

APPENDIX L: CULTURAL-HERITAGE STUDY

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**AN UPDATED PHASE I HERITAGE IMPACT ASSESSMENT
(HIA) STUDY FOR PILANESBERG PLATINUM MINE'S (PPM)
PROPOSED PLANT EXPANSION PROJECT NEAR THE
PILANESBERG IN THE NORTH-WEST PROVINCE**

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ACRONYMS AND ABBREVIATIONS

AIA Archaeological Impact Assessment

ASAPA Association of South African Professional Archaeologists

CRM Cultural Resource Management

EAP Environmental Assessment Practitioner

ECO Environmental Control Officer

EIA Environmental Impact Assessment

EMP Environmental Management Plan

EIA Early Iron Age

ESA Early Stone Age

GPS Global Positioning System

HIA Heritage Impact Assessment

IEM Integrated Environmental Management

I & Aps Interested and Affected Parties

LIA Late Iron Age

LSA Late Stone Age

MIA Middle Iron Age

MPRDA Mineral and Petroleum Resources Development Act, 28 of 2002

MSA Middle Stone Age

NEMA National Environmental Management Act, 107 of 1998

NEMBA National Environmental Management: Biodiversity Act, 10 of 2004

NEMAQA National Environmental Management: Air Quality Act, 39 of 2004

NEMWA National Environmental Management: Waste Act, 59 of 2008

NHRA National Heritage Resources Act, 25 of 1999

NWA National Water Act, 36 of 1998

OSHA Occupational Health and Safety Act, 85 of 1993

PHRA Provincial Heritage Resource Agency

RSA Republic of South Africa

SAHRA South African Heritage Resources Agency

SAHRIS South African Heritage Resources Information System

ToR Terms of Reference

TERMINOLOGY

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

- **Conservation:** Maintaining all or part of a renewable or non-renewable resource in its present condition to provide for its continued 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:** 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 people 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.
- 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 involves permitting processes, requires the input of different specialists and the co-operation and approval of the SAHRA.

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 Pilanesberg Platinum Mine's (PPM) proposed Plant Expansion Project near the Pilanesberg 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 as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) (see Box 1) (except paleontological remains) do occur in the Project Area.
- To establish if any of these heritage resources may be affected by the proposed Plant Expansion Project and, if so, to determine the significance of the impacts on these heritage resources.
- To recommend appropriate mitigation measures for those types and ranges of heritage resources which may be affected by the Plant Expansion Project.

The Phase I HIA for the proposed Plant Expansion 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) in the PPM Project Area, namely:

- A stone walled complex along the eastern foot of Mukukunupu

This stone walled complex was geo-referenced, tabulated and mapped (Figure 6 - 9; Table 1).

The significance of the stone walled sites

The significance of the stone walled sites must be determined in order to establish the significance of the impact on any of these remains. This will determine whether any mitigation measures may be required for the stone walled complex which may be negatively affected by the PPM Plant Expansion Project.

The stone walled sites comprise remains which are older than sixty years and which qualify as archaeological remains and which therefore are protected by the National Heritage Resources Act (No 25 of 1999).

The stone walled sites are rated as of medium to high significance. This rating is based on the use of two rating (grading) schemes, namely:

- A scheme of criteria which outlines places and objects as part of the national estate as they have cultural-historical significance or other special value (outlined in Section 3 of the NHRA [Act No 25 of 1999] (see Box 1) (Table 3).
- A field rating scheme according to which heritage resources are graded in three tiers (levels) of significance based on the regional occurrence of heritage resources (Table 4) (Section 7 of the NHRA [Act No 25 of 1999]).

Criteria to be part of the national estate

The NHRA (No 25 of 1999) distinguishes nine criteria for places and objects to be 'part of the national estate' if they have cultural significance or other special value, namely (also see Box 1):

- **Its importance in/to the community, or pattern of South Africa's history;**
- **Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;**
- **Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;**
- Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- **Its importance in demonstrating a high degree of creative or technical achievement at a particular period;**
- **Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;**
- **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
- Sites of significance relating to the history of slavery in South Africa.

The highlighted criteria reflect aspects of the historical, social, technical or scientific significance (research, use and application, e.g. in tourism industry) of the stone walled sites. According to these criteria the significance of the stone walled sites is graded as of medium to high significance (Table 3).

Field rating scheme for stone walled sites

Grading of heritage resources remains the responsibility of heritage resources authorities. However, in terms of minimum standards SAHRA requires that heritage reports include field

ratings in order to comply with Section 38 of the NHRA (No 25 of 1999). The NHRA (No 25 of 1999, Section 7) provides for a three-tier grading system for heritage resources. The field rating process is designed to provide a qualitative and quantitative rating of heritage resources. The rating system distinguishes three categories of heritage resources:

- Grade I Heritage resources hold qualities so exceptional that they are of special national significance.
- Grade II Heritage resources hold qualities which make them significant within the context of a province or a region.
- **Grade III heritage resources are worthy of conservation, i.e. are generally protected in terms of Sections 33 to 37 of the NHRA (No 25 of 1999).**

According to the highlighted field rating scheme the stone walled sites can be rated as medium to high significance and can be destroyed after the remains have been recorded and a permit obtained from SAHRA for allowing for the destruction of the remains (Table 4).

Possible impact on the stone walled sites

According to the current layout plan for the PPM Plant Expansion Project the following can be noted:

- None of the stone walled sites identified in the project area will be directly affected by the PPM Plant Expansion Project.
- The stone walled complex occurs at a safe distance from where the proposed Training Centre could be established (Figure 7).

The significance of the impact on the stone walled sites

None of the stone walled sites will be affected by the proposed PPM Plant Expansion Project. The significance of the impact on these remains therefore is very low (Table 5)

Managing the stone walled sites

The stone walled sites along the lower foot slope of Mukukunupu must be avoided by all developmental activities. Notice boards with the following inscriptions can be erected along the fence and dirt road that border the settlements: 'Caution Archaeological sites. Avoid as any damage caused may lead to prosecution'.

Summary

None of the stone walled sites identified in the Project Area need to be affected by the PPM Plant Expansion Project. Consequently, there is no reason from a heritage point of view why the proposed PPM Plant Expansion Project cannot proceed.

General: disclaimer

It is possible that this Phase I HIA study may have missed heritage resources in the Project Area as heritage sites may be covered with grass or vegetation while others 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 the construction, operation or closure of the proposed PPM Plant Expansion Project the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notify in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.

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1 INTRODUCTION

1.1 Background

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).

1.2 Aims with this report

This study comprises a Phase I HIA survey and assessment for PPM's proposed Plant Expansion Project. The aims with the Phase I HIA were the following:

- 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) (see Box 1) occur with the footprint of the proposed Plant Expansion Project (hereafter referred to as the Project Area) and, if so,
- To determine the significance of these heritage resources, and,
- To make recommendations regarding the mitigation and/or the conservation of any significant heritage resources that may be affected by the proposed Plant Expansion Project.

1.3 Assumptions and limitations

The findings, observations, conclusions and recommendations reached in this report are based on the author's best scientific and professional knowledge, available information and his ability to keep up with the physical and other comprehensive challenges that the project commanded. The author has a good understanding of the types and ranges of heritage resources that occur in the Project Area as he was

involved in several heritage impact assessment studies in the larger area during the last fifteen years.

The report's findings are based on accepted archaeological survey and assessment techniques and methodologies.

The author preserves the right to modify aspects of the report including the recommendations if and when new information becomes available particularly if this information may have an influence on the reports final results and recommendations.

The heritage survey may have missed heritage resources as heritage sites may occur in tall grass or thick clumps of vegetation whilst others may be located below the surface of the earth and may only be exposed once development commences.

It is also possible that heritage resources may simply have been missed as a result of human failure.

2 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-)

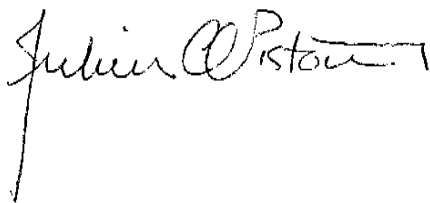
Accreditation: Member of the Association for Southern African Professional Archaeologists. (ASAPA)

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 Ekurhuleni, Hartebeespoort and heritage management plans for the Magaliesberg and Waterberg. Since acting as an independent consultant he has done approximately 800 large to small heritage impact assessment reports. He has a longstanding working relationship with Eskom, Rio Tinto (PMC), Rio Tinto (EXP), Impala Platinum, Angloplats (Rustenburg), Lonmin, Sasol, PMC, Foskor, Kudu and Kelgran Granite, Bafokeng Royal Resources, Pilanesberg Platinum Mine (PPM) etc. as well as with several environmental companies.

3 DECLARATION OF INDEPENDENCE

I, Dr Julius CC Pistorius declare the following:

- I act as an independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even, if this result in views and findings that are not favourable for the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialists report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the applications;
- I will comply with the Act, Regulations and other applicable legislation;
- I will consider, to the extent possible, the matters listed in Regulation 13;
- I understand to disclose to the applicant and the competent authority all material information in my possession
- All the particulars furnished by me in this form are true and correct 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; and
- I realise that a false declaration is offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



18 February 2019

4 LEGAL FRAMEWORK

South Africa's heritage resources ('national estate') are protected by international, national, provincial and local 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).

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 (NHRA, Act No 25 of 1999). According to the NHRA (Act No 25 of 1999) heritage resources are categorized 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 (PHRA's) 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 and provincial acts and is implemented by the South African Heritage Resources Agency (SAHRA) and the Provincial Heritage Resources Agencies (PHRA's).

4.1 Legislation relevant to heritage resources

Legislation relevant to South Africa's national estate includes the following:

- National Environmental Management Act (NEMA) Act 107 of 1998
- Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
- National Heritage Resources Act (NHRA) Act 25 of 1999
- Development Facilitation Act (DFA) Act 67 of 1995

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

4.1.1 NEMA

The NEMA stipulates under Section 2(4)(a) that sustainable development requires the consideration of all relevant factors including (iii) the disturbance of landscapes and sites that constitute the nation's cultural heritage must be avoided, or where it cannot be altogether avoided, is minimised and remedied. Heritage assessments are implemented in terms of the NEMA Section 24 in order to give effect to the general objectives. Procedures considering heritage resource management in terms of the NEMA are summarised under Section 24(4) as amended in 2008. In addition to the NEMA, the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEMPA) may also be applicable. This act applies to protected areas and world heritage sites, declared as such in terms of the World Heritage Convention Act, 1999 (Act No. 49 of 1999) (WHCA).

4.1.2 MPRDA

The MPRDA stipulates under Section 5(4) no person may prospect for or remove, mine, conduct technical co-operation operations, reconnaissance operations, explore for and produce any mineral or petroleum or commence with any work incidental thereto on any area without (a) an approved environmental management programme or approved environmental management plan, as the case may be.

4.1.3 NHRA

According to Section 3 of the NHRA (Act No 25 of 1999) the 'national estate' comprises a wide range and various types of heritage resources (see Box 1).

4.1.3.1 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 000m² or which involve three or more existing erven or subdivisions thereof
- Re-zoning of a site exceeding 10 000 m²
- Any other category provided for in the regulations of SAHRA, a provincial or local heritage authority or any other legislation such as NEMA, MPRDA, etc.

4.1.3.2 Section 34 (Buildings and structures)

Section 34 of the NHRA provides for general protection of structures older than 60 years. According to Section 34(1) 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..

Most importantly, Section 34(1) clearly states that no structure or part thereof may be altered or demolished without a permit issued by the relevant Provincial Heritage Resources Authority (PHRA). These permits will not be granted without a HIA being completed. A destruction permit will thus be required before any removal and/or demolition may take place, unless exempted by the PHRA according to Section 34(2) of the NHRA.

4.1.3.3 Section 35 (Archaeological and palaeontological resources and meteorites)

Section 35 of the NHRA provides for the general protection of archaeological and palaeontological resources, and meteorites. In the event that archaeological resources are discovered during the course of development, Section 38(3) specifically requires that the discovery must immediately be reported to the PHRA, or local authority or museum who must notify the PHRA. Furthermore, no person may without permits issued by the responsible heritage resources authority 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.

4.1.3.4 Section 36 (Burial grounds and graves)

Section 36 of the NHRA allows for the general protection of burial grounds and graves. Should burial grounds or graves be found during the course of development, Section 36(6) stipulates that such activities must immediately cease and the discovery reported to the responsible heritage resources authority and the South

African Police Service (SAPS). Section 36 also stipulates that 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
- 9(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.

Section 36 of the NHRA divides graves and burial grounds into the following categories:

- 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

Human remains less than 60 years old are subject to provisions of the National Health Act, 2003 (Act No 61 of 2003), Ordinance 12 of 1980 (Exhumation Ordinance) and Ordinance No 7 of 1925 (Graves and dead bodies Ordinance, repealed by Mpumalanga). Municipal bylaws with regard to graves and graveyards may differ. Professionals involved with the exhumation and relocation of graves and graveyards must establish whether such bylaws exist and must adhere to these laws.

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

Permission for the exhumation and relocation of graves older than sixty years must also be gained from descendants of the deceased (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).

4.1.3.5 Section 37 (Public monuments and memorials)

Section 37 makes provision for the protection of all public monuments and memorials in the same manner as places which are entered in a heritage register referred to in Section 30 of the NHRA.

4.1.3.6 Section 38 (HRM)

Section 38 (8): The provisions of this section do not apply to a development as described in Section 38 (1) if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989), or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act No. 50 of 1991), or any other legislation. Section 38(8) ensures cooperative governance between all responsible authorities through ensuring that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of Subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent.

The Listed Activities in terms of the Government Notice Regulations (GNRs) stipulated under NEMA for which Environmental Authorisation (EA) will be applied for will trigger a HIA as contemplated in Section 38(1) above as follows:

4.4.4 NEMA Appendix 6 requirements

NEMA Regulations (2014) (as amended) - Appendix 6	Relevant section in report
Details of the specialist who prepared the report	Dr Julius CC Pistorius
The expertise of that person to compile a specialist report including a curriculum vitae	Part 2. Details of the specialist
A declaration that the person is independent in a form as may be specified by the competent authority	Part 3. Declaration of independence
An indication of the scope of, and the purpose for which, the report was prepared	Part 1. Introduction
An indication of the quality and age of base data used for the specialist report	Part 7. Approach and Methodology Part 7.1 Databases, literature survey and maps
A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change	Part 8.1. Field survey
The duration date and season of the site investigation and the relevance of the season to the outcome of the assessment	Part 7. Approach and Methodology
A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Part 7. Approach and Methodology Part 8.1. Field survey
Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure inclusive of a site plan identifying site alternatives	Part 8. Heritage survey
An identification of any areas to be avoided, including buffers	Part 8. Heritage assessment
A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Figure 6
A description of any assumptions made and any uncertainties or gaps in knowledge;	Part 1.3. Assumptions and limitations
A description of the findings and potential implications of such findings on the impact of the proposed activity or activities	Part 9.5 Summary Part 10. Conclusion and recommendations
Any mitigation measures for inclusion in the EMPr	Part 9.4. Managing the heritage resources
Any conditions for inclusion in the environmental authorisation	None
Any monitoring requirements for inclusion in the EMPr or environmental authorisation	None
A reasoned opinion as to whether the proposed activity or portions thereof should be authorised and regarding the acceptability of the proposed activity or activities	Part 9.5. Summary Part 10. Conclusion and recommendations
If the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Part 9.5. Summary Part 10. Conclusion and recommendations

NEMA Regulations (2014) (as amended) - Appendix 6	Relevant section in report
A description of any consultation process that was undertaken during the course of preparing the specialist report	Part 7.3. Consultation process undertaken and comments from interested & affected parties
A summary and copies of any comments received during any consultation process and where applicable all responses thereto	Part 7.3. Consultation process undertaken and comments from interested & affected parties
Any other information requested by the competent authority.	None

5 THE PILANESBERG PLATINUM MINE PLANT EXPANSION PROJECT

5.1 Location

The PPM Project Area stretches across parts of the farms Rooderand 46JQ, Witkleifontein 136JP, Tuschenkomst 135JP and Ruighoek 169JP near the north-western and northern perimeters of the Pilanesberg in the North-West Province. The PPM Project Area has been affected by mining activities such as the establishment of open cast pits for the mining of platinum; the dumping of waste rock; the establishing of a mineral processing plant and other mine related infrastructure as well as the developing, upgrading and relocation of roads, etc..

The PPM Plant Expansion Project occurs within the footprint of the mine's existing infrastructure and operational area (2526BB Mabeskraal and 2527AA Saulspoort; 1: 50 000 topographical maps) (Figure 1).

5.2 The Pilanesberg as a natural heritage resource

The Pilanesberg near the PPM is a unique natural landmark and it forms part of South Africa's natural heritage. This complex of mountains consists of an eroded circular alkaline volcanic structure, 1 250 million years old, in the low-lying Bushveld Complex. This extinct volcano is 27km in diameter and it is surrounded by six rings of mountains.

The result is a circular mountainous region which stands in stark contrast to the surrounding open plains, creating a unique enclave for human occupation and utilisation from the earliest times.

During the Late Iron Age, access to the Pilanesberg was controlled by well-positioned and extensive settlements near the periphery of this circular mountain range, close to some of the entrances leading to the pathway-like valleys which criss-cross the central part of the Pilanesberg.



Figure 1- The PPM Plant Expansion Project falls within the existing infrastructure and operational area of Pilanesberg Platinum Mine north of the Pilanesberg (red circle outlines stone walled sites) (above).

The Pilanesberg National Park was developed in and around this extinct volcano and covers a surface of 500km². The park was opened in 1979 and it now contains examples of most southern African mammals and some 300 bird species. The central feature of the park is a man-made lake known as Mankwe on the river by the same name.

Sun City, on the edge of the Pilanesberg, was the first of several casinos and holiday resorts to be established on the South African veldt soon after the Bophuthatswana homeland was granted independence in 1977. The complex incorporates the Superbowl, a huge concert area, four luxury hotels, including the Palace of the Lost City, as well as many sporting and gambling facilities and an artificial beach, the Valley of the Waves.

5.3 The nature of the PPM Plant Expansion Project

Current operations at the PPM include open pit mining on the farm Tuschenkomst 135JP. Ore from the open pit operations is transported to the existing mineral processing facility located on the farms Witkleifontein 136JP and Tuschenkomst 136JP for processing. Waste rock is stockpiled on waste rock dumps. Tailings from the mineral processing facility are disposed of on the PPM tailings storage facility on the farm Witkleifontein 136JP. Services and infrastructure exist to support the mining and mineral processing activities (Figure 2).

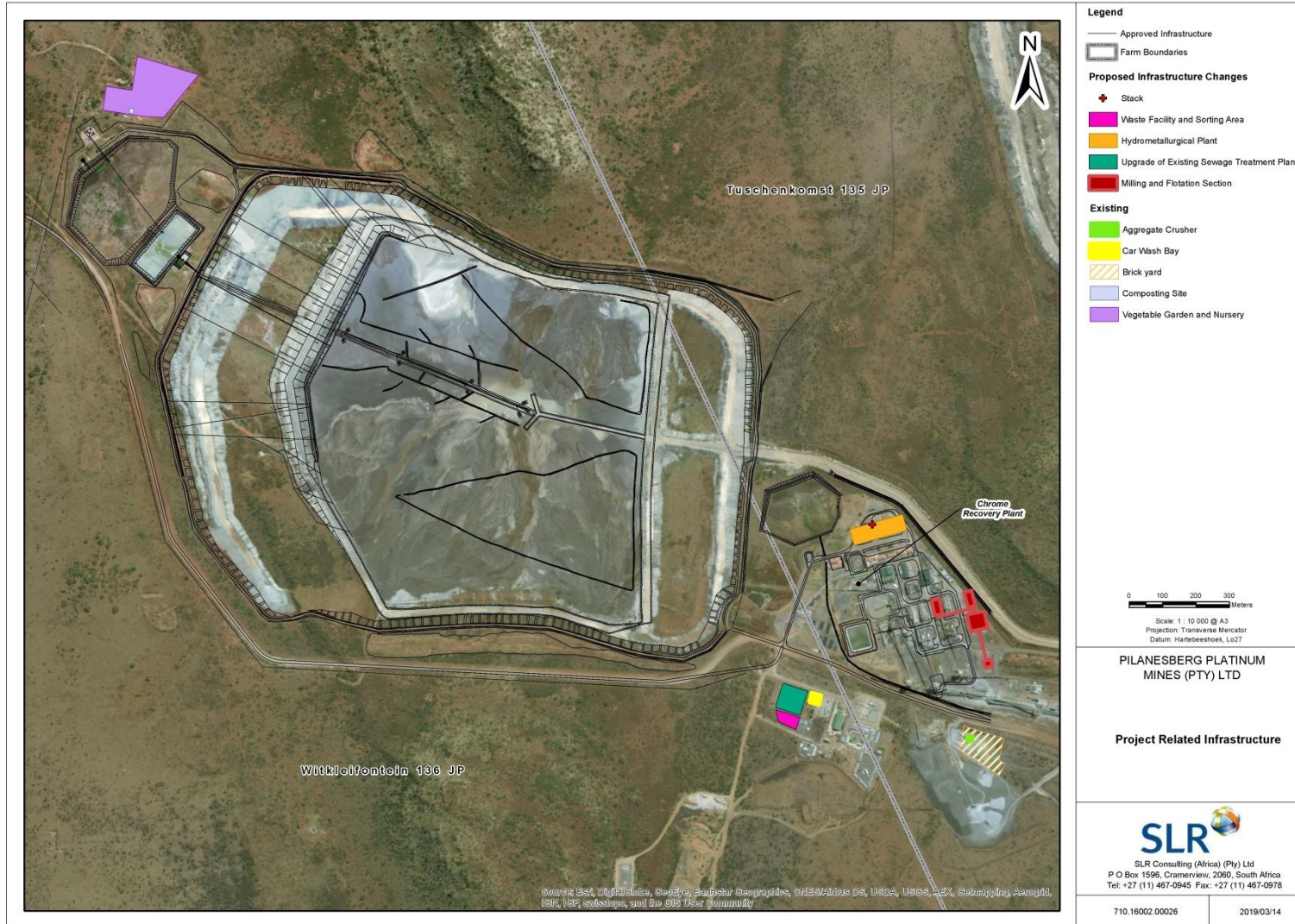


Figure 2- The footprint of the proposed PPM Plant Expansion Project located mainly within the footprint of the existing disturbed infrastructure (above).

With reference to Figure 2, PPM proposes to expand the existing mineral processing facilities located on the farms Witkleifontein 136 JP and Tuschenkomst 135 JP. The expanded mineral processing facility will include the following:

- a hydrometallurgical plant for the extraction of PGMs and base metals;
- a UG2 milling and flotation circuit to process ore from the Sedibelo Platinum Mine (SPM) operation.

In addition, the following is planned:

- upgrading of the existing sewage treatment plant; and
- relocation of the waste storage and handling facility from inside the plant to an area outside the plant.

Furthermore, a number of community based initiatives have been established at the mine. These have been included in this report at the request of the DMR. They include:

- an aggregate crusher and brick making project;
- nursery;
- vegetable garden and composting area;
- car wash.

It is expected that the proposed project will extend the life of PPM's processing facility beyond the life of mine.

6 CONTEXTUALISING THE PILANESBERG PLATINUM MINE PROJECT AREA

A brief overview of pre-historical and historical information is provided below in order to contextualise the region and to help to determine the significance of any heritage resources that may occur in the PPM Project Area.

6.1 Stone Age sites

Stone Age (SA) sites are marked by stone artefacts that are found scattered on the surface of the earth or that are part of deposits in caves and rock shelters. The Stone Age is divided into the Early Stone Age (ESA, the period from 2.5 million years ago to 250 000 years ago), the Middle Stone Age (MSA, the period from 250 000 years ago to 22 000 years ago) and the Late Stone Age (LSA, the period from 22 000 years ago to about 2 000 years ago).

A few isolated, haphazardly scattered stone tools were observed throughout the PPM Project Area. These tools date from the MSA and include two Mousterian cores, a blade and an end-scraper. These stone tools were not geo-referenced as they were possibly carried into the area.

The LSA is associated with rock paintings and engravings done by the San, Khoi Khoi and, in more recent times, by Negroid (Iron Age) farmers. More than one spokesperson told the author that there are caves higher up the mountain of Matone. Such phenomena, if they do exist, may contain stone tools dating from the SA, Late Iron Age remains and even rock paintings. A few rock paintings have been recorded in the Pilanesberg.

6.2 Late Iron Age remains

The Pilanesberg area is dominated by stone walled sites that date from the Late Iron Age (LIA), some of which were occupied into the historical period. These sites are associated with Tswana groups such as the Kgatla Kgafêla, the Tlhako, the Tlôkwa

and Nguni-affiliated clans who were either living in the area from an earlier time, before the Sotho-Tswana arrived, or who were descended from Mzilikazi's Ndebele who temporarily occupied several settlement complexes in the area before they moved to the Zeerust-Marico area in AD1832. Large numbers of the descendants of these original Nguni-speaking people today live in Groenfontein, Rhenosterhoek and Kraalhoek, to the north of the PPM Project Area.

The following contextual evidence serves as background to the PPM Project Area: the origins of the Kgatla group; the history of the Kgatla Kgafêla and the Tlhako; the arrival of the first colonists and early chrome mining in the area.

6.2.1 Origins of the Kgatla group

The ancestral Kgatla were composed of the Kgatla, the Tlôkwa, the Makgolokwe and probably the Bahlakwana and the Basia sections. (The latter three clans no longer exist). The Kgatla also maintained that there was an early relationship with the Hurutshe (under common chiefs such as Malekele-Masilo-Legabo) which may date back to AD1450 when the Hurutshe and Kwena separated. These earliest Kgatla groups initially lived in the central part of the former Transvaal province, somewhat to the south of what is today Thabazimbi, near the Rooiberg Tin Mines.

Phohoti, the son of Mokgatle, is usually regarded as the first Kgatla chief. His son and successor was Botlholo (Mashiasebara), whose sons Mogale, Pule and Modise split up. Pule initially ruled on behalf of Mogale's son Mosetlha, who died before he could succeed, and this encouraged Pule (whose son Masego died before his father) to leave the tribe and to form a separate tribe under his grandson Kgafele. Botlholo's third son, Modise, and his son Tabane were the forefathers of the sections of the Mmakau, the Motša and the Seabe.

Today there are numerous subsections of the Kgatla. In 1953 a leading anthropologist distinguished at least eleven tribes within this group.

The totem of the Kgatla is the blue monkey (*kgabo*), although they also had another totem, the 'kgabo ya mollo', or the 'tip of the flame', which they used when the Kgatla were on the warpath.

Mogale, the ancestor of the Moseitlha, lived at a place called Dirolong/Direleng in the Bela Bela area (some say in the Rustenburg area). Mogale (Moseitlha) or Mashego (Kgafela) moved to Momuseng (the old Makapans Location). Towards the end of the 17th century, the Kgafela section broke away under Mahego (the son of the regent, Pule). However, Kgafela and his son Tebele remained east of the Crocodile River and Kgafela's grandson Masellane moved to Molokwane ('Vlieggepoort') near the confluence of the Crocodile and Pienaars Rivers. (This split was the result of a dispute whether Moseitlha, a woman, should rule the tribe). This was also the time when Tabane (the Mmakau section) broke away and settled at Mogwete (Varkfontein, in the Premier Mining area).

While the Kgatla Moseitlha remained one section, Tabane's branch later broke up into several tribes. Modise or Moptsha had a young wife who left the tribe while she was pregnant, as she was accused of witchcraft, saying that her child was crying in her womb. It was called 'lelela teng' ('crying inside'). This child later became the great Pedi chief Thulare, who was also called 'Thulare a Mmakau'. Further divisions of the Kgatla were caused by internal strife during the time of Mzilikazi (Breutz 1954, 1986; Schapera 1942, 1952, 1955).

6.2.2 Brief history of the Kgatla Kgafêla

After the Kgafêla broke away from the Moseitlha at Momusweng (Makapans Location, Hammanskraal), probably during the first half of the 17th century, they settled in various places on their way to the north-west and the Crocodile River. Known places of settlement were Ntuane (to the north-west of Makapans Location near the Pienaars River), Momoseu (near Ntwane), and Tshekane (Leeuwpoort, south of the Rooiberg Tin Mine). Tshekane proved to be unhealthy, so they dwelt at Matone (Tuschenkomst) for a while and then settled at Molokwane ('Vlieggepoort', at the confluence of the Crocodile and Pienaars Rivers) near Ramakokas Location.

At the start of the 18th century, they lived at Mabule, Kruidfontein (near Saulspoort). During the first half of the 18th century, Kgwefane lived at Saulspoort in the Dithubaruba section of Moruleng. Molefe lived at Maramapong at Saulspoort. Towards the end of the 18th century, Phetso lived at Sefikile (Spitskop, 8km to the west of Northam). Letsebe ruled at Mabule (Kruidfontein) at the confluence of the Modderkuil and Middelkuil. When Senwelo was invested as chief, he moved from Mabule to Tlokwane (Rhenosterkop). Motlotle ruled at Magakwe or Dithubarubu (Kruidfontein).

Pilane built his village at Monamaneng (Kafferskraal). Later he moved to Bogopana (Witfonteinrand), to the north-east of Witfontein, and from there to Mmamodimokwana (Schilpadsnest) near the Crocodile River.

After the Matabele invasion in AD1827 Pilane went to live at Motsitle (Mabeskraal). After AD1837 he settled at the Elands River at Mmasebudule (Rhenosterfontein).

During the Matabele invasion, the Kgatla were too weak to defend them against enemies. Consequently, they paid a tribute to the Ndebele. Nevertheless, their villages were destroyed and the young men were incorporated into the Ndebele army. After the Ndebele had left the Pilanesberg area (AD1832) Ndebele raiders returned to the area and took three of Pilane's sons with them in AD1842. Molefi Pilane's uncle negotiated their release. Molefi, who maintained good relations with the Ndebele took charge of the tribe when Pilane fled to the Langa Ndebele.

The far northern part of Kgatla territory, incorporating the farms Holfontein, Cyferfontein and Rhenosterkraal was a separate tribal section for some years under the authority of a sub-chief, Dikema Pilane. He played an important role in the times of Paul Kruger. It was also in this far northerly area that the descendants of one of Mzilikazi's sons lived.

Kgamanyana lived at Moruleng the present tribal headquarters at Saulspoort. In 1869 Kgamanyana and many tribesmen left the country to settle at Mochudi on the banks of the Nkgotwane River in Botswana, after camping one year at Tshwene-

Tshwene (near Vleesfontein). The other part of the tribe remained at Saulspoot and acquired most of the farms to the north of the Pilanesberg.

Many of these Tswana clans were uprooted during the *difaqane* when Mzilikazi's Matabele (Ndebele) entered the North-West Province, crossing the Magaliesberg at Mpame (Kommandonek) in the middle of August 1832 (Breutz 1954, 1986; Schapera 1942, 1952, 1955).

From this brief historical overview, it is clear that the mountain Matone was occupied by the Kgatla while the PPM Project Area to the north of the Pilanesberg covers much of the sphere of influence of one section of the Kgatla. This group probably intermarried with Mzilikazi's Ndebele, especially given that some of his sons remained in the area after the Ndebele moved westwards. Descendants of this mixed Ndebele/Tswana population still live in the area today (Breutz 1954, 1986; Schapera 1952, Schapera 1955). A similar situation occurred to the north of Rustenburg, south of Phokêng, where the Ndebele intermarried with their Tswana neighbours, the Fokeng) (Pistorius 1997a, 1997b).

6.2.3 Brief history of the Tlhako

The Tlhako is one of the numerous Nguni-related clans who lived in the central part of the former Transvaal province from early on. They branched off from the Ndzundza-Ndebele who lived near what is today the Premier Mine (Cullinan, Mangolwana) and Wonderboom (Pretoria). Thereafter they dwelt in the Boshhoek (Pharami) area for some time, before settling along the Thulani River near Pella towards the end of the 17th century.

Chief Seutlwane settled on the northern slope of Pilwe Mountain. His son, Mabe, who lived about the middle of the 18th century, moved six kilometres further to the north to Mothoutlung on the eastern part of Palmietfontein. Mabe's youngest son, Motsisi, went to live at Legatalle, to the north-east of Ruighoek 426, where he became involved with a long struggle with the Kgatla Kgafêla. His son, Molotsi, also lived and died at Legatalle, probably around AD1820 to AD1830.

Mabe became chief in 1820 and settled at Motsitle, today known as Mabieskraal. When Mzilikazi invaded the region, the Tlhako did not leave the area, but were subjugated by the Ndebele. Many of the Tlhako later accompanied the Ndebele and crossed the Marico River to settle with the Ndebele at Silkaatskop. However, when the Ndebele were defeated by the Voortrekkers in the far North-Western Transvaal, many returned to their old home at Motsitle in 1837.

Maabe and the Voortrekkers' relationship deteriorated. After he was flogged by the Boers in AD1860, the tribe moved to Molepolole and settled at Magagarape, where Maabe died in 1869. His sons Moetle, Mokgatele, Leotwane and Setadi returned to Mableskraal.

Moetle Mabe became chief in 1870. He raided the cattle of the local white farmers and also supplied labour to surrounding white farmers. He died on 15 May 1908.

The Tlhako's sphere of influence overlaps the west and in the south with parts of the PPM Project Area. Stone walled sites on Ruighoek 169JP, Rooderand 46JQ and Witkleifontein 136JP and possibly Tuschenkomst as well therefore can therefore possibly be associated with this group (Breutz 1954, 1986).

6.3 Arrival of the first colonists

During the first half of the 19th century, the first colonial traders who operated between the far north-west and the central part of the Bankeveld used the gap between the northern tip of the Magaliesberg and the south-western edges of the Pilanesberg, near the PPM Project Area as a corridor. Wagons passed through this corridor on their way to Rustenburg and further to the east. Traders such as Schoon and McLuckie (1829), missionaries such as Robert Moffat (1829), the scientific expedition of Andrew Smith (1835) (Lye 1975), and adventurers such as Cornwallis Harris (1836) moved between the Magaliesberg and the Pilanesberg where they observed numerous Late Iron Age communities living in this part of the north-west (Horn 1996).

Rustenburg, to the far south of the PPM Project Area, was the first colonial town to be established by Europeans (Voortrekkers) during the first half of the 19th century (Pretorius 1967). Closer to Pilanesberg, Boshhoek was established along the railway line from Pretoria, and the town initially served as a terminus (Erasmus 1995).

6.4 Early chrome mining

It has long been known that there were chrome ores in the Bushveld Igneous Complex. They were indicated on Carl Mauch's geological map of the area close to the Hex River near Rustenburg, which he visited in 1865. Chromite is also mentioned in official reports that were compiled by a certain Molengraaf. The first exploration for chrome occurred in 1917 and general production of the metal began in 1924 when 4 570 tons were mined.

Chromite is present in the Bushveld Igneous Complex as layers in the piroxinite, norite and anorthosite units and to a certain extent also in the harzburgiet unit. The deposits in the Complex can be divided into a Western Zone and an Eastern Zone.

The deposits in the Western Zone stretch for approximately 200km from Brits to Rustenburg, further northwards to the west of the Pilanesberg, and from there, with some interruptions of seven to thirteen kilometres, to near the Crocodile River. The Eastern Complex starts near Draaikraal at the upper reaches of the Dwars River in the Lydenburg district. Further northwards the deposit crosses the Steelpoort River near the Steelpoort station and gradually turns north-westwards as far as Scheiding – a total distance of 120 kilometres.

The Western Zone can be divided into four sections, namely a sector to the north of Rustenburg, two sectors to the west and to the north of the Pilanesberg, and a sector in the Brits-Rustenburg area.

The sector to the west of the Pilanesberg seems to have been exploited the most. Here two distinct layers were distinguished, namely the Groenfontein layer and the Main Layer higher up in the sequence. These layers vary in thickness on farms such as Palmietfontein 208JP, Groenfontein 138JP and Ruighoek 169JP.

By the start of 1974 seventeen chrome mines were already operating: eight in the Western Zone, six in the Eastern Zone, two in Marico and one near Mokopane (Viljoen & Reimold 1999; Wagner 1973).

7 APPROACH AND METHODOLOGY

This heritage survey and impact assessment study was conducted by means of the following:

7.1 Field survey

A field survey was conducted on 18 and 19 October 2018 for the PPM Plant Expansion Project by means of following the footprint of the proposed new project. The PPM project area was surveyed several times in the past (see Part 11, 'Bibliography relating to earlier heritage studies').

The field survey was conducted by means of following national, dirt and farm roads across the project area. Other accessible pathways such as 'two spoor' field tracks were also utilized to gain access to parts of the project area. The track log only outlines main routes that were travelled. Pedestrian surveys were undertaken from some of these primary routes and therefore were not recorded.



Figure 3- GPS track log registered with a mounted GPS instrument. Track was confined to a revisit of heritage resources discovered in 2009 (Pistorius 2009) (above).

Ecological indicators such as alternations in vegetation patterns; open or bald spots in the veld; protrusions of boulders, low hills or patches with grass, prominent dolerite kopjes or dykes and dense penetrable vegetation were searched as these could harbour foundations of possible historical structures or graveyards.

Aerial imagery served as a supplementary source (prior and after fieldwork) to establish the possible presence of heritage resources such as farm homesteads or extended stone walled villages.

All coordinates for heritage resources recorded by the author were done with a Garmin Etrex hand set Global Positioning System (instrument) with an accuracy of < 15m.

The nature and character of the project area is further illuminated with descriptions and photographs (see Part 8.1 'The field survey').

7.2 Databases, literature survey and maps

Databases kept and maintained at institutions such as the PHRA, the Archaeological Data Recording Centre at the National Flagship Institute (Museum Africa) in Pretoria and SAHRA's national archive (SAHRIS) were consulted by the author to determine whether any heritage resources of significance had been identified during earlier heritage surveys in or near the project area. Most of the heritage studies done for PPM since the inception of the mine were done by the author (see Part 11, Bibliography relating to earlier heritage studies') Never the less heritage resources may have been missed as a result of various factors (Part 1.3, 'Assumptions and limitations).

7.3 Consultation process undertaken and comments received from stakeholders

No specific consultation process was undertaken for the purposes of the heritage study as the stakeholder consultation for the project is being done by SLR Consulting (Africa) (Pty) Ltd.

7.4 Significance ratings

The significance of possible impacts on the heritage resources was determined using a ranking scale based on the following:

- Occurrence
 - Probability of occurrence (how likely is it that the impact may/will occur?), and
 - Duration of occurrence (how long may/will it last?)
- Severity
 - Magnitude (severity) of impact (will the impact be of high, moderate or low severity?), and
 - Scale/extent of impact (will the impact affect the national, regional or local environment, or only that of the site?).

Each of these factors has been assessed for each potential impact using the following ranking scales:

Probability: 5 – Definite/don't know 4 – Highly probable 3 – Medium probability 2 – Low probability 1 – Improbable 0 – None	Duration: 5 – Permanent 4 – Long-term (ceases with the operational life) 3 - Medium-term (5-15 years) 2 - Short-term (0-5 years) 1 – Immediate
Scale: 5 – International 4 – National 3 – Regional 2 – Local 1 – Site only 0 – None	Magnitude: 10 - Very high/don't know 8 – High 6 – Moderate 4 – Low 2 – Minor

The heritage significance of each potential impact was assessed using the following formula:

Significance Points (SP) = (Magnitude + Duration + Scale) x Probability

The maximum value is 100 Significance Points (SP). Potential environmental impacts are rated as very high, high, moderate, low or very low significance on the following basis:

- More than 80 significance points indicates VERY HIGH heritage significance.
- Between 60 and 80 significance points indicates HIGH heritage significance.
- Between 40 and 60 significance points indicates MODERATE heritage significance.
- Between 20 and 40 significance points indicates LOW heritage significance.
- Less than 20 significance points indicates VERY LOW heritage significance.

8 THE PHASE I HERITAGE IMPACT ASSESSMENT STUDY (HIA)

8.1 The field survey

The field survey was done by means of following national and local roads as well as two track roads across the project area in order to gain access to the footprint of developmental components of the PPM Plant Expansion Project.

However, the largest part of the project area comprises a 'brown fields' area as it falls within the footprint and operational area of the existing PPM.



Figure 4- The footprint where the proposed new training centre could be established is in undisturbed bush in the foreground but closer to the tailings dam in the background. No heritage resources of significance were observed on this flat piece of land (above).



Figure 5- The existing aggregate crusher and part of its footprint. This area was surveyed during earlier heritage studies and no heritage resources were found on this level piece of turf veld (above).



Figure 6- The existing vegetable garden and nursery's footprint were surveyed in the past. Stone walled sites occur on the slope of Matome in the background but not where the existing community facilities were established (above).

8.2 Types and ranges of heritage resources

The Phase I HIA for the proposed Plant Expansion 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) in the PPM Project Area, namely:

- A stone walled complex along the eastern foot of Mukukunupu

This stone walled complex was geo-referenced, tabulated and mapped (Figure 6 - 9; Table 1).

The stone walled complex is now briefly described and illuminated with photographs.



Figure 7- A stone walled complex dating from the Late Iron Age (AD1600 to AD1820) along the eastern foot of Mukukunupu in the proposed Project Area (above).

8.2.1 A cluster of Late Iron Age sites

A cluster of LIA stone walled sites occur along the lower eastern foot slope of Mukukunupu where dolerite was used in the construction of these sites. This cluster is one of several in the general area which is composed of a varying numbers of individual sites that were grouped together to form villages which covered large surface areas.

All these clusters of stone walled sites are located along the lower contours or along the spurs of mountains. The majority of sites are confined to mountains such as Mogare, Mmatone, Patshwane and Mukukunupu on Tuschenkomst 135JP and Witkeifontein 136JP.



Figure 8- Stone walled settlements photographed in the early summer along the lower foot of Mukukunupu date from AD1650 to AD1850. These sites were possibly occupied by one of the Tswana groups who still occupy the area today (above).



Figure 9- The spatial composition of the stone walled sites comprises an outer ring of dwellings around a large central inner space (above).



Figure10- A residential unit in one of the stone walled dwellings along the foot of Mukukunupu. It seems as if dwellings which were constructed with grass and thatch were constructed in these homesteads (above).

8.3 Locality and significance of Stone Walled Sites

Locality	Coordinates	Significance
South	25' 06.738"s; 26' 59.016"e	Med-High
Middle	25' 06.738"s; 26' 59.016"e	Med-High
East	25' 06.738"s; 26' 59.016"e	Med-High

Table 2- Locality and spread of stone walled sites along the lower foot of Mukukunupu (above).

9 THE HERITAGE ASSESSMENT FOR THE PPM PLANT EXPANSION PROJECT

9.1 The significance of the heritage resources

The significance of the stone walled sites must be determined in order to establish the significance of the impact on any of these remains. This will determine whether any mitigation measures may be required for the stone walled complex which may be negatively affected by the PPM Plant Expansion Project.

9.1.1 The significance of the stone walled sites

The stone walled sites comprise remains which are older than sixty years and which qualify as archaeological remains and which therefore are protected by the National Heritage Resources Act (No 25 of 1999).

The stone walled sites are rated as of medium to high significance. This rating is based on the use of two rating (grading) schemes, namely:

- A scheme of criteria which outlines places and objects as part of the national estate as they have cultural-historical significance or other special value (outlined in Section 3 of the NHRA [Act No 25 of 1999] (see Box 1) (Table 3).
- A field rating scheme according to which heritage resources are graded in three tiers (levels) of significance based on the regional occurrence of heritage resources (Table 4) (Section 7 of the NHRA [Act No 25 of 1999]).

9.1.1.1 Criteria to be part of the national estate

The NHRA (No 25 of 1999) distinguishes nine criteria for places and objects to be 'part of the national estate' if they have cultural significance or other special value, namely (also see Box 1):

- **Its importance in/to the community, or pattern of South Africa's history;**
- **Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;**

- **Its potential to yield information that will contribute to an understanding of South Africa’s natural or cultural heritage;**
- Its importance in demonstrating the principal characteristics of a particular class of South Africa’s natural or cultural places or objects;
- Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- **Its importance in demonstrating a high degree of creative or technical achievement at a particular period;**
- **Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;**
- **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
- Sites of significance relating to the history of slavery in South Africa.

Criteