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A PHASE I HERITAGE IMPACT ASSESSMENT STUDY FOR THE PROPOSED NORTH-EAST ROCK WASTE DUMP FOR THARISA MINERALS (PTY) LTD NEAR MARIKANA IN THE NORTH-WEST PROVINCE

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EXECUTIVE SUMMARY

A Phase I Heritage Impact Assessment (HIA) study as required in terms of Section 38 of the National Heritage Resources Act (No 25 of 1999) was done for Tharisa Minerals (Pty) Ltd (Tharisa's) north-east waste rock dump on the farm Elandsdrift 467 JQ near Marikana in the North-West Province. The aims with the Phase I HIA study were the following:

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

The Phase I HIA study for the proposed north-eastern waste rock dump did not reveal any of the types and ranges of heritage resources as outlined in Section 38 of the National Heritage Resources Act (No 25 of 1999).

There is consequently no reason from a heritage point of view why the development of the proposed north-eastern waste rock dump should not proceed.

General

It is possible that this Phase I HIA study may have missed heritage resources in the proposed north-eastern rock waste dump as heritage sites may occur in the tall grass which cover whole of the Project Area as well as in the clumps of vegetation which are concentrated along the eastern edge of the Project Area as well as towards its central part. It is also possible that heritage resources may lie below the surface of the earth and may only be exposed once development commences.

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

CONTENTS

1 INTRODUCTION

This document contains the report on the results of the Phase I Heritage Impact Assessment (HIA) study that was done for Tharisa Minerals (Pty) Ltd (Tharisa's) Marikana in the North West Province. Tharisa intends to establish a new waste rock dump in the north-eastern corner of their mining area (referred to as the north-eastern waste rock dump) on the farm Elandsdrift 467JQ within the Bonjanala Platinum District Municipality (BPDM) and within the Madibeng Local Municipality (MLM) in the North West Province. The proposed project may have an influence on any of the types and ranges of heritage resources which are listed in Section 3 of the National Heritage Resources Act (No 25 of 1999) which may occur in the Project Area.

In order to comply with heritage legislation Tharisa requires knowledge of the presence, relevance and the significance of any heritage resources that may be affected by the Project. Tharisa needs this knowledge in order to take pro-active measures with regard to any heritage resources that may be affected, damaged or destroyed when the Project is implemented. Consequently, SLR Consulting Africa (Pty) (Ltd) who is responsible for compiling an Environmental Impact Assessment for the project commissioned the author to undertake a Phase I HIA study for the north-east waste rock dump.

The aims with the Phase I HIA were the following:

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

Focused archaeological research has been conducted in the North West Province for several decades. This research consists of surveys and of excavations of Stone

Age and Iron Age sites as well as of the recording of rock art and historical sites in this area. The North West Province has a rich heritage comprised of remains dating from the pre-historical and from the historical (or colonial) periods of South Africa. Pre-historical and historical remains in the North West Province of South Africa form a record of the heritage of most groups living in South Africa today.

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

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

The National Heritage Resources Act (Act No 25 of 1999, Art 3) outlines the following types and ranges of heritage resources that qualify as part of the National Estate, namely:

(a) places, buildings structures and equipment of cultural significance;
(b) places to which oral traditions are attached or which are associated with living heritage;
(c) historical settlements and townscapes;
(d) landscapes and natural features of cultural significance;
(e) geological sites of scientific or cultural importance;
(f) archaeological and palaeontological sites;
(g) graves and burial grounds including-
  (i) ancestral graves;
  (ii) royal graves and graves of traditional leaders;
  (iii) graves of victims of conflict;(iv) graves of individuals designated by the Minister by notice in the Gazette;
  (v) historical graves and cemeteries; and
  (vi) other human remains which are not covered by in terms of the Human Tissues Act, 1983 (Act No 65 of 1983);
(h) sites of significance relating to the history of slavery in South Africa;
(i) movable objects, including -
(i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
  (ii) objects to which oral traditions are attached or which are associated with living heritage;
  (iii) ethnographic art and objects;
  (iv) military objects;
  (v) objects of decorative or fine art;
  (vi) objects of scientific or technological interest; and
  (vii) books, records, documents, photographs, positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No 43 of 1996).

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

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

2 PROJECT DESCRIPTION

2.1 Location

Tharisa produces chrome and platinum group metals (PGM) concentrate at Tharisa Mine near Marikana town. The mine is located on the farms Kafferskraal 342 JQ and Elandsdrift 467 JQ within the Rustenburg Local Municipality (RLM), Madibeng Local Municipality (MLM) and the Bojanala Platinum District Municipality (BPDM) of the North West Province (Bapong 2527CA 1:50 000 topographical map & 2526 Pretoria 1:50 000 topographical map) (Figure 1).

Tharisa operates with an environmental impact assessment (EIA) and environmental management programme (EMP) report approved in terms of the Mineral and Petroleum Resources Development Act, 28 of 2002 (MPRDA) and National Environmental Management Act, 107 of 1998 (NEMA). The mine also operates with a water use license (License No.: 03/A21K/ABCGIJ/1468) issued in July 2012 in terms of the National Water Act, 36 of 1998 (NWA). However, a number of changes are planned and have taken place at the mine which resulted in a need to amend the mine's approved EIA and EMP in terms of the MPRDA. The changes also triggered a number of listed activities under NEMA which required the need for a scoping and EIA and EMP process in terms of the NEMA.

Since the commencement of the environmental assessment process in 2011revisions to the project scope have taken place. Following the scoping meetings held in February 2012 the provision for a smelter and additional run-of-mine (RoM) pad were excluded from the EIA process and the capacity of the chrome sand drying plant was increased. Should the smelter be reconsidered in future a separate EIA process will be required. For the RoM pad it was identified that there will be sufficient capacity at the existing pad and therefore no additional facility would be needed.

As part of ongoing mine planning Tharisa identified the need for an additional waste rock dump to handle the volume of waste rock produced by the open pit mining operations. Instead of initiating a separate EIA process to cater for this change it was

decided to incorporate the new waste rock dump into the current EIA process and as such revise the scoping report.

This Phase I HIA study focusses on the proposed north-eastern waste rock dump.

Figure 1 – Regional setting for Tharisa Minerals (Pty) Ltd near Marikana in the North West Province. The mine is planning several new developmental components of which the establishment of the proposed north-eastern waste rock dump is the concern of this report (above).

2.2 Development components of the Project

The main developmental components with which Tharisa is involved comprise the following (see below). Only the north-eastern waste rock dump is the concern of this report as the footprints for the other developmental components were covered when the initial Phase I HIA study for Tharisa was done in 2007 (Pistorius 2007) (Figure 2):

- Deepening of the pit(s) and related additional waste rock and tailings material storage
- A chrome sand drying plant with associated fuel storage facilities, within the concentrator complex
- Changes to the tailings storage facility design
- Re-shaping and re-alignment of waste rock dumps
- Changes to general surface infrastructure layout and operations at the mine.

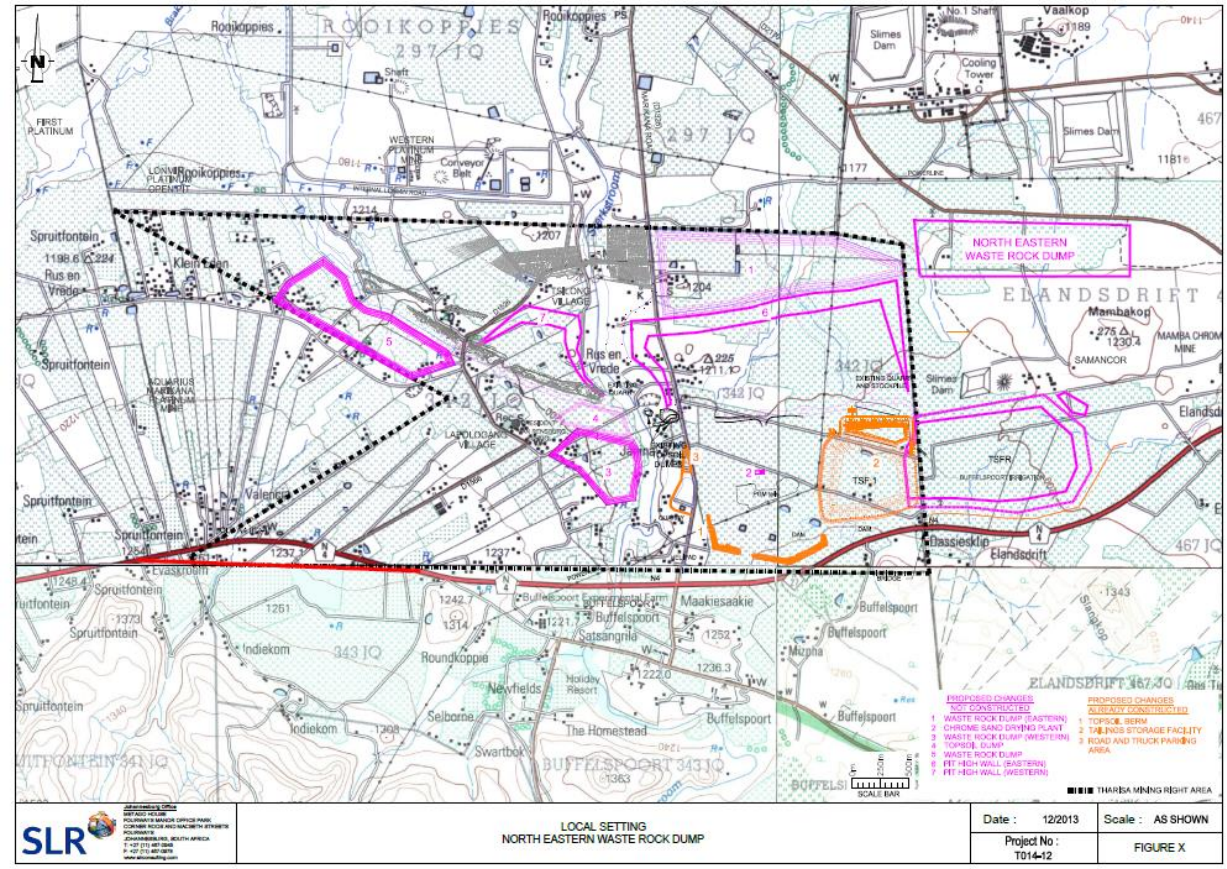


Figure 2 – Tharisa Minerals (Pty) Ltd near Marikana in the North West Province. The map indicates changes which already have been implemented at the mine (orange) whilst the purple outline delineates footprints of infrastructure such as the north-eastern rock waste dump which still has to be constructed (above).

The motivation for these developmental components is the following:

- Deepening of the pits will provide Tharisa with access to additional ore reserves thereby increasing the viability of the mine.
- The purpose of the chrome sand drying plant is to produce higher-value chrome sand suitable for use as foundry sand.
- The changes in the tailings character and design will optimise tailings disposal via the installation of toe drains on the “inside toe of the TSF containment walls”. These drains will draw down the phreatic surface of the tailings dam thus making it more stable, helping the tailings consolidate, improve the placed density and reducing the hydrostatic pressures acting on the containment walls.
- Changes to the waste rock dumps allows for additional storage of waste rock generated by the open pit operations as well as optimising the available space at the mine
- The other changes to the general surface infrastructure will optimise the available space at the mine, optimise operations at the mine, and/or improve noise and visual mitigation measures.
- The purpose of the truck parking area is to provide sufficient parking and/or waiting area for the trucks en route to Marikana Railway Siding (MRS).

2.3 The nature of the Project Area

The Tharisa Mine lies on a relatively flat plain which gently slopes down towards the north. The area has an average elevation of approximately 1200 meters above mean sea level (mamsl), with elevation ranging from 1140m in the south-west to approximately 1320m in the north. North of the mine are a number of gabbro-norite hills. The Magaliesberg Mountain range lies approximately two kilomters to the south of the mine. The perennial Sterkstroom and various non-perennial tributaries of the Sterkstroom and Maretlwane Rivers run in a northerly direction through the mine area.

Before the Tharisa Mine was established land use in the area was a mixture of farming, residential, mining, small business and general community activities.

Similar land uses still take place although the proportion and scale of individual land uses has changed.

There are a number of land users that are actively involved in subsistence and/or commercial farming activities such as livestock, piggery and the cultivating of citrus fruits and vegetables in the vicinity of the mine. There are also land users who own small businesses such as accommodation, shops and restaurants. South of the N4 is a property development project, Living Waters Properties, which is in the early stages of development.

Due to overgrazing and subsistence farming practices by informal dwellers as well as the collection of vegetation mainly for firewood, parts of the area have been transformed by misuse. Drainage systems within the area also show evidence of disturbance by agricultural activities.

Residential land use i.e. formal, informal and farmsteads is one of the main land uses near the mine.

The Project Area where the proposed new north-eastern waste rock dump will be established is situated on a level piece of veld which is wedged between Lonmin's infrastructure (north) and a cluster of small hills called Mambakop on the farm Elandsdrift 467JQ.

The natural vegetation in the area has been replaced by patches of land which are covered with agricultural fields and by mining activities. The Project Area at large has been scarred by developmental activities such as haul roads, electrical power lines, mining and processing activities as well as other developments which have altered the natural state of the area to a transformed mine landscape which is characteristic of the platinum belt in the North West Province.

The area has a history of underground mining and a number of years of opencast mining activities. Consequently, the present condition of the Project Area at large is typically that of disturbed land use areas. The nature and characteristic features of

the Project Area is discussed and illuminated with photographs (see Part 6.1 ‘The field survey’).

2.4 The heritage potential of the Project Area

A number of heritage studies have been done for Lonmin, Tharisa Minerals, Eskom and other developers in close proximity of the proposed north-eastern waste rock dump which outline the nature and heritage character of the area. These studies also provide some predictive evidence regarding the types and ranges of heritage resources to be expected in any new area to be surveyed, namely: (see Part 9, ‘Bibliography relating to earlier heritage studies').

The initial Phase 1 HIA study which was conducted for Tharisa in 2007 identified the following types and ranges of heritage resources in the area (Pistorius 2007):

- Stone walled settlements dating from the Late Iron Age and historical period.
- Graveyards, historical as well as contemporary.
- A historical village and homestead.
- Mining heritage remains.
- Isolated and randomly scattered stone tools.
- Historical houses and outdated discarded agricultural implements.

These are the most common heritage resources which also occur in the Project Area at large (see Part 4, ‘Baseline information').

3 LEGAL FRAMEWORK

South Africa's heritage resources ('national estate') are protected by international, national and regional legislation which provides regulations, policies and guidelines for the protection, management, promotion and utilization of heritage resources. South Africa's 'national estate' includes a wide range of various types of heritage resources as outlined in Section 3 of the National Heritage Resources Act (NHRA, Act No 25 of 1999) (see Box 1).

According to the NHRA (Act No 25 of 1999) heritage resources are categorised using a three-tier system, namely Grade I (national), Grade II (provincial) and Grade III (local) heritage resources.

At the provincial level, heritage legislation is implemented by Provincial Heritage Resources Agencies (PHRAs) which apply the National Heritage Resources Act (Act 25 of 1999) together with provincial government guidelines and strategic frameworks. Metropolitan or Municipal (local) policy regarding the protection of cultural heritage resources is also linked to national acts and is implemented by the South African Heritage Resources Agency (SAHRA) and the Provincial Heritage Resources Agencies.

At a national level heritage resources are dealt with by the National Heritage Council Act (Act No 11 of 1999) and the National Heritage Resources Act (Act No 25 of 1999).

3.1 Legislation relevant to heritage resources

The identification, evaluation and assessment of heritage resources in South Africa are regulated by the following legislation:

- National Environmental Management Act (NEMA) Act 107 of 1998
- National Heritage Resources Act (NHRA) Act 25 of 1999
- Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002

- Development Facilitation Act (DFA) Act 67 of 1995

3.2 The National Heritage Resources Act (NHRA)

According to the NHRA (Act No 25 of 1999) the 'national estate' comprises the following (see Box 1):

a. Archaeological artefacts, structures and sites older than 100 years
b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography
c. Objects of decorative and visual arts
d. Military objects, structures and sites older than 75 years
e. Historical objects, structures and sites older than 60 years
f. Proclaimed heritage sites
g. Graveyards, burial grounds and graves older than 60 years
h. Meteorites and fossils
i. Objects, structures and sites or scientific or technological value.

Elaborating on the above the 'national estate' also includes (Box 1):

1. Places, buildings, structures and equipment of cultural significance
2. Places to which oral traditions are attached or which are associated with living heritage
3. Historical settlements and townscapes
4. Landscapes and features of cultural significance
5. Geological sites of scientific or cultural importance
6. Archaeological and paleontological sites of importance
7. Sites of significance relating to the history of slavery
8. Movable objects (e.g. archaeological, paleontological, meteorites, geological specimens, military and ethnographic objects, books etc.)

3.3 Heritage Impact Assessment studies

According to Section 38 of the National Heritage Resources Act (Act No 25 of 1999) a Heritage Impact Assessment (HIA) process must be followed under the following circumstances:

- The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length
- The construction of a bridge or similar structure exceeding 50m in length
- Any development or activity that will change the character of a site and which exceeds 5 000m^2 or which involve three or more existing erven or subdivisions thereof
- Re-zoning of a site exceeding 10 000 m^2
- Any other category provided for in the regulations of SAHRA or a provincial heritage authority

3.4 Regulations with regard to heritage resources

The regulations outlined below are applicable to the types and ranges of heritage resources which are the most common in the region where the heritage study was conducted, namely:

3.4.1 Buildings and structures

According to Section 34(1) of the NHRA (Act No 25 of 1999) no person may alter (demolish) any structure or part thereof which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

A structure means any building, works, device or any other facility made by people and which is fixed to land and which includes fixtures, fittings and equipment associated with such structures.

Alter means any action which affects the structure, appearance or physical properties of a place or object, whether by way of structural or any other works such as painting, plastering, decorating, etc..

3.4.2 Graves and burial grounds

Graves and burial grounds are divided into the following:

a. ancestral graves
b. royal graves and graves of traditional leaders
c. graves of victims of conflict
d. graves designated by the Minister
e. historical graves and cemeteries
f. human remains

In terms of Section 36(3) of the NHRA (Act No 25 of 1999) no person, without a permit issued by the relevant heritage resources authority, may:

a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves
b) destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation, or any equipment which assists in the detection or recovery of metals.

Unidentified graves are handled as if they are older than 60 years until proven otherwise.

Human remains that are less than 60 years old are subject to provisions of the Human Tissue Act (Act 65 of 1983) and to local regulations. Exhumation of graves must conform to the standards set out in the Ordinance on Excavations (Ordinance no. 12 of 1980) (replacing the old Transvaal Ordinance no. 7 of 1925).

Permission must also be gained from the descendants (where known), the National Department of Health, Provincial Department of Health, Premier of the Province and local police. Furthermore, permission must also be gained from the various landowners (i.e. where the graves are located and where they are to be relocated) before exhumation can take place. Human remains can only be handled by a

registered undertaker or an institution declared under the Human Tissues Act (Act 65 of 1983 as amended).

3.4.3 Archaeology, palaeontology and meteorites

Section 35(4) of the NHRA (Act No 25 of 1999) deals with archaeology, palaeontology and meteorites and states that no person without a permit issued by the responsible heritage resources authority (national or provincial) may:

- destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site or any meteorite
- destroy, damage, excavate, remove from its original position, collect or own any archaeological or paleontological material or object or any meteorite
- trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or paleontological material or object, or any meteorite; or bring onto or use at an archaeological or paleontological site any excavation equipment or any equipment that assists in the detection or recovery of metals or archaeological and paleontological material or objects, or use such equipment for the recovery of meteorites
- alter or demolish any structure or part of a structure which is older than 60 years.

Heritage resources may only be disturbed or moved by an archaeologist after being issued with a permit received from the South African Heritage Resources Agency (SAHRA). In order to demolish heritage resources the developer has to acquire a destruction permit by from SAHRA.

4 BASELINE INFORMATION

4.1 The Central Bankeveld

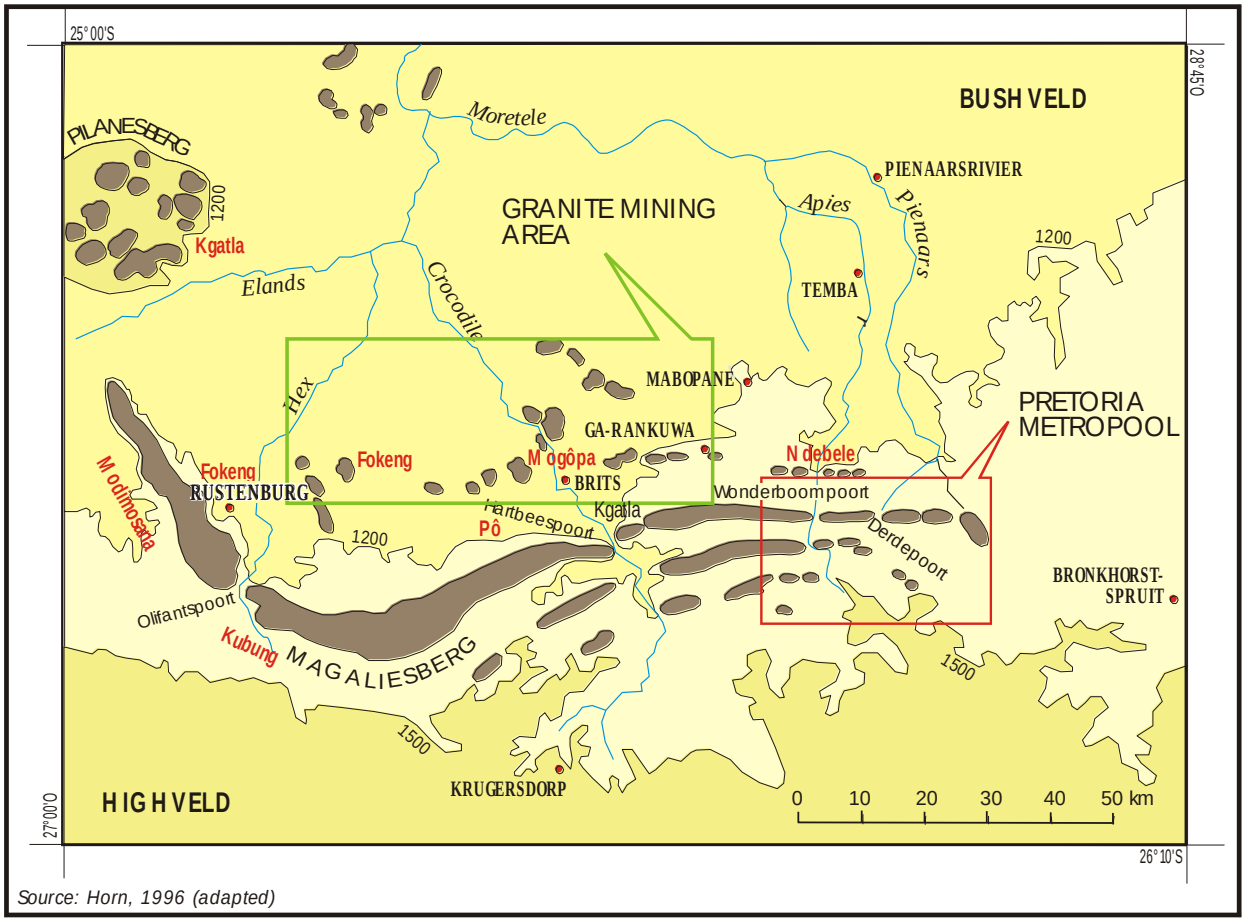
Tharisa is located in the Central Bankeveld of the North West Province of South Africa. The Bankeveld is a narrow strip of land between the northern bushveldt savannah and the centrally situated Highveld and can be divided into the Western Bankeveld, the Central Bankeveld and the Eastern Bankeveld. Only the Central Bankeveld with its numerous centuries-old remains of ancient Tswana spheres of influence is important to this report.

The Central Bankeveld is covered by older grabbo penetrated by younger vulcanic magma which formed the series and chains of pyramid-shaped granite hills from the Pilanesberg in the north-west to Onderstepoort near Pretoria in the east. These hills, as part of the Magaliesberg valley, represent a unique ecozone characterised by grassveld, savannah veld and near wooded valleys. The region has abundant surface water supplies. The Pienaar, the Moretele, the Hex and the Apies Rivers all drain their waters into the Crocodile River (Horn 1996).

4.2 Pre-historical context

Tharisa is located to the north of the Magaliesberg which is known for its rich and diverse range of heritage resources (Carruthers 2000, De Beer 1975). Stone Age sites are scattered along the Magaliesberg and are also found in caves and rock shelters in the mountain. Rock engraving sites are located further towards Maanhaarrand and Rustenburg in the west. Blockhouses along the Magaliesberg and colonial farm homesteads are still common in Marikana and on the outskirts of Brits (Madibeng). The most abundant heritage, however, are those that date from the Late Iron Age and which are associated with the numerous Tswana chiefdoms who occupied this region during the last four centuries (Mason 1968).

The interaction between the climate, geology, topography, and the fauna and flora of the Central Bankeveld established a milieu in which the first Tswana found a suitable living environment in order to practise herding, agriculture, metal working and trading. It was here that their chiefdoms flourished during AD1600 to AD1840 (Horn 1996; Pistorius 1995).



Source: Horn, 1996 (adapted)

Figure 3- The Central Bankeveld is characterised by a conspicuous chain of granite hills which stretch between Pretoria and the Pilanesberg. Stone walled settlements occur along these hills and represent the spheres of influence of several Tswana chiefdoms which emerged in this fertile eco-zone during the last four centuries (adapted from Horn 1996).

The settlements of these early Tswana chiefdoms are characterised by an impressive and elaborate stone-built tradition. Hundreds and perhaps thousands of sites were built along the bases of the granite hills. The most formidable of these chiefdoms close to Tharisa were the Kwena Môgôpa and the Kwena Môgale (Bapô) the latter whose

spheres of influence overlapped with Tharisa's mine lease area. Further to the west, closer to Rustenburg was the Fôkeng chiefdom while several Kgatla spheres of influence emerged further to the west near Brits (Pistorius 2000). The Kgatla were subjected by Mzilikazi and were used as labourers to build one of the Ndebele's villages, probably known as emHlalandlela, which is located to the north-east of Tharisa (Pistorius 1998).

The Bapô, a people whose earliest ancestors were descended from the Amambô Nguni from Kwa Zulu/Natal, arrived in the Magaliesberg during the 16th or 17th centuries. They established a sphere of influence close to Tharisa. One of their capitals was Tlhôgôkgôlô (Wolhuterskop). Several of the chiefs of this clan where known by the name of Môgale. The name of the Magalies Mountains (Magaliesberg) was derived from the name Môgale (Breutz 1953, 1986).

Numerous *difaqane* wars were fought during the last quarter of the 18th century and during the first quarter of the 19th century in the Central Bankeveld. These wars led to the displacement of large numbers of Tswana in the Bankeveld. The *difaqane* wars were caused by the Ndebele (Matabele) of Mzilikazi who arrived from the Vaal River region to occupy the Bankeveld in August 1827. The Ndebele destroyed the Kwena Môgôpa, the Kgatla and what had remained of the Bapô after an earlier defeat by the Pedi of Thulare. These wars exacerbated the havoc started earlier in the Bankeveld and gradually became a characteristic feature of historical events in this region during the early 19th century (Rasmussen 1978).

The Ndebele established several settlement complexes in the Central Bankeveld from whence they maintained their grip on the indigenous population. Four of these Zulu/Nguni residences (*imisi*) and military kraals (*amakhanda*) have been discovered during the course of earlier archaeological surveys (Pistorius 1997a, 1997b & 1998).

Internal strife between the various Tswana chiefdoms also seems to have been on the increase from the latter half of the 18th century onwards. Paternal relatives fought against each other to attain the chieftaincy of the various Tswana chiefdoms. Succession disputes also led to the splintering of the existing chiefdoms into a growing

number of independent spheres of influence in the Bankeveld (Manson and Bhenga 2000).

During the early 19th century travellers, traders and missionaries visited the Central Bankeveld where they encountered the devastated Tswana chiefdoms. They also mentioned that numerous Tswana tribes were displaced. These travellers included the traders Robert Schoon and William McLuckie in August 1829. They were soon followed by the missionary Robert Moffat who visited Mzilikazi in an *umuzi* near what is today Pretoria. In June 1835 Charles Bell and other members of Andrew Smith's expedition visited a Ndebele village near Rustenburg which Bell subsequently painted (Lye (ed.) 1975). One year later, in December 1836, Cornwallis Harris also visited the Central Bankeveld where he painted the village of emHlalandlela (Harris 1963).

The Bankeveld was rich in fauna which attracted the Griqua and the first white hunters to the region. Ivory was plentiful, with herds of elephants roaming the area. Ivory and the skins of the wide variety of fauna were sought after as precious trade commodities. Although the Tswana hunted the fauna of the Bankeveld, they were more renowned as agriculturists and cattle herders than as hunters.

Complex causes led to the unfolding of the numerous Tswana chiefdoms and their spheres of influence throughout the Bankeveld during the last decades of the 18th century and during the first decades of the 19th century. These causes were multidimensional and included the ecological potential of the region, the social and political formation and expansion of different spheres of influence, the establishment of short and long distance trade relations and local and regional wars. These causes and historical events were complex and are not fully recorded in oral traditions or in any other records.

4.3 Historical context

Some of the earliest Voortrekkers who moved across the Magaliesberg in the early 19th century established themselves on the farms Kafferskraal and Witpensfontein (today Rustenburg) and Schaapkraal, to the west and north of the study area. Since the

second half of the 19th century, farmers and workers have occupied the Rustenburg District (including the Mooinooi, Marikana, Hartebeespoort and Brits areas). Tobacco and citrus farming, together with cattle herding, became a subsistence pattern that has lasted to this day. Old farm homesteads, agricultural implements and other infrastructure such as tobacco drying sheds may still exist on farms adjacent to the study area (Bergh 1992; Pretorius 1967).

During the Second/Anglo Transvaal Boer War (1899-1902) British blockhouses were built along the ridge of the Magaliesburg, from Pretoria in the east to Rustenburg in the west. Several of these structures are located in Kommandonek and in Pampoennek in the Magaliesberg, to the south of Tharisa (Carruthers 2000).

4.4 Mining

After the discovery of the Merensky Reef in 1929, the economy of the area was gradually changed from farming into platinum and chrome mining. What started as small scale mining activities north of the Magaliesberg during the 20th century was soon eclipsed by the rise of the platinum mining complex near Rustenburg. The discovery of the Merensky Reef and the accompanying platinum boom was soon followed by the establishment of numerous chrome and norite mines in the North-West Province.

5 STUDY APPROACH AND METHODOLOGY

5.1 Fieldwork

The Project Area was surveyed with a vehicle whilst pedestrian surveys were conducted from a main track that was travelled with a vehicle and which was recorded with a mounted GPS instrument. The aim with the survey was to geo-reference, describe and photograph heritage resources whenever they existed. Photographs and descriptions illuminate the characteristic features of the Project Area (see Part 6.1 **'**Fieldwork survey').

Figure 4- The main track of the field survey that was recorded with a mounted GPS instrument when surveying the Project Area. Pedestrian surveys were conducted in all directions from the main track. The largest part of the Project Area was utilized for cultivating crops such as maize in the past (above).

5.2 Databases, literature survey and maps

Literature relating to the pre-historical and the historical unfolding of the Bankeveld was reviewed. This review focused primarily on the pre-history as well as the Historical Period of the central part of the Bankeveld. The literature research contextualises the pre-historical and historical background of the Central Bankeveld which again contributes to a better understanding of the identity and meaning of heritage sites which occur in and near the Project Area.

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

Maps outlining the Project Area were also consulted (2527CA Bapong; 1: 50 000 topographical map & 2526 Pretoria; 1:250 000 map).

5.3 Assumptions and limitations

It is possible that this Phase I HIA study may have missed heritage resources in the proposed north-eastern rock waste dump as sites may occur in the tall grass which cover whole of the Project Area as well as in the clumps of vegetation which are concentrated along the eastern edge of the Project Area as well as towards its central part. It is also possible that heritage resources may lie below the surface of the earth and may only be exposed once development commences.

If any heritage resources of significance is exposed during any phase of the establishment of the north-east waste rock dump the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notify in order to determine appropriate mitigation measures for the discovered finds. This may

include obtaining the necessary authorization (permits) from SAHRA to conduct the mitigation measures.

5.4 Some remarks on terminology

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

- Conservation: The act of maintaining all or part of a resource (whether renewable or non-renewable) in its present condition in order to provide for its continued or future use. Conservation includes sustainable use, protection, maintenance, rehabilitation, restoration and enhancement of the natural and cultural environment.

- Cultural resource management: A process that consists of a range of interventions and provides a framework for informed and value-based decision-making. It integrates professional, technical and administrative functions and interventions that impact on cultural resources. Activities include planning, policy development, monitoring and assessment, auditing, implementation, maintenance, communication, and many others. All these activities are (or will be) based on sound research.

- Cultural resources: A broad, generic term covering any physical, natural and spiritual properties and features adapted, used and created by humans in the past and present. Cultural resources are the result of continuing human cultural activity and embody a range of community values and meanings. These resources are non-renewable and finite. Cultural resources include traditional systems of cultural practice, belief or social interaction. They can be, but are not necessarily identified with defined locations.

- Heritage resources: The various natural and cultural assets that collectively form the heritage. These assets are also known as cultural and natural resources. Heritage resources (cultural resources) include all human-made phenomena and intangible products that are the result of the human mind. Natural, technological or industrial features may also be part of heritage

resources, as places that have made an outstanding contribution to the cultures, traditions and lifestyles of the people or groups of people of South Africa.

- In-Situ Conservation: The conservation and maintenance of ecosystems, natural habitats and cultural resources in their natural and original surroundings.

- Iron Age: Refers to the last two millennia and 'Early Iron Age' to the first thousand years AD. 'Late Iron Age' refers to the period between the 16th century and the 19th century and can therefore include the Historical Period.

- Maintenance: Keeping something in good health or repair.

- Pre-historical: Refers to the time before any historical documents were written or any written language developed in a particular area or region of the world. The historical period and historical remains refer, for the Project Area, to the first appearance or use of 'modern' Western writing brought to the Eastern Highveld by the first Colonists who settled here from the 1840's onwards.

- Preservation: Conservation activities that consolidate and maintain the existing form, material and integrity of a cultural resource.

- Recent past: Refers to the 20th century. Remains from this period are not necessarily older than sixty years and therefore may not qualify as archaeological or historical remains. Some of these remains, however, may be close to sixty years of age and may, in the near future, qualify as heritage resources.

- Protected area: A geographically defined area designated and managed to achieve specific conservation objectives. Protected areas are dedicated primarily to the protection and enjoyment of natural or cultural heritage, to the maintenance of biodiversity, and to the maintenance of life-support systems. Various types of protected areas occur in South Africa.

- Reconstruction: Re-erecting a structure on its original site using original components.

- Replication: The act or process of reproducing by new construction the exact form and detail of a vanished building, structure, object, or a part thereof, as it appeared at a specific period.

- Restoration: Returning the existing fabric of a place to a known earlier state by removing additions or by reassembling existing components.

- Stone Age: Refers to the prehistoric past, although Late Stone Age peoples lived in South Africa well into the Historical Period. The Stone Age is divided into an Earlier Stone Age (3 million years to 150 000 thousand years ago) the Middle Stone Age (150 000 years to 40 000 years ago) and the Late Stone Age (40 000 years to 200 years ago).

- Sustainability: The ability of an activity to continue indefinitely, at current and projected levels, without depleting social, financial, physical and other resources required to produce the expected benefits.

- Translocation: Dismantling a structure and re-erecting it on a new site using original components.

- Project Area: refers to the area (footprint) where the developer wants to focus its development activities (refer to Figure 3).

- Phase I studies refer to surveys using various sources of data in order to establish the presence of all possible types and ranges of heritage resources in any given Project Area (excluding paleontological remains as these studies are done by registered and accredited palaeontologists).

- Phase II studies include in-depth cultural heritage studies such as archaeological mapping, excavating and sometimes laboratory work. Phase II work may include the documenting of rock art, engraving or historical sites and dwellings; the sampling of archaeological sites or shipwrecks; extended excavations of archaeological sites; the exhumation of human remains and the relocation of graveyards, etc. Phase II work involve permitting processes,

require the input of different specialists and the co-operation and approval of SAHRA.

6 THE PHASE I HERITAGE SURVEY

6.1 The field survey

The heritage survey is outlined by means of photographs and descriptions which illuminate the characteristic features of the Project Area.

Figures 5 & 6- The proposed north-eastern waste rock dump will be established between Lonmin's mine infrastructure (above) and a small complex of hills known as Mamabakop on Elandsdrift 467JQ (above and below).

Figures 7 & 8- The proposed north-eastern waste rock dump will be established in an area which was utilized for the cultivation of crops in the past. It is therefore unlikely that any heritage resources of significance, if it in fact did exist in the past, will be found on this piece of land (above and below).

Figures 9 & 10- Thick clumps of bush consisting of trees, shrubbery and tall grass occur along the eastern edge of the proposed north-eastern rock waste dump as well as towards its central part (above and below).

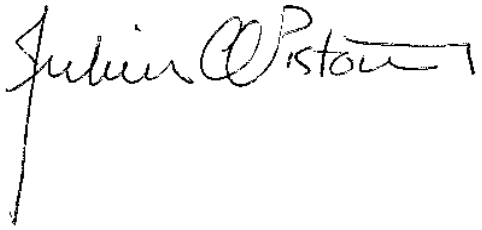
6.2 Types and ranges of heritage resources

The Phase I HIA for the north-east waste rock dump revealed none of the types and ranges of heritage resources which are outlined in Section 38 of the National Heritage Resources Act (No 25 of 1999).

7 CONCLUSION AND RECOMMENDATION

The Phase I HIA study for the proposed north-eastern waste rock dump did not reveal any of the types and ranges of heritage resources as outlined in Section 38 of the National Heritage Resources Act (No 25 of 1999).

There is consequently no reason from a heritage point of view why the development of the proposed north-eastern waste rock dump should not proceed.



DR JULIUS CC PISTORIUS
Archaeologist & Heritage Consultant
Member ASAPA

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APPENDIX A: DETAILS OF THE SPECIALIST

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

Qualifications:

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

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

MA Archaeology (distinction) (UP, 1985)

D Phil Archaeology (UP, 1989)

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

Work experience:

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

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

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

Independent Archaeologist and Heritage Consultant (2003-)

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

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

APPENDIX B: DECLARATION OF THE SPECIALIST

I, Julius CC Pistorius, declare that:

•I act as the independent environmental practitioner in this application
•I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
•I declare that there are no circumstances that may compromise my objectivity in performing such work;
•I have expertise in conducting environmental impact assessments, including knowledge of the National Heritage Resources Act (No 25 of 1999) and any guidelines that have relevance to the proposed activity;
•I will comply with the Act, regulations and all other applicable legislation;
•I will take into account, to the extent possible, the matters listed in regulation **8** of the regulations when preparing the application and any report relating to the application;
•I have no, and will not engage in, conflicting interests in the undertaking of the activity;
•I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
•I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
•I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
•I will keep a register of all interested and affected parties that participated in a public participation process; and
•I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
•all the particulars furnished by me in this form are true and correct;
•will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
•I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.

Disclosure of Vested Interest

I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2010.

_____
Signature of the environmental practitioner:
Private Consultant

_____
Name of company:
01 June 2014

_____
Date:

_____
Signature of the Commissioner of Oaths:

_____
Date:

_____
Designation: