bterms/g/bordercave.htm>

<sup>6</sup> Deacon, J & H. Deacon. 1999. *Human Beginnings in South Africa*. Cape Town: David Philip.

LSA people also hunted small game with bows and poisoned arrows. Because of poor preservation, open sites become of less value compared to rock shelters.

#### **4.4. The Iron Age Culture [ca. 2500 years BP]**

##### *4.4.1. The Early Iron Age*

The Iron Age culture, which supplanted the Stone Age perhaps 2500 years ago, is associated with the advent of farmers with life stock and using several metals and pottery. Popular scholarly theories have postulated mass migration to account for the perceived sudden synchronized appearance of these technologies in South Africa and indeed in the whole region of Eastern and Southern Africa.<sup>7</sup> Migration has been critically questioned primarily in view of the fact these people were indigenous to Africa. Furthermore a gradual “expansion” or “spread” of settlement (rather than a migration in the strict sense) of speakers of Bantu languages over a long period of time sounds more plausible.<sup>8</sup> In the southern part of the continent these people coexisted and intermingled with Khoisan communities, and hybrid languages spoken in this area is a footprint of such cultural encounters. Metal working represents a new technology not practiced by the Stone Age hunters.

According to Huffman (2007) there were two streams of Early Iron Age (EIA) expansion converging in South Africa, one originating in eastern Africa which has been called the *Urewe-Kwale Tradition* (or the eastern stream) and another from the west, spreading through Zambia and Angola, which he termed the *Kalundu Tradition* (or western stream) (Fig 2) which gradually replaced the Eastern Stream.

Broederstroom near Hartebeesport on the edge of the Magaliesberg is a type site for the earliest appearance of the EIA which has been called Broederstroom and is date between AD 450 and 750.

##### *4.4.2. The Later Iron Age*

The Pilanesberg area is dominated by stone walled sites that date from the Late Iron Age (LIA), some of which were occupied into the historical period. These sites are associated with Tswana groups such as the Kgatla Kgafêla and the Tlhako. Historical and oral records attest to migration streams of Nguni speakers into the south and east of the development area from the 17<sup>th</sup> century from the south-eastern seaboard. These early Nguni groups which spread out occupying a significantly large area from present day Pretoria to Mokopane and to the Pilanesberg Mountains, might have been responsible for some of the stone work.

#### **4.5. Historical Groups**

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<sup>7</sup> Phillipson, D. W. 2005. *African Archaeology*. Cambridge: University of Cambridge Press: 249. Huffman 2007. *A Handbook of the Iron Age*. UKZN Press.

<sup>8</sup> Evers, T. M. 1988. *Recognition of Groups in the Iron Age of Southern Africa*. Unpublished PhD Thesis, University of Witwatersrand. Huffman 2007. *A Handbook on the Iron Age*. Scottsville: UKZN Press



A summary of the differentiation of Tswana groups has been provided by Dr Julius Pistorius.<sup>9</sup> The Tswana people of the western and north-western parts of the country may be classified under several subgroups. The Kgatla were a segment of the Tlokwa and possibly there was early historical relationship with the Hurutshe (under common chiefs such as Malekele-Masilo-Legabo) which may date back to AD1450. These earliest Kgatla groups initially lived in the south of what is today Thabazimbi, near the Rooiberg Tin Mines. The founder figure was Phohoti, the son of Mokgatle. His son and successor was Bothlolo (Mashiasebara), whose sons Mogale, Pule and Modise split up. Pule left the tribe to form a separate group under his grandson Kgafele. Bothlolo's third son, Modise, and his son Tabane were the forefathers of the sections of the Mmakau, the Motša and the Seabe.

Mogale, the ancestor of the Moseitlha, lived at a place called Dirolong/Direleng in the Bela area and later moved to Hammanskraal. There were further splits in which one segment remained east of the Crocodile River while another segment moved to Molokwane ('Vlieggepoort') near the confluence of the Crocodile and Pienaars Rivers.

#### 4.5.1. *The Kgatla Kgafêla*

After the Kgafêla broke away from the Moseitlha at Momusweng (Hammanskraal), probably during the first half of the 17<sup>th</sup> century, they settled in various places on their way to the north-west and the Crocodile River. After the Matabele invasion in 1827 one Pilane went to live at Motsitle (Mabeskraal). After 1837 he settled at the Elands River at Mmasebudule (Rhenosterfontein). On the arrival of the Matabele the Kgatla were subjugated and paid a tribute, their villages were destroyed and the young men were incorporated into the Ndebele army. Many of these Tswana clans were uprooted during the *difaqane* when Mzilikazi's and his Matabele *impis* entered the North-West Province in c1832. The area north of the Pilanesberg covers much of the sphere of influence of this section of the Kgatla. This group probably intermarried with Mzilikazi's Ndebele, especially given that some of his sons remained in the area after the Ndebele moved westwards. Descendants of this mixed Ndebele/Tswana population still live in the area today

#### 4.5.2. *The Tlhako*

The Tlhako is one of the numerous Nguni-related clans who lived in the central part of the former Transvaal province from early on splintering from the Ndzundza-Ndebele who lived in the area around KwaMhlanga but spread westwards under Chief Seutlwane. His son, Mabe (Mahobie), who lived about the middle of the 18<sup>th</sup> century, moved 6km further to the north to Mothoutlung on the eastern part of Palmietfontein. Mabe (or Mahobie) became chief in 1820 and settled at Motsitle, today known as Mabieskraal (Mahobieskraal). Upon the arrival of Mzilikazi the Tlhako were subjugated by the Ndebele and many of the Tlhako later accompanied the Ndebele and crossed the Marico River to settle with the Ndebele at Silkaatskop. When Mzilikazi was defeated by the Voortrekkers in 1837 and left the former

<sup>9</sup> Pistorius, J. 2013. An updated Phase I Heritage Impact Assessment (HIA) study for Pilanesberg Platinum Mine (PPM) near the Pilanesberg in the North-West Province of South Africa.

Transvaal, many of the Tlhako returned to their old home. Mabe and the Voortrekkers' relationship deteriorated after a humiliating flogging incident by the Boers in AD1860. He moved to Molepolole and settled at Magagarape, where Mabe died in 1869. His sons Moetle, Mokgatele, Leotwane and Setadi returned to Mabeskraal (Mahobieskraal).

Moetle Mabe became chief in 1870 and raided white farms for cattle while also supplying farm labour. He died on 15 May 1908. The Tlhako's territory is in the southern and western periphery of the Pilanesberg.

#### 4.5.3. *BaHurutshe*

The baHurutshe are one of the largest numerically and historically important Tswana chiefdoms in the North-West Province. The "proto-baHurutshe" lived near the headwaters of the Madikwe (Marico) River in about the mid- to late thirteenth century. The founder figure was a woman, Mohurutshe. After her death according to legend there was a rivalry between her two sons, Motebele and Motobejane. The former with his followers fled to Ootse, in present-day eastern Botswana, while the latter remained at the Madikwe River. Motobejane's faction established a capital at Tshwenyane about 15 kilometres north of today's Zeerust. Towards the end of the eighteenth century, the BaHurutshe, like most of their neighbours, became embroiled in a series of conflicts, usually referred to as the Difaqane. These were due to competition over land, cattle and particularly control of new trade items, especially ivory. This in turn was caused by demands from the expanding white trade frontier from the Cape. The BaHurutshe became particularly harassed by the baNgwaketse to the east. The BaHurutshe were forced to form an alliance with the BaTlhaping and BaKwena to keep their opponents at bay, during which time their kgosi, Sebogodi, was killed.

When the missionary, John Campbell, of the London Missionary Society (LMS), visited them in 1820, they were still intact and economically thriving at Kaditshwene. Within a couple of years, however, they were attacked by marauders from the Caledon river area, the Patsa-baFokeng of Sebetwane, and the BaPhuting. They then dispersed as refugees in the BaRolong country. Some were incorporated by Mzilikazi and moved with him to south-western Zimbabwe.

In 1836 Mzilikazi was attacked by the white Voortrekkers (with the assistance of the Griqua and Tswana allies, among them the Hurutshe). The BaHurutshe slowly returned to their former homeland. They re-established themselves under the leadership of Moiloa. They were supported by the London Mission Society (LMS) and the Lutheran Hermannsberg Missionary Society (HMS). They also reached a rapprochement with the Voortrekkers after the establishment of the South African Republic.

#### 4.6. The Nguni

Prior to the arrival of Mzilikazi's Ndebele on the highveld around 1827, there were several Nguni groups in the study area as a result of earlier movements in the 17<sup>th</sup> and 18<sup>th</sup> century (the Transvaal Ndebele).

The Pilansberg area falls within the trail of Mzilikazi in his epic movement from Zululand during the Difaqane and final settlement in the Matobho Hills in present day south-western Zimbabwe. Mzilikazi incorporated elements from several Tswana groups moving with them to south-western Zimbabwe, while some elements of the Ndebele may have also remained in the Pilanesberg area.

#### **4.7. The European Contact Period**

During the first half of the 19th century, the first colonial traders were operating between the far north-west and the central part of the Bankeveld. They chart a passage in the gap between the northern tip of the Magaliesberg and the south-western edges of the Pilanesberg in the study area. Wagons passed through this corridor on their way to Rustenburg and further to the east. Traders such as Schoon and McLuckie (1829), missionaries such as Robert Moffat (1829), the scientific expedition of Andrew Smith (1835) and adventurers such as Cornwallis Harris (1836) moved between the Magaliesberg and the Pilanesberg where they observed numerous precolonial communities living in this part of the north-west. Rustenburg 60km to the south Pilanesberg was the first colonial town to be established by the Voortrekkers during the first half of the 19th century.

#### **4.8. The Homeland of Bophuthatswana 1961-1994**

The homeland of Bophuthatswana was established in 1961 under the apartheid scheme of giving semi-independence to ethnic groups in an attempt to frustrate the nationalist cause. For cooperating with the apartheid project, Bophuthatswana was rewarded by the government, becoming a governing state in 1972 and attaining “independence” in 1977. Lucas Mangope was the man behind this political project, and considered an apartheid puppet by the liberation movements. In 1972 he was appointed Prime Minister and then President of the independent state in 1977. There was however growing opposition to the homeland government. In 1978, Mangope was briefly deposed, but reinstated after the intervention of the South African government. Mangope continued to oppose the unification programme espoused by the ANC. In 1994 on the eve of democratic elections he was deposed.<sup>10</sup> There is a view in some circles that Mangope was enlightened initiating modernization programmes in Bophuthatswana creating a model of success.<sup>11</sup>

The above sets the archaeological and historical context for studying the archaeology and heritage of the project area.

### **5. FINDINGS OF THE HERITAGE SURVEY**

#### **5.1. Heritage sensitivity of the broader area**

In a heritage impact study undertaken in 2013 for the Pilanesberg Platinum Mine (PPM) on the north-western foot of the Pilanesberg (20km north of the present study area), Dr Julius Pistorius reported finding among other things:

- (i) Clusters of stone walled sites which date from the LIA are associated with the mountains of Mogare, Mmatone, Patshwane and Mukukunupe on Witkleifontein 136JP and Tuschenkomst 135JP while three LIA stone walled sites are associated with the mountain of Thlorosane and some of its foothills on Ruighoek 169JP.
- (ii) Two isolated LIA stone walled sites are associated with the hills Mabjaneng and Motsotsodi on Witkleifontein 136JP while a single, isolated LIA stone walled site occurs on Ruighoek 169JP. A single, isolated site with limited stone walls also occurs on the flats of Witkleifontein 136JP.
- (iii) The abandoned historical graveyard which is associated with the former
- (iv) A few isolated scattered stone tools were observed on the flats between some of the mountains on Witkleifontein 136JP.<sup>12</sup>

<sup>10</sup> <http://www.sahistory.org.za/places/bophuthatswana>, Gastrow, Shelagh. 1995. Who's who in South African Politics, Number 4. Johannesburg: Ravan Press.

<sup>11</sup> Mr Harry M Phaswana, Magalies Water Project. Pers. Communication, February 2015.

<sup>12</sup> Pistorius, J. 2013. An updated Phase I Heritage Impact Assessment (HIA) study for Pilanesberg Platinum Mine (PPM) near the Pilanesberg in the North-West Province of South Africa, p33.

We therefore alerted our field guides of the probability of stone walls of the Iron Age period occurring on the Farm Palmietfontein 208JP. However, no such sites were reported and we did not come across anything resembling rough walling except stone foundations of houses which are described below: (See location of all sites in recorded during the survey in Fig 21).

### **5.2. Iron Age/historical villages**

In two places there were stones some of which were arranged into a rectangle or lines (Sites S2 and S6). S1 is located around a cluster of boulders forming a small rocky feature on the western foot of the Pilanesberg hills a distance of 200m. According to an oral tradition received from the informants, this was Mamotoko Village predating the establishment of the farm; the occurrence of pottery and an upper grindstone seemed to confirm this dating. People continued to live at the village on the arrival of the Voortrekkers and the partition of the land into farms. The occurrence of rectangular layouts marked by stones apparently betrays the modern influences of contacts with Europeans (Figs 10-12).



**Figure 10: Rectangular and line arrangement of stones mark foundations of houses (Site S2).**





**Figure 11 : Upper grindstone (Site S2).**



**Figure 12 : Undecorated potsherds (Site 2).**

The second village (Site S6) is located 250m south of the hill also marked by a scatter of stones some of which are arranged in a square layout plan. Again the introduction of squares and rectangles into

building plans is indicative of European influence, although the village is reported to date to the period before the establishment of farms.

### 5.3. Old cemeteries

There are two large cemeteries located close to the villages described above apparently where the residents were interred. The first cemetery (Site S3) is located only 90m to the west of village S2. There is a scatter of stones which renders difficult the isolation and count of individual graves. We estimated that there might be  $\pm 40$  graves in area approximately 70m x 60m in extent. A minimum of 8 headstones were counted (Fig 13).



**Figure 13 : Grave with headstone and scatter of stones (Site S3).**

The second cemetery (Site S7) is in proximity to the second village (Site S6) and located to the south of the settlement only 70m distance. There are a number of clearly defined cairns with more than 11 headstones being counted. There are names engraved on some of the headstone, but largely illegible; on close examination there were three dates, 1907, 1913 and 1914 (Figs 14-15).





**Figure 14 : Site S7, stone cairns marking graves.**



**Figure 15 : Headstone dated 1907.**



#### **5.4. The pioneer Lutheran Church building**

Located 100m east in the middle ground between the village (Site S4) and the Pilanesberg hills are the remains of an old Lutheran church building of mud bricks and plaster. This remnant structure dates to the 19<sup>th</sup> century contact period when missionaries and traders entered the area ahead of the Voortrekkers. The walls stand up to 1.80m high and define a narrow rectangle 3.50m wide by 25m long. The church was located approximately in middle ground between the two villages at 500m and 650m respectively, which might indicate contemporaneity; that it drew congregants from the two villages at the same time (Fig 16).



**Figure 16 : The wall remains of the old Lutheran Church (Site S4).**

#### **5.5. Stone Age sites**

A stone tool, a possible flake/scrapper with a percussion platform and possibly dating to the Middle Stone Age. The site lies outside the proposed mining area (Fig 17).



Figure 17 : MSA flake tool (Site S1).

### 5.6. Modern mining

Evidence abounds in the area of previous mining activities dating from the second half of the 19<sup>th</sup> century. In our view none of the burrows, trenches and tailings are worthy of protection. A concrete trough and stumps of heavy steel rails were recorded marking the remains of a processing plant / crusher. This site may be protected as evidence of early modern mining in the area (Figs 18-19).



Figure 18 : Concrete structure, part of a processing plant (Site S5).





**Figure 19 : Heavy steel rail planted into the ground (Site S5).**

### 5.7. Significance ranking of findings

The significance ranking (with a colour scheme) refers to perceived impacts and risk of the proposed development. Appropriate interventions and mitigation strategies are also proposed.

This heritage impact evaluation is respectful of the sanctity of graves / burial grounds. It is therefore recommended that the two cemeteries be fenced off and the Environmental Control Officer be made aware the sacred value of the sites to local people. In addition the natural woody vegetation should be retained as a buffer around the cemeteries. It is cautioned that the second cemetery (Site S7) is situated very close to area with many diggings and parallel trial trenches suggesting future mining activity might be concentrated there (Figs 20-21). If mine operations will be extended to extract any possible mineral deposits in the ground below the cemetery, mitigation strategies must be weighed carefully including the option of exhumation and relocation of the graves to a formal cemetery. Such a proposal will have to be tabled before the local community and relatives/descendants of deceased for consensus to be reached.



**Figure 20 : Village site (S6) and Cemetery (S7) located in proximity to trial trenches.**

In the same vein consideration must be made for protection of the remains of the two villages and the Lutheran Church. This study recommends that the three sites be fenced off. The oral traditions connected with the sites reflect public sensibilities about the historical and heritage value of these sites. We noted that the second village (Site S6) is in close proximity to the area with diggings and trial trenches. If this indicates that there are mineral rich gravels beneath then the option destruction of the

site after salvage excavation must be considered. This not a decision which heritage experts alone should take without consulting local communities/ historically interested and affected parties.



Figure 21 : Location of heritage sites (S1-S7) recorded during the survey.

Table 7: Sites Recorded on Site and their Significance

	RANKING	SIGNIFICANCE	No of sites
1	High	National and Provincial heritage sites (Section 7 of NHRA). All burials including those protected under Section 36 of NHRA.	2 Cemeteries
2	Medium A	Substantial archaeological deposits, buildings protected under Section 34 of NHRA. These may be protected at the recommendations of a heritage expert.	(3) 2 old settlements, 1 remains of early church
3	Medium B	Sites exhibiting archaeological and historical characteristics of the area, but do not warrant further action after they have been documented.	1 MSA
4	Low	Heritage sites which have been recorded, but considered of minor importance relative to the proposed development.	1 mine plant
		<b>TOTAL</b>	<b>7</b>

## 5.8. Risk assessment of the findings

**Table 8 : Risk assessment of the findings**

EVALUATION CRITERIA	RISK ASSESSMENT
Description of potential impact	Negative impacts range from partial to total destruction of surface and under-surface movable/immovable relics.
Nature of Impact	Negative impacts can both be direct or indirect.
Legal Requirements	Sections 34, 35, 36, 38 of National Heritage Resources Act No. 25 (1999)
Stage/Phase	Bulk sampling and mining operations
Nature of Impact	Negative, both direct & indirect impacts.
Extent of Impact	Site preparation, trenching, open cast mining have potential to damage heritage resources above and below the surface not seen during the survey
Duration of Impact	Any accidental destruction of surface or subsurface relics is not reversible, but can be mitigated.
Intensity	Uncertain.
Probability of occurrence	Medium.
Confidence of assessment	High.
Level of significance of impacts before mitigation	High.
Mitigation measures	Fencing off the cemeteries and village sites/ archaeological salvage of Village Site (Site S6) and Cemetery (Site S7).
Level of significance of impacts after mitigation	Low.
Cumulative Impacts	None.
Comments or Discussion	None.

## **6. RECOMMENDATIONS AND CONCLUSIONS**

The two cemeteries which have been documented must be protected. In the same vein consideration must be given for the protection of the two village sites and the remnant mud brick walls of the old Lutheran Church in view of the extant oral traditions connected with these sites. Since the possibility of mine operations extending to the second cemetery and village site the option archaeological salvage must be considered in consultation with the local communities / historically interested and affected parties and consensus reached. It is further advised that these recommended be incorporated in the Environmental Management Plan for the operation phase of the mine project. If in the future any archaeological or historical material of significance are found all activities should temporarily be stopped in the specific area for inspection by an archaeologist or other specialists appointed by SAHRA or the provincial heritage authority.



## 7. CATALOGUE OF HERITAGE SITES

Table 9 : Catalogue of Heritage Sites

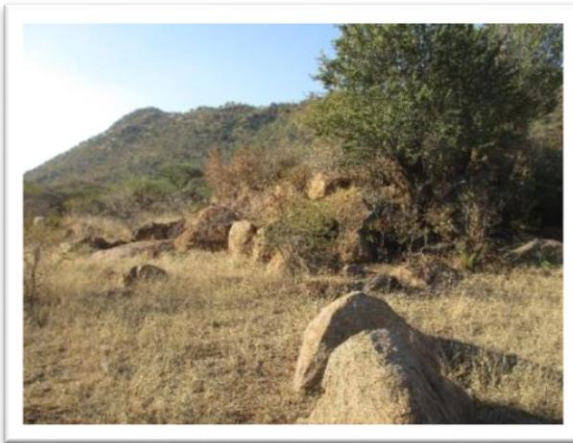
SITE NO	LATITUDE	LONGITUDE	PERIOD	DESCRIPTION	RANKING
S1	25°17'14.20"S	26°55'40.40"E	MSA	Possible MSA flake tool showing a percussion platform.	Low
S2	25°17'47.80"S	26°57'2.50"E	LIA/Historical	Cluster of boulders forms a rocky feature on the western foot of the Pilaesberg. Remains of an old village indicated by rectangular stone foundations, upper grindstones and potsherds.	Medium A
S3	25°17'47.70"S	26°56'59.30"E	LIA/Historical	Old cemetery with ±40 graves, marked by cairns, at least 8 headstones and scatter of stones.	High
S4	25°18'0.90"S	26°57'13.80"E	Contact	Remains of the first Lutheran Church building. Rectangular mud brick structure measuring 3.50m x 25.0m and walls up to 1.80m high.	Medium A
S5	25°18'9.30"S	26°57'14.40"E	Industrial	Remains of mine processing plant.	Low
S6	25°18'17.90"S	26°57'28.00"E	LIA/Historical	Remains of an old village indicated by rectangular stone foundations.	
S7	25°18'19.80"S	26°57'28.49"E	LIA/Historical	Old cemetery with ±40 graves, marked by cairns, at least 11 headstones and scatter of stones. Some headstones with engraved names and dates 1907, 1913 and 1914 seen.	High

**Table 10 : Impact & Mitigation 1**

S1	COORDINATES	25°17'14.20"S	26°55'40.40"E
<div style="display: flex; justify-content: space-around;">   </div> <p><b>OBSERVATIONS</b>            Black soils on the edge of a stream. Possible MSA flake tool showing a percussion platform.</p>			
<b>HERITAGE STATUS</b>		-	
<b>POTENTIAL IMPACTS &amp; PROPOSED MITIGATION</b>		Lies outside the proposed development area.	

Table 11 : Impact & Mitigation 2

S2 Old settlement	COORDINATES	25°17'47.80"S	26°57'2.50"E
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**OBSERVATIONS**

Cluster of boulders forms a rocky feature on the western foot of the Pilanesberg. Remains of an old village indicated by rectangular stone foundations, upper grindstones and potsherds.


<b>HERITAGE STATUS</b>	Significant evidence of precolonial /historical settlements in the area
<b>POTENTIAL IMPACTS &amp; PROPOSED MITIGATION</b>	Site must be preserved, perimeter fencing recommended.



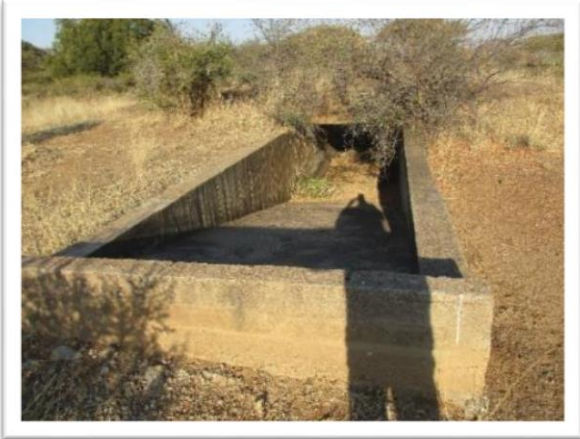

**Table 12: Impact & Mitigation 3**

<b>S3 Cemetery</b>	<b>COORDINATES</b>	25°17'47.70"S	26°56'59.30"E
<div style="display: flex; justify-content: space-around;">   </div> <p><b>OBSERVATIONS</b> Old cemetery with ±40 graves, marked by cairns, at least 8 headstones and scatter of stones.</p>			
<b>HERITAGE STATUS</b>	Burial grounds are sacred.		
<b>POTENTIAL IMPACTS &amp; PROPOSED MITIGATION</b>	The cemetery must be protected, the area fenced off and buffer of trees preserved around it.		

**Table 13 : Impact & Mitigation 4**

S4 Lutheran Church	COORDINATES	25°18'0.90"S	26°57'13.80"E
			
<p><b>OBSERVATIONS</b></p> <p>Remains of the first Lutheran Church building. Rectangular mud brick structure measuring 3.50m x 25.0m and walls up to 1.80m high.</p>			
<b>HERITAGE STATUS</b>		Significant evidence of pioneer Missionary activities in the area.	
<b>POTENTIAL IMPACTS &amp; PROPOSED MITIGATION</b>		The structure is fragile and is worthy of protection. It must be fenced off.	

**Table 14 : Impact & Mitigation 5**

<b>S5 Old Mine</b>	<b>COORDINATES</b>	25°18'9.30"S	26°57'14.40"E
<div style="display: flex; justify-content: space-around;">   </div> <p><b>OBSERVATIONS</b> Remains of mine processing plant.</p>			
<b>HERITAGE STATUS</b>	Significant as evidence of early modern mining.		
<b>POTENTIAL IMPACTS &amp; PROPOSED MITIGATION</b>	The structure may or may not be worth keeping depending on the recommendations of the heritage authority.		



**Table 15 : Impact & Mitigation 6**



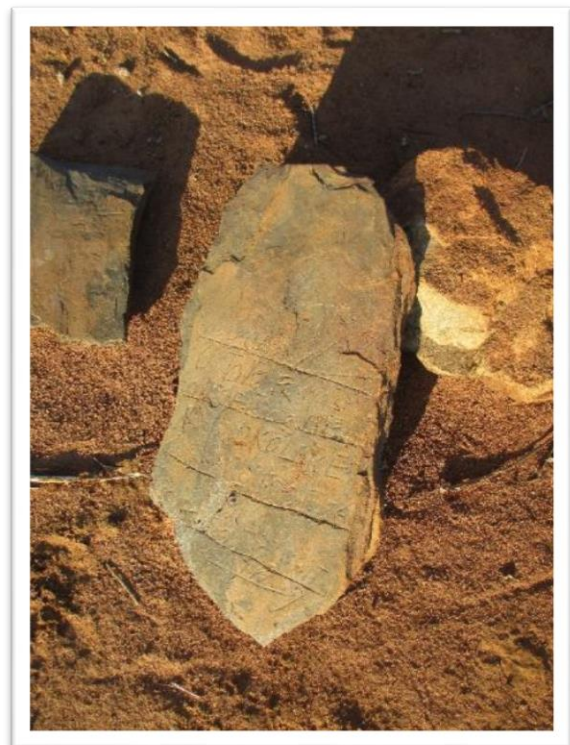
<b>S6 Old Village</b>	<b>COORDINATES</b>	25°18'17.90"S	26°57'28.00"E
<div style="display: flex; justify-content: space-around;">   </div> <p><b>OBSERVATIONS</b> Remains of an old village indicated by rectangular stone foundations.</p>			
<b>HERITAGE STATUS</b>	Significant evidence of precolonial /historical settlements in the area		
<b>POTENTIAL IMPACTS &amp; PROPOSED MITIGATION</b>	The site is located close to diggings and trial trenches suggesting the presence of mineral bearing gravels. If the mining will be encroach on the site, archaeological salvage must be considered after consultation with the local community.		

Table 16 : Impact & Mitigation 7

S7 Cemetery	COORDINATES	25°18'19.80"S	26°57'28.49"E
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*Dated 1907*



*Dated 1913*

**OBSERVATIONS**

Old cemetery with ±40 graves, marked by cairns, at least 11 headstones and scatter of stones. Some headstones with engraved names and dates 1907, 1913 and 1914 seen.

<b>HERITAGE STATUS</b>	Graves are sacred and they must be protected.
<b>POTENTIAL IMPACTS &amp; PROPOSED MITIGATION</b>	Since the possibility of mine operations extending to the second cemetery and village site the option archaeological salvage must be considered in consultation with the local communities / historically interested and affected parties and consensus reached.

## 8. REFERENCES

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### Legislation

- National Heritage Resources Act (No 25: 1999).
- National Environmental Management Act (No 107, 1998)

### Websites

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## 9. ACKNOWLEDGEMENTS

Councillor Joseph Shimane Sibande in the company of a local elder, Mr Joseph Mthopi, guided us during heritage survey on the property.

## 10. ADDENDUM: DETAILS OF SPECIALIST

We at EnviroSHEQ Consulting (Pty) Ltd provide solutions for heritage and environmental management to the public and private sector. Supported by a professional team with deep knowledge of national policy and regulations, we are playing a leading role in sustainable development initiatives. The company's principal HIA researcher, Dr Edward Matenga, holds a PhD in Archaeology and Heritage

from the Department of African Archaeology & Ancient History at Uppsala University (Sweden). He also obtained a Postgraduate Certificate in the Integrated Conservation of Territories and Landscapes of Heritage Value (ICCROM, Rome). He is a member of International Council on Monuments and Sites (ICOMOS) and ASAP (South African Association of Professional Archaeologists). Matenga has extensive experience on environmental management, in particular in the field of archaeological and heritage resources, strategic planning for heritage in protected areas, preparation of World Heritage nomination dossiers, Evaluations of World Heritage Nominations and Heritage Impact Assessments.

Significantly in 2014-16 Matenga was the principal researcher in a team contracted by Eskom for a Phase II Heritage Impact Assessment for graves that had been disturbed and desecrated during the construction of the Medupi Power Station in Lephalale. In addition Matenga has salvaged and relocated several graves in Limpopo Province in the period between 2013 and 2016 at the request of various clients including Eskom.

On the international scene, Matenga is currently involved in the preparation of the World Heritage Nomination Dossier for the South African Human Rights, Liberation and Reconciliation – Nelson Mandela Legacy Sites. He was involved in the preparation of the Nomination File for the Tongo Tenzug Sacred Cultural Landscape in Bolgatanga (Northern Ghana) in 2008/9. He was involved on the development of the Integrated Conservation Management Plan for the Robben Island Museum. He was an ICOMOS expert for the evaluation of Nyika Plateau National Park in Malawi (2005), Mijikenda Sacred Forests in Kenya (2006), and Le Morne Cultural Landscape in Mauritius (2007). He conducted an assessment of the state of conservation of stone-built structures in the North Province of Cameroon. The project was initiated by ICCROM – the International Centre for the Study of the Preservation and Restoration of Cultural Property under the Africa 2009 Programme.

Dr Edward Matenga has been involved in heritage impact assessments, archaeological surveys, grave issues, exhumations and relocations. Some of the projects may be listed here:

- HIA for proposed coal and gas extraction Chapudi / Generaal / Mopane (80 000 ha) (2013) – Coal of Africa Pty Ltd
- HIA for proposed coal extraction in Leandra - BHP Billiton Pty Ltd 50 000ha (2014-125)
- Community relations management in respect of disturbed graves, Medupi Power Station, Lephalale (2014-2016) (Eskom)
- Exhumation and relocation, Tjatane, Limpopo (2014) (Eskom)