Prepared for:

IMPALA PLATINUM

A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY FOR THE IMPALA PLATINUM SHAFT 17 COMPLEX ON THE FARM VLAKFONTEIN 276JQ NEAR RUSTENBURG IN THE NORTH-WEST PROVINCE OF SOUTH AFRICA

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February 2006

EXECUTIVE SUMMARY

This Phase I Heritage Impact Assessment (HIA) study as required in terms of Section 38 of the National Heritage Resources Act, Act 25 of 1999 was done as part of an EMP for the Impala Shaft 17 complex on the farm Vlakfontein 276JQ to the north of Rustenburg in the North-West Province of South Africa. The Phase I HIA study revealed a relatively wide range of heritage resources in the project area. However, only heritage resources in and near the Impala mining area will be affected by the proposed new development project. These heritage resources include the following:

- The Late Iron Age stone walled sites at Rathipa and Borogwe in the Impala Shaft 17 mining area (RAT01, BOR01).
- A site located on the flats between Rathipa and Moshewoe (FLAT01).
- Possibly, the stone walled sites at Mangano (MAN01) (also called Boithumelo) slightly to the north of the Impala Shaft 17 complex.

All the heritage resources in the Impala project area were geo-referenced and mapped. Their level of significance were indicated as well as the possibility of impact on these heritage resources during the construction and future existence of the Impala Shaft 17 complex (Figure 5, Tables 1-3). However, only the stone walled sites RAT01 and BOR01 in the Impala mining area, Site FLAT01 on the edge of the mining area and possibly the stone walled sites at Mangano (MAN01) slightly to the north of the Impala mining area may be affected by the proposed Impala Shaft 17 project.

The significance of the stone walled sites that may be affected by the Impala Shaft 17 complex can be determined according to the following criteria:

- The mountains of Rathipa, Borogwe, Mangano (as well as others in the area, such as Mafika, Serurube, etc.) are historical beacons, as they are associated with human occupation during the last four hundred years.
- The sites and complexes of sites associated with these mountains and knolls were occupied simultaneously by hundreds perhaps thousands of people who lived in these villages from pre-historic times (AD1650 to 1880) well into the historical period.
- These sites and the surrounding landscape represent a ‘cultural landscape’ which is unique, as it reflects a regional history, in particular that of the Fokeng.
- These site complexes are unique in the context of the Late Iron Age as they contain

settlements that are characteristic of Tswana populations.

- Some of the sites and complexes of sites on the eastern perimeter of the Impala Shaft 17 project area are in an excellent (pristine) condition and have not been affected by any development in the past. These sites offer outstanding research opportunities, as they represent archaeological 'laboratories' which can be utilised for decades to come. The settlements offer exceptional educational and tourism potential, if they are developed according to correct scientific and museological principles.
- Sites and complexes of sites in the Thaba-ea-Nape range of mountains are endangered as developments in the region, such as granite mining, are threatening the future existence of this cultural landscape.
- Living relatives of the people whose ancestors lived at some of the sites possibly still live in the area, although general knowledge about this historical continuity has been erased by historical factors.

There is consequently little doubt that sites such as RAT01, BOR01, FLAT01 and MAN01 have **HIGH** significance (Table 3). These sites, particularly RAT01, BOR01 and FLAT01 will most likely be affected by the proposed Shaft 17 complex. Two possible scenarios exist with regard to impact on these stone walled sites, namely:

- A partial or full impact on any of these sites due to the development of the Impala Shaft 17 complex and some of its extended infrastructure such as roads, railway lines, tailings dams, pipe lines, etc.
- Accidental or unknowing impact on any of these sites even if attempts are made to avoid these sites during the construction period or during the future, indefinite existence of the Shaft 17 complex.

The possibility of impact on sites at RAT01, BOR01, FLAT01 and MAN01 is indicated as **'HIGH'** (Table 4). These sites are not only confined to the hills themselves, except FLAT01 which is spread out across level land, but also extend considerable distances away from the base lines of the hills.

Sites RAT01, BOR01, FLAT01 and MAN01 are protected by the National Heritage Resources Act (No 25 of 1999) and may not be affected (accidentally damaged or deliberately demolished) during the construction or the future existence of the Impala Shaft 17 complex.

It is therefore recommended that these sites be subjected to mitigation measures as required by Section 38 of the National Heritage Resources Act (No 25 of 1999). Phase II mitigation measures for significant archaeological sites require that such sites be documented (surveyed, excavated, sampled) *prior* to these sites been affected (damaged, altered, destroyed) as a result of the construction or the future operation of the Impala Shaft 17 complex.

The Phase II investigations would cover for any accidental (unknowing) or deliberate alterations (destruction) that may be brought to any of the sites around the base of Rathipa, Borogwe, the site on the flats (FLAT01) between Rathipa and Moshewoe and the sites at Mangano (MAN01) during the construction or the future, indefinite existence of the Impala Shaft 17 complex.

Phase II investigations must be done by archaeologists accredited with ASAPA who must acquire the necessary permit for the mitigation measures which must be conducted *prior* to the alteration (accidental damage, destruction) of the archaeological sites.

EXECUTIVE SUMMARY

1 INTRODUCTION

This document contains the report on a Phase I Heritage Impact Assessment (HIA) study done for the Impala Shaft 17 complex on the farm Vlakfontein 276JQ to the north of Rustenburg in the Bojanala Platinum District in the North-West Province of South Africa.

The North-West Province of South Africa has a rich heritage comprised of remains dating from the pre-historic and from the historical (or colonial) periods of South Africa. Pre-historic and historical remains in the North-West Province present 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' (outlined in Section 3 of the National Heritage Resources Act, Act No 25 of 1999) occur in this region (see Box 1).

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

The National Heritage Resources Act (Act 25 of 1999, Section 3) outlines the following types and ranges of heritage resources that qualify as part of the national estate:

(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 in terms of the Human Tissue Act (Act 65 of 1983);

(h) sites of significance relating to the history of slavery in South Africa;

(i) moveable objects, including -

(i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects, 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 (Act 43 of 1996).

The National Heritage Resources Act (Act 25 of 1999, Sec 3) also distinguishes nine criteria for a place and/or object to qualify as 'part of the national estate if they have cultural significance or other special value …'. These criteria are the following:

(a) its importance in the community, or pattern of South Africa's history;

(b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;

(c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;

(d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;

(e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;

(f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;

(g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;

(h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and/or

(i) its significance relating to the history of slavery in South Africa.

2 AIMS OF THIS REPORT

Impala Platinum intends to establish the proposed new Impala Shaft 17 complex on the farm Vlakfontein 276JQ to the north of Rustenburg in the Bojanala Platinum District in the North-West Province of South Africa. Given the possibility that heritage resources may occur in or near the proposed new Shaft 17 mining complex, Impala appointed the author to conduct a Phase I Heritage Impact Assessment (HIA) study of the Impala Shaft 17 mining area. The aims of this HIA study were:

- to establish whether any of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) (Box 1) do occur in or near the Impala Shaft 17 mining area and, if so, to determine the nature, the extent and the significance of these remains;
- to determine whether such remains will be affected by the proposed new Shaft 17 complex; and
- to evaluate what appropriate actions could be taken to reduce the impact of the proposed new development on such remains.

3 METHODOLOGY

This HIA study was conducted by

- surveying on foot the proposed new Impala Shaft 17 complex, as well as surveying, where appropriate, areas adjoining the mining areas (in other words, peripheral areas which will not be affected by the mining activities);
- briefly surveying literature relating to the pre-historical and historical context of the Rustenburg region;
- interviewing spokespersons to establish the presence or existence of certain heritage resources such as graveyards or abandoned settlements and to collect indigenous names for landmarks such as hills (usually with archaeological sites) in the area;
- consulting maps of the proposed new mining area;
- consulting archaeological (heritage) data bases such as the one kept at the North-West Provincial Heritage Resources Agency (NW PHRA); and
- integrating all the information obtained from the literature survey, maps and spokespersons with the evidence derived from the fieldwork.

3.1 Fieldwork

The Impala Shaft 17 complex will cover part of the farm Vlakfontein 276JQ to the north of Rustenburg in the North-West Province. The project area was reconnoitred with a vehicle where there were accessible roads. However, large tracts of the proposed mining area on Vlakfontein 276JQ, where a number of stone walled sites occur, were covered on foot.

Although heritage resources in the peripheral areas (outside the mining area) will not be affected by the proposed development project, this report does refer briefly to the presence of historical houses that occur in some of the peripheral areas.

3.2 Databases, literature survey and maps

Databases kept and maintained at institutions such as the North-West Heritage Resources Agency (SAHRA) in Mafekeng and the Archaeological Data Recording Centre at the National Flagship Institute (Museum Africa) in Pretoria were consulted to determine whether any heritage resources had been identified during earlier archaeological surveys in the project area.

Literature relating to the pre-historical and the historical unfolding of the Bankeveld area was reviewed. This review focused particularly on local Tswana groups such as the Fokeng who live along the Thaba-ea-Nape range of mountains. The history of the origins of the Tlôkwa, Kgatla Kgafêla and the Kwena Môgôpa who respectively lived further to the north-west, north and north-east of the Impala Shaft 17 project area was not reviewed.

It is important to contextualise the pre-historical and historical background of the Bankeveld in order to comprehend the identity and meaning of heritage sites in the Impala Shaft 17 mining area and subsequently to determine the significance of any remains which may be affected by the development project (see Parts 6 & 7).

In addition, the Impala Shaft 17 mining and project areas were also studied by means of the 1:50 000 topographical maps on which the mining and project areas appear (2527CB Rustenburg East, 1:50 000).

3.3 Spokespersons

Spokespersons living in villages in the project area are usually intimately acquainted with the area, particularly if they were born there. Some spokespersons were therefore consulted with regard to the possible presence of graveyards and abandoned villages, and the indigenous names for landmarks such as mountains and hills were noted, as these natural phenomena are usually associated with pre-historical and historical sites (see Part 9).

3.4 Mapping heritage resources

All the heritage resources found in the mining areas and some in the peripheral areas were geo-referenced using a GPS instrument and they were thereafter mapped in Arch View. A relatively narrow range of heritage resources occurs in the Impala Shaft 17 project area. The most important heritage resources were geo-referenced and mapped. Their level of significance was determined as well as the possibility of any impact on these remains (Figure 5; Tables 1- 4).

3.5 Assumptions and limitations

It must be pointed out that heritage resources can be found in the most unexpected places. It must also be borne in mind that surveys may not detect all the heritage resources in a given project area. While some remains may simply be missed during surveys (observations), others may occur below the surface of the earth and may only be exposed once development (such as mining) commences.

3.6 Some remarks on terminology

Terms that may be used in this report are briefly outlined in Box 2.

Box 2- Terminology relevant to this report

The Heritage Impact Assessment (HIA) referred to in the title of this report includes a survey of heritage resources as outlined in the National Heritage Resources Act , Act 25 of 1999 (see Box 1).

Heritage 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.

The term 'pre-historic' 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 Rustenburg and Marikana areas in the North-West Province by the first colonists who settled in this area after c. 1839.

The term 'relatively 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 may, however, be almost sixty years old and these may qualify as heritage resources in the near future.

It is not always possible, based on observations alone, to distinguish clearly between archaeological remains and historical remains, or between historical remains and remains from the relatively recent past. Although certain criteria may help to make this distinction possible, these criteria are not always present, or, when they are present, they are not always clear enough to interpret with great accuracy. Criteria such as square floor plans (a historical feature) may serve as a guideline. However, circular and square floors may occur together on the same site.

The term 'sensitive remains' is sometimes used to distinguish graves and cemeteries, as well as ideologically significant features such as holy mountains, initiation sites or other sacred places. Graves in particular are not necessarily heritage resources if they date from the recent past and do not have headstones that are older than sixty years. The distinction between 'formal' and 'informal' graves in most instances also refers to graveyards that were used by colonists and by indigenous people. This distinction may be important, as different cultural groups may uphold different traditions and values with regard to their ancestors. These values have to be recognised and honoured whenever graveyards are exhumed and relocated.

The term '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).

The term '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.

Mining heritage sites refer to old, abandoned mining activities, underground or on the surface, which may date from the pre-historic, historical or the relatively recent past.

The term 'mining area' ('critical area') refers to the area where the developer wants to focus development activities.

The term 'peripheral area' refers to the area that will not be affected by the proposed new development activities.

The 'project area' refers to both the mining and peripheral areas.

Phase I studies refer to surveys using various sources of data in order to establish the presence of all possible types of heritage resources in any given area.

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 bodies and the relocation of graveyards, etc. Phase II work may require the input of specialists and requires the cooperation and approval of SAHRA.

4 THE IMPALA SHAFT 17 PROJECT AREA

4.1 Location

Impala Platinum intends to establish its Shaft 17 complex on the farm Vlakfontein 276JQ. The project area is bordered in the east by residential areas such as Serutube, Mafika, Setlhokwe, Rankunyana and Phetwane (from the north to the south) with Kana in the far south. The area falls under the Rustenburg Local Municipality in the Bojanala Platinum District in the North-West Province of South Africa.

Granite hills, part of the Thaba-ea-Nape (or Thaba-ea-Maralla) range of mountains, are scattered to the east of the project area with smaller kopjes and knolls to the west and inside the project area. These mountains and kopjes are in many instances covered with stone walled villages dating from the Late Iron Age, serving as remnants of the ancestors of many of the Tswana speaking people still living in the area today.

Other prominent beacons in the area include the Bospoort Dam located to the south-east of the project area and large mountains serving as historical beacons such as Malejane in the far east, Mmatshetshele along the banks of the Bospoort Dam, Motlhabe to the north-east and Pelane and Mafotlhelo to the north of the road running to Beestekraal further to the north-east (Rustenburg East [2527CB]: 1: 50 000) (Figure 5).

4.2 The nature of the project area

The Impala Shaft 17 mining complex will incorporate various types of infrastructure. Construction activities will be undertaken to make this infrastructure a reality while many activities have to be maintained in the short, medium and long term to keep the infrastructure viable. These infrastructure and activities will be limited to the Impala mining area (also referred to as the critical areas) whereas the peripheral areas cover land adjacent to the critical areas. The mining and peripheral areas are collectively referred to as the Impala Shaft 17 project area (see Terminology, Box 2).

The Impala Shaft 17 project area mainly consists of two main eco zones, namely:

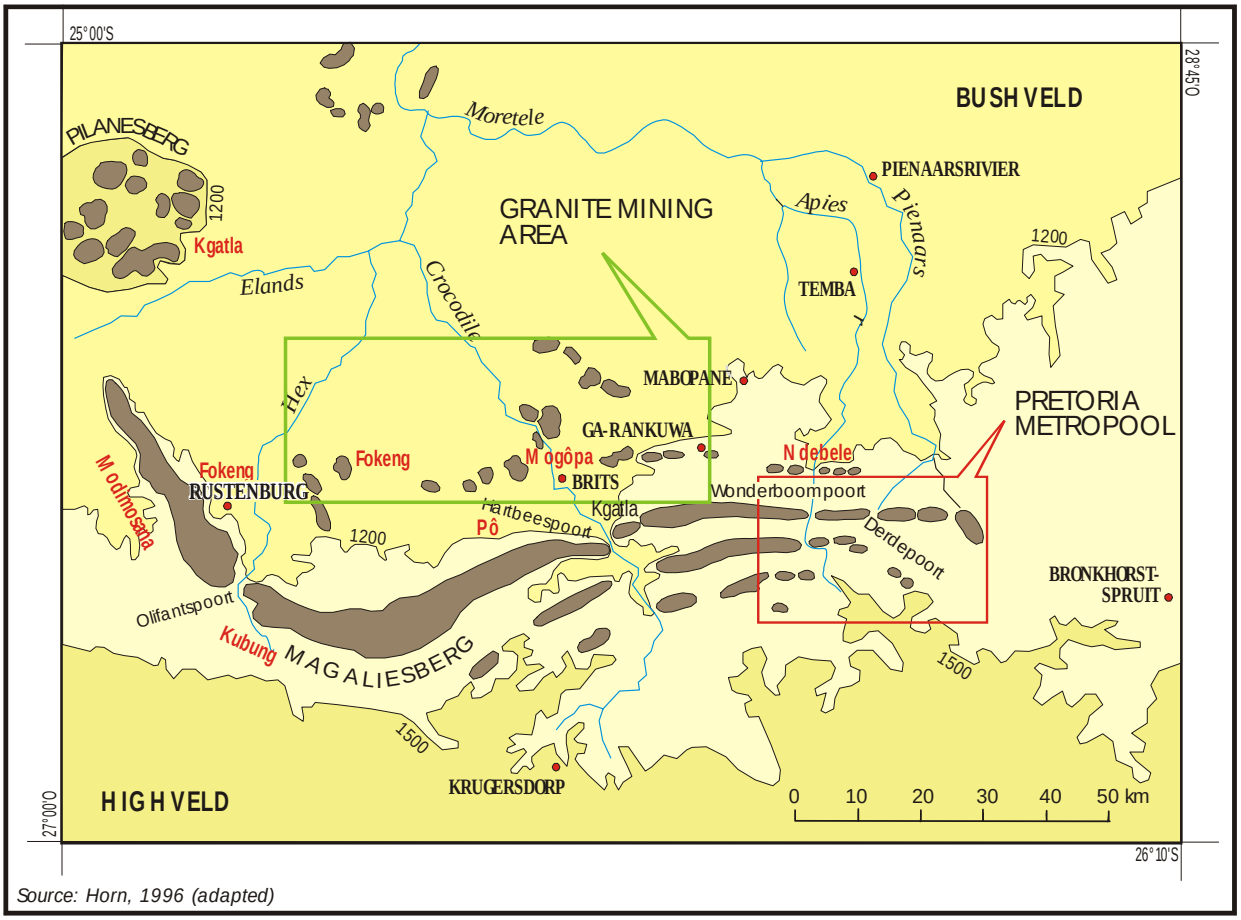
- A westerly part that is characterised by an outstretched piece of land that is covered with turf and with grass veldt as well as with patches of *acacia* trees.
- An undulating easterly border which is interspersed with granite knolls and protrusions that are covered with a large variety of vegetation. Some of these protrusions and hills which are part of the Thaba-ea-Nape range of mountains are associated with stone walled sites dating from the Late Iron Age. Many of these topographical features also serve as historical beacons as their names date from the immemorial past. (Many of the historical hills' names have been collected from spokespersons, see Part 9).

Figure 1- The western part of the Impala Shaft 17 project area consists of an outstretched piece of turf veldt with grass and patches of *acacia* trees. Heritage resources in this rather featureless landscape comprise of isolated stone walled sites which are usually located near granite dykes (above).

Figure 2- The eastern part of the Impala Shaft 17 project area incorporates the Thaba-ea-Nape range of hills. It is an undulating stretch of land as it is interspersed with granite hills and protrusions which are associated with Late Iron Age stone walled sites (above).

4.3 On the fringes of a cultural landscape

The series of granite hills bordering on the eastern perimeter of the Impala Shaft 17 project area are associated with large numbers of archaeological sites representing numerous Tswana spheres of influence dating from the last four hundred years. This time period is also referred to as the Late Iron Age. It is therefore necessary that the archaeological and historical significance of this cultural landscape be described and explained in more detail before the results of the Phase I HIA study is discussed (see Part 5).



Source: Horn, 1996 (adapted)

Figure 3- The Central Bankeveld is characterised by a conspicuous chain of granite hills where the heritage of numerous ancient Tswana chiefdoms which emerged in this fertile eco-zone existed during the last four centuries (adapted from Horn 1996).

5 CONTEXTUALISING THE PROJECT AREA

5.1 The Central Bankeveld

The Impala Shaft 17 complex 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 (Figure 3).

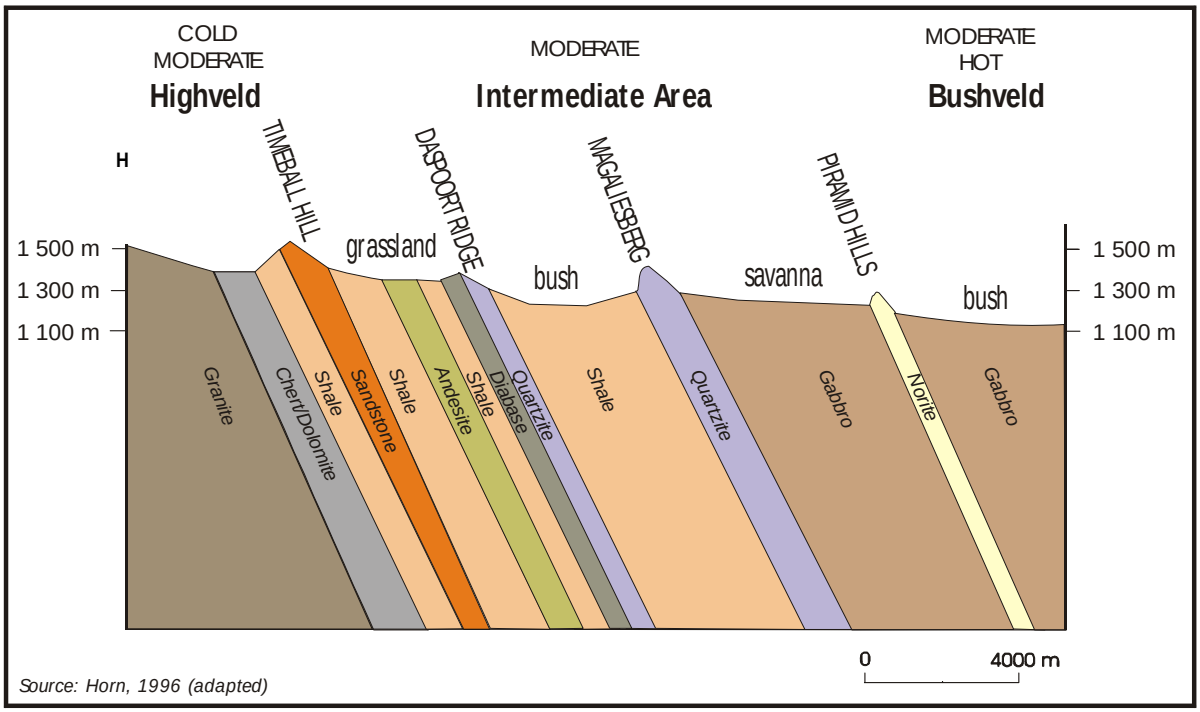


Figure 4- The topography, geology and climatic features of the Central Bankeveld where Late Iron Age Tswana spheres of influence flourished during the last four centuries (adapted from Horn, 1996).

5.2 Pre-historical context

The Impala Shaft 17 complex is located between the Magaliesberg in the west and the series of granite kopjes running from Thekwane in the south to near the Pilanesberg in the north. This area is known for its rich and diverse range of heritage resources. Stone Age sites are scattered along the Magaliesberg and are also found in caves and rock shelters in the mountain. Rock engravings are located further towards Maanhaarrand and Rustenburg in the west. 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.

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 1840.

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 were the Kwena Môgôpa, Kwena Môgale (Bapô), Bakgatla and Fokeng. Further to the west, closer to Rustenburg was the Fôkeng chiefdom while several Kgatla spheres of influence emerged further to the west near Brits. The Kgatla were subjected by Mzilikazi and were used as labourers to built one of the Ndebele's villages, probably known as emHlalandlela.

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. 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.

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.

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.

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.

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. One year later, in December 1836, Cornwallis Harris also visited the Central Bankeveld where he painted emHlalandlela near Brits.

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.

5.3 Brief history of the Fokeng

The Thaba-ea-Nape (also referred to as the Thaba-ea-Maralla) range of mountains on the eastern fringes of the Impala Shaft 17 project area, between Marikana and Rustenburg, was home to numerous ancestral rulers of the Fokeng people. According to oral tradition different branches (clans) of the Fokeng settled from the north to the south along this range of mountains from as early as the 17th century. The places of settlement were: Serutube, Marekana, Tsitsing (Kanana), Thekoane (Thekwana) and Photsaneng (Bleskop).

It is not necessary to describe the origins and the history of the Fokeng here in great detail. Only a broad outline of the genealogy of Fokeng rulers, from Nape (AD1700) to Môkgatle (AD1835) is outlined. Settlements that were associated with some of these rulers, although only a few are mentioned in oral tradition, are also indicated.

The oldest legends state that the Fokeng entered the Transvaal through Tweedepoort, under the leadership of Nape, the earliest known Fokeng chief. This was before AD1700 AD. The group moved south-eastwards and settled on the banks of the Elands River (Kgetleng). Three Fokeng groups detached themselves from the main branch and moved southwards on different occasions. The Fokeng are therefore spread over the Orange Free State, Lesotho and even the former homeland of Transkei. The Fokeng are, next to the San people, the oldest inhabitants of the Orange Free State.

The domain under Fokeng control during the last two centuries was the following: the northern border was the Kgetleng River (and the Tlôkwa and Kgatla Kgafêla chiefdoms); the western boundary was the Kwena Modimosana chiefdoms and the southern boundary the Magaliesberg. The eastern boundary was determined by the presence of the Kwena Môgôpa and the Kwena Mogale chiefdoms.

The history of the Fokeng begins with Sekete III (Maleriba) who probably ruled in AD1700. He had three sons Kgantsi, Pitswe and Diale. (The last two had the same mother). Kgantsi was born from a Hurutshe father after the Hurutshe had abducted his mother. (Controversy surrounded Sekete's III position until his death, although he was the oldest son).

Diale succeeded Sekete III and his reign probably began in AD1720. His sons were Mokuru, Mogotsi, Ramarwa, Ramogase, Tlase and Ntê. (The first two died young). Diale's sons freed the Fokeng from the Hurutshe's custom to castrate the Fokeng's bulls, an act that was considered offensive by the Fokeng as it indicated the Huruthse's seniority above the Fokeng. This particular incident put an end to the Huruthse's domination of the Fokeng.

With the exception of Ramorwa all the known sons of Diale became leaders of *dikgoro*, Ntê, the progenitor of the *kgoro* Seloko, Tlase, of Mathebetswaane and Ramogware of Metlapeng.

Ramorwa succeeded Diale as chief and had fours sons: Mmutle, Sekete, Katane and Mpie.

Sekete succeeded Ramorwa in about AD1790. He was a formidable warrior and is remembered as one of the greatest Fokeng chiefs. The following individuals were sons of Sekete: Thete, Nameng, Nôge, Mogotsi, Molefe, Pitswe, Ramarue, Mohue, Manaana, Rantsogwana and Marahtsane (more can be added). Important individuals were Thete, Nameng and Nôge.

Katane, or Raikane acted as regent for Thethe (also known as Mmakgongwana) who became the next chief. He had the following sons: Diale, Mokgatle, Molotlegi, Molefe, Liphatse and Pogwe. (The first, third and fifth died young). Môkgatle, Molefe and Pogwe played important parts in the next phase of Fokeng history.

Thethe was very found of his two younger brothers, Namemg and Nôge. The two brothers, however, turned against him. (The main concentration point in Thethe's time was at Makotshaneng [Makojaneng], east of Rustenburg near the Hex River). Thethe fled with his followers and took refuge with the Modimosana Mmatau. The Fokeng accepted Nameng as chief.

Nameng reigned for only eight months after the enforced departure of Thethe as he was killed by the doings of Nôge, who now became chief.

Nôge's rule commenced in about 1820 and ended when he was ousted in 1829 to 1830. Nôge's reign represents a stormy period in Fokeng history. Thethe invited the Pedi to attack the Fokeng whereupon Malekutu destroyed the Fokeng in 1823 to 1824. The devastation caused by the Pedi accounts for the fact that Mzilikazi amassed very little from the Fokeng's territory in 1826 to 1829.

Nôge killed Ndebele visitors to his village. He occupied the summit of Ntlhane, a 'hillock near Malejane', with his followers and bolstered the foot and slopes with wooden stockades. The Fokeng pounded the Ndebele with stones forcing them to retreat.

Nôge became unpopular and fled to Moshoeshoe in the Orange Free State.

Môkgatle's accession was somewhere between 1834 and 1836. His reign had hardly begun when the Voortrekkers drove the Ndebele out of the Transvaal. He remained in office until his death in 1891 when he was about eighty years old. His principal village was named Mmakgongwana (after Thethe), today located in Rustenburg and partly on Paardekraal. Dirêpotsana Hill, where Phokeng now stands, was also re-occupied as residential area in Mokgatle's time.

5.4 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 east 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.

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, Pampoennek and in Olifantsnek in the Magaliesberg, to the south of the Impala Shaft 17 project area.

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 granite mines in the North-West Province.

5 THE PHASE I HERITAGE IMPACT ASSESSMENT STUDY (HIA)

5.1 Types and ranges of heritage resources in and near the Impala mining area

The Phase I HIA for the Impala Shaft 17 project area revealed the following types and ranges of heritage resources, as outlined in Section 3 of the National Heritage Resources Act (Act No 25 of 1999):

- Stone walled sites dating from the Late Iron Age were found at some of the hills and protrusions on Vlakfontein 276JQ.
- Historical houses occur in Serutube, Kana, Rankunyana, Setlhokwe, Mafika and other villages in the Impala Shaft 17 peripheral area.
- A limited number of stone tools occur haphazardly across the project area.
- Remains dating from the more recent past.

The stone walled sites dating from the Late Iron Age and the remains from the recent past were geo-referenced. The co-ordinates for these heritage resources were determined by means of a GPS instrument and most of these heritage resources were mapped (Figure 5; Tables 1-2).

A broad description is provided below of all the types and ranges of heritage resources that were identified in the Impala Shaft 17 project area, some of which are illustrated by means of photographs. The Late Iron Age sites have been assigned a code in order to simplify the identification and description of these resources.

The various types and ranges of heritage resources are discussed according to their types (range). Heritage resources in and near the mining areas (which may be affected) and those in peripheral areas (which need not be affected) are clearly distinguished.

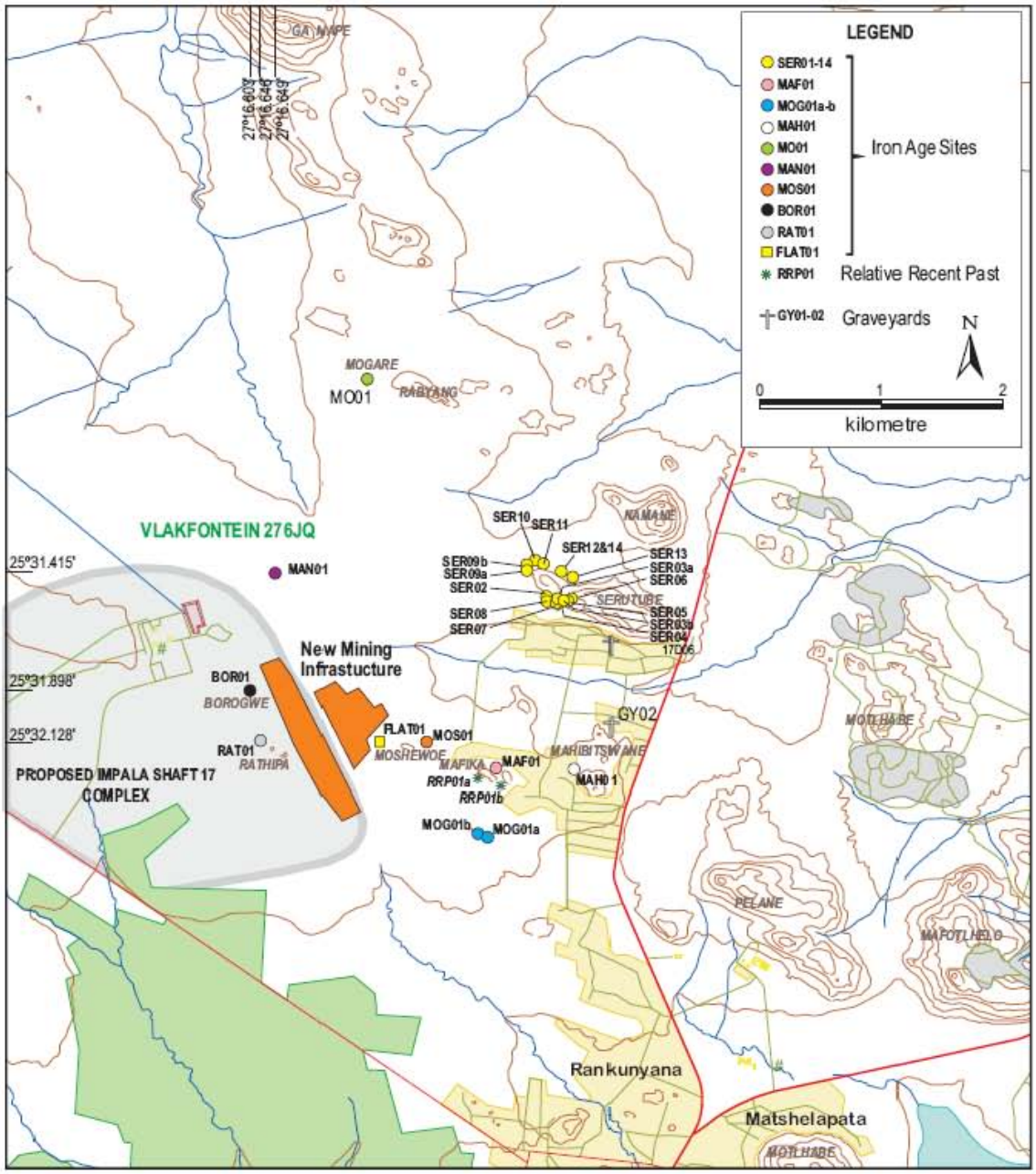


Figure 5- The Impala Shaft 17 project area on the farm Vlakfontein 276JQ near Rustenburg in the North-West Province (2527CB Rustenburg East; 1: 50 000 topographical map). The most important heritage resources discovered in the project area were stone walled settlements, isolated and haphazardly scattered stone tools and historical houses.

This figure indicate stone walled sites dating from the Late Iron Age along the base lines or plateaux of low granite protrusions in the Impala Shaft 17 project area. These settlements were occupied by Tswana people, most probably ancestors of the Fokeng who still occupy this area today.

5.2 Stone walled sites from the Late Iron Age

A considerable number of Late Iron Age stone walled sites occur in the Impala Shaft 17 project area. The majority are located in the granite hills in the peripheral area outside the Impala Shaft 17 project area. Most of these sites were mapped and geo-referenced (Figure 5; Tables 1 - 2).

The Late Iron Age sites are usually single settlements located along the bases of kopjes such as Namane and Mogare or are composed of clusters of several sites located along the lower slopes of large mountains such as Serutube or on plateaux of large protrusions such as Mogwaregware, Rathipa and Boithumelo.

There is at least a single isolated site on the plains between Rathipa and Moshewoe (FLAT01, with no coordinates available). Isolated, single walls or enclosures occur at some hills and probably served specific functions such as cattle enclosures, initiation sites or dwellings for persons ostracised from villages. These remains were not geo-referenced as settlements.

Single sites are merely composed of one *kgôrô* while clusters of stone walled sites are composed of varying numbers of individual sites (*dikgôrô*) that were grouped together to form a village (*motse*) which covers a relatively large surface. The most outstanding settlements can be found in association with the hills Rathipa, Mangano (or Boithumelo), Mogwaregware and Serutube.

The stone walled sites represent Tswana settlements which were composed of the following spatial features: A single village (*kgôrô*) or a conglomeration of villages (*dikgôrô*). A typical *kgôrô* is characterized by an outer scalloped wall that encircles central kraal complexes that were usually linked together. The outer scalloped walls still contain the remains of dwellings (huts) within their surrounding yards (*malapa*) that were occupied by the various family groups (*masika*), central kraal complexes composed of courts (*makgotla*) and enclosures for domestic stock.

Figure 6- A stone walled site in a ravine along the southern side of Serutube mountain (below).

Figure 7- Some of he extensive stone walled sites along the western slope of Rathipa (below). These sites are covered with grass and vegetation and can not be seen clearly.

Figure 8- Some of the extensive stone walled sites associated with Rathipa is currently covered with thick vegetation (below). These sites represent several *dikgôrô* which are associated with Fokeng clans (below).

Figure 9- Lines of stones (partly disturbed as a result of gravity) on the bare rocky surfaces of Moshewoe. These stone lines are part of Late Iron Age sites (below).

Figure 10- The extensive settlement on Mangano (or Boithumelo) which is currently covered with thick vegetation. Site MAN01 is located outside the new proposed Shaft 17 project area.

Figure 11- A site with no stone walls along the northern slope of Serutube. These sites may easy be missed as they are inconspicuous and can only be recognised by the experienced archaeologist (below).

LATE IRON AGE SITES	CO-ORDINATES	DESCRIPTION
MAF01 (Mafika)	25º 32.250' 27º 17.692'	Large enclosure associated with outer wall, walls in valley in mountain and with majestic rocks
MOG01a & MOG01b (Mogwaregware)	25º 32.553' 27º 17.651' 25º 32.540' 27º 17.610'	The two coordinates are part of the same extensive site that covers a large flat plateau on Mogwaregware.
MAH01 (Mahibitswane)	25º 32.249' 27º 18.044'	Situated between granite protrusions on Mahibitswane to the east of village. This site is located on several stepped terraces. Site MAH01 has been damaged as the village of Serutube has encroached on the stone walled site.
MO01 (Mogare)	25º 30.513' 27º 17.115'	Mogare is the north-westerly of the Namane-Mogare series of hills drifting across the eastern perimeter of the project area.
Mangano or Boithumelo (MAN01)	25º 31.415' 27º 16.649'	This is an excellently preserved site next to a granite knoll fitted with a trig beacon. It is marked by extensive stone walls, deep archaeological deposits and an abundance of surface material.
MOS01 (Moshewoe)	25º 02.091' 27º 17.371'	This site is marked by short stretches of stone walls, an enclosure and lines of stones on the surface of granite boulders. No evidence of a coherent site.
RAT01 (Rathipa)	25º 32.128' 27º 16.646'	This is an excellently preserved site next to a granite knoll. It is marked by extensive stone walls, deep archaeological deposits and an abundance of surface material.
BOR01 (Borogwe)	25º 31.898' 27º 16.603'	This is two small granite knolls with a few stone walls.
FLAT01	No coordinates	This site is located on a flat area between Rathipa and Moshewoe that does not cover a large surface.

Table 1- Coordinates for Late Iron Age sites. Site RAT01, MOG01, FLAT01 and MAN01 are located in or near the proposed new Impala Mining area (above).

5.3 Historical houses

Numerous (historical) houses that are older than sixty years occur in Serutube, Kana, Rankunyana, Sethlokwe, Mafika and other villages in the Impala Shaft 17 peripheral area. All houses older than sixty years are protected by the National Heritage Resources Act (No 25 of 1999).

Many of the historical houses in the Impala Shaft 17 project area are severely dilapidated. Those that are still in a good condition are occupied and are not endangered by the proposed new mining activities. The fact that historical houses do occur and that they are protected by the National Heritage Resources Act (Act No 25 of 1999), however, should be taken into account when blasting is to be done near villages, or when expansion activities are considered for the future.

Figure 12- A historical house in Serutube (above). Houses like these are older than sixty years and are protected by the National Heritage Resources Act (No 25 of 1999). These houses are not endangered by the proposed development.

5.4 Scattered stone tools that occur haphazardly

A limited number of scattered stone tools were observed in places in the mining and project areas. The stone tools were all manufactured from hornfels and they include cores, scraper and points.

These stone tools will not be affected by the proposed new development project.

5.5 Remains from the recent past

Remains from the recent past, some with historical significance, were observed in the Impala Shaft 17 project area. These remains will not be affected by the proposed development. These sites have been geo-referenced (Table 2), namely:

5.5.1 Site RRP01

Site RRP01 is located in a saddle in Mafika as well as along the eastern foot of this mountain. These remains cover a large surface and consist of enclosures, several stone walls and structures with square ground plans. These remains are associated with middens and with surface material such as pottery, animal bone waste material and pieces of glass.

It seems as if this site may date from the Late Iron Age and that part of it may have been readapted in historical times and occupied into the more recent past. However, unaffected parts of the site still remain and reflect its Late Iron Age and historical origins.

5.5.2 Site RRP02

A limited number of stone walls and what seems like terraces occur along the base of kopje to the south of Moshewoe in the southern part of the Impala Shaft 17 project

area. Upright foundations stones with square ground plans also occur on level ground close to the base of the kopjes.

It seems as if these remains date from the recent past and that some remains from the Late Iron Age may have been adapted to be used by people in the more recent past.

Heritage resources	Coordinates	Description
Site RRP01a Site RRP01b	25º 32.327' ; 27º17.711' 25º 32.292' ; 27º17.610'	Covers a saddle in Mafika as well as the southern foot of this kopje. Iron Age and historical affinities.
Site RRP02	25º 31.898' ; 27º 16.603'	Upright foundation stones with square ground plans to the south of Moshewoe

Table 2- Co-ordinates for sites dating from the relatively recent past (above).

Figure 13- Extensive remains with Late Iron Age and historical affinities on Mafika. These remains may have been adapted when the site was occupied in the more recent past (above).

6 THE SIGNIFICANCE AND IMPACT ON LATE IRON AGE SITES IN AND NEAR THE IMPALA MINING AREA

6.1 Late Iron Age sites in and near the Impala mining area

A relatively wide range of heritage resources were observed in the Impala Shaft 17 project area. However, only heritage resources in and near the Impala mining area will be affected by the proposed new development project. These heritage resources include the following:

- The Late Iron Age stone walled sites at Rathipa and Borogwe in the Impala Shaft 17 mining area (RAT01, BOR01).
- A site located on the flats between Rathipa and Moshewoe (FLAT01).
- Possibly, the stone walled sites at Mangano (MAN01) (also called Boithumelo) slightly to the north of the Impala Shaft 17 complex.

6.2 The significance of the Late Iron Age sites

The level of significance of all heritage resources in the Impala project area and the possibility of impact on these heritage resources during the construction and future existence of the Impala Shaft 17 complex are indicated in Table 3. However, only the stone walled sites RAT01 and BOR01 in the Impala mining area, Site FLAT01 on the edge of the mining area and possibly the stone walled sites at Mangano (MAN01) slightly to the north of the Impala mining area may be affected by the proposed Impala Shaft 17 project.

The significance of the stone walled sites that may be affected by the Impala Shaft 17 complex can be determined according to the following criteria:

- The mountains of Rathipa, Borogwe, Mangano (as well as others in the area, such as Mafika, Serurube, etc.) are historical beacons, as they are associated with human occupation during the last four hundred years.
- The sites and complexes of sites associated with these mountains and knolls were occupied simultaneously by hundreds perhaps thousands of people who

lived in these villages from pre-historic times (AD1650 to 1880) well into the historical period.

- These sites and the surrounding landscape represent a ‘cultural landscape’ which is unique, as it reflects a regional history, in particular that of the Fokeng.
- These site complexes are unique in the context of the Late Iron Age as they contain settlements that are characteristic of Tswana populations.
- Some of the sites and complexes of sites on the eastern perimeter of the Impala Shaft 17 project area are in an excellent (pristine) condition and have not been affected by any development in the past. These sites offer outstanding research opportunities, as they represent archaeological ‘laboratories’ which can be utilised for decades to come. The settlements offer exceptional educational and tourism potential, if they are developed according to correct scientific and museological principles.
- Sites and complexes of sites in the Thaba-ea-Nape range of mountains are endangered as developments in the region, such as granite mining, are threatening the future existence of this cultural landscape.
- Living relatives of the people whose ancestors lived at some of the sites possibly still live in the area, although general knowledge about this historical continuity has been erased by historical factors.

There is consequently little doubt that sites such as RAT01, BOR01, FLAT01 and MAN01 have **HIGH** significance (Table 4).

Types of heritage resources in the Impala Shaft 17 project and mining areas	Possibility of impact on heritage resources	Level of significance of heritage resources
Sites RAT01, BOR01 in mining area, FLAT01 and MAN01 on edge of mining area	**HIGH**	**HIGH**
Randomly scattered stone tools	LOW	LOW
Historical houses	LOW	MEDIUM TO HIGH
Remains from the recent past	LOW	LOW

Table 3- Levels of significance of the heritage resources in the Impala Shaft 17 project and mining areas and the possibility of any impact on these remains during the construction and future existence of the shaft (above).

6.3 Possible impact on the Late Iron Age sites

The stone walled sites at Rathipa (RAT01) and Borogwe (BOR01) are located in the Impala mining area, the site on the flats between Rathipa and Moshewoe (FLAT01) is situated on the edge of the Impala mining area and the sites at Mangano (MAN01) is situated slightly to the north of the northern edge of the Impala mining area. These sites, particularly RAT01, BOR01 and FLAT01 will most likely be affected by the proposed Shaft 17 complex's development. Two possible scenarios exist with regard to impact on these stone walled sites, namely:

- A partial or full impact on any of these sites due to the development of the Impala Shaft 17 complex and some of its extended infrastructure such as roads, railway lines, tailings dams, pipe lines, etc;
- Accidental or unknowing impact on any of these sites even if attempts are made to avoid these sites during the construction period or during the future, indefinite existence of the Shaft 17 complex.

The possibility of impact on all types and ranges of heritage resources in the Impala project area during the construction and the operation of the Impala Shaft 17 complex is indicated in Table 3. The possibility of impact on sites at RAT01, BOR01,

FLAT01 and MAN01 is indicated as **'HIGH'** (Table 3). These sites are not only confined to the hills themselves (except FLAT01) but also extend considerable distances away from the bases of the hills.

Sites RAT01, BOR01, FLAT01 and MAN01 are protected by the National Heritage Resources Act (No 25 of 1999) and may not be affected (damaged, demolished) during the construction or the future existence of the Impala Shaft 17 complex *prior* to these sites been subjected to Phase II mitigation measures (investigations).

6.4 Mitigating and managing the Late Iron Age sites

It is recommended that these sites be subjected to mitigation measures as required by Section 38 of the National Heritage Resources Act (No 25 of 1999). Phase II mitigation measures for significant archaeological sites which may be affected [damaged, altered, demolished] by the development of the Shaft 17 complex require that archaeological sites be documented (surveyed, excavated, sampled) *prior* to these sites been affected (damaged, altered, destroyed) as a result of the construction or the future operation of the Impala Shaft 17 complex.

The Phase II investigations would cover for any accidental (unknowing) or deliberate alterations (destruction) that may be brought to any of the sites around the base of Rathipa, Borogwe, the site on the flats (FLAT01) between Rathipa and Moshewoe and the sites at Mangano (MAN01) during the construction or the future existence of the Impala Shaft 17 complex.

Phase II investigations must be done by archaeologists accredited with ASAPA who must acquire the necessary permit for the mitigation measures which must be conducted *prior* to the alteration (accidental damage, deliberate destruction) of the archaeological sites.

7 CONCLUSION AND RECOMMENDATIONS

A relatively wide range of heritage resources were observed in the Impala project area. However, only heritage resources in and near the Impala mining area will be affected by the proposed new development project. These heritage resources include the following:

- The Late Iron Age stone walled sites at Rathipa and Borogwe in the Impala Shaft 17 mining area (RAT01, BOR01).
- A site located on the flats between Rathipa and Moshewoe (FLAT01).
- Possibly, the stone walled sites at Mangano (MAN01) (also called Boithumelo) slightly to the north of the Impala Shaft 17 complex.

The level of significance of all heritage resources in the Impala project area and the possibility of impact on these heritage resources during the construction and future existence of the Impala Shaft 17 complex are indicated in Table 4. However, only the stone walled sites RAT01 and BOR01 in the Impala mining area, Site FLAT01 on the edge of the mining area and possibly the stone walled sites at Mangano (MAN01) slightly to the north of the Impala mining area may be affected by the proposed Impala Shaft 17 project.

The significance of the stone walled sites that may be affected by the Impala Shaft 17 complex can be determined according to the following criteria:

- The mountains of Rathipa, Borogwe, Mangano (as well as others in the area, such as Mafika, Serurube, etc.) are historical beacons, as they are associated with human occupation during the last four hundred years.
- The sites and complexes of sites associated with these mountains and knolls were occupied simultaneously by hundreds perhaps thousands of people who lived in these villages from pre-historic times (AD1650 to 1880) well into the historical period.
- These sites and the surrounding landscape represent a ‘cultural landscape’ which is unique, as it reflects a regional history, in particular that of the Fokeng.

- These site complexes are unique in the context of the Late Iron Age as they contain settlements that are characteristic of Tswana populations.
- Some of the sites and complexes of sites on the eastern perimeter of the Impala Shaft 17 project area are in an excellent (pristine) condition and have not been affected by any development in the past. These sites offer outstanding research opportunities, as they represent archaeological 'laboratories' which can be utilised for decades to come. The settlements offer exceptional educational and tourism potential, if they are developed according to correct scientific and museological principles.
- Sites and complexes of sites in the Thaba-ea-Nape range of mountains are endangered as developments in the region, such as granite mining, are threatening the future existence of this cultural landscape.
- Living relatives of the people whose ancestors lived at some of the sites possibly still live in the area, although general knowledge about this historical continuity has been erased by historical factors.

There is consequently little doubt that sites such as RAT01, BOR01, FLAT01 and MAN01 have **HIGH** significance (Table 4).

These sites, particularly RAT01, BOR01 and FLAT01 will most likely be affected by the proposed Shaft 17 complex's development. Two possible scenarios exist with regard to impact on these stone walled sites, namely:

- A partial or full impact on any of these sites due to the development of the Impala Shaft 17 complex and some of its extended infrastructure such as roads, railway lines, tailings dams, pipe lines, etc.
- Accidental or unknowing impact on any of these sites even if attempts are made to avoid these sites during the construction period or during the future, indefinite existence of the Shaft 17 complex.

The possibility of impact on sites at RAT01, BOR01, FLAT01 and MAN01 is indicated as **'HIGH'** (Table 4). These sites are not only confined to the hills themselves, except FLAT01 which is spread out across level land, but also extend

considerable distances away from the bases of the hills.

Sites RAT01, BOR01, FLAT01 and MAN01 are protected by the National Heritage Resources Act (No 25 of 1999) and may not be affected (accidentally damaged or deliberately demolished) during the construction or the future existence of the Impala Shaft 17 complex.

It is therefore recommended that these sites be subjected to mitigation measures as required by Section 38 of the National Heritage Resources Act (No 25 of 1999). Phase II mitigation measures for significant archaeological sites require that such sites be documented (surveyed, excavated, sampled) *prior* to these sites been affected (damaged, altered, destroyed) as a result of the construction or the future operation of the Impala Shaft 17 complex.

The Phase II investigations would cover for any accidental (unknowing) or deliberate alterations (destruction) that may be brought to any of the sites around the base of Rathipa, Borogwe, the site on the flats (FLAT01) between Rathipa and Moshewoe and the sites at Mangano (MAN01) during the construction or the future, indefinite existence of the Impala Shaft 17 complex.

Phase II investigations must be done by archaeologists accredited with ASAPA who must acquire the necessary permit for the mitigation measures which must be conducted *prior* to the alteration (accidental damage, destruction) of the archaeological sites.

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9 SPOKESPERSONS CONSULTED

Michak Ramitlua. Cattle herder well acquainted with the geography of the project area.

Steven Motswe. Cattle herder well acquainted with the geography of the project area.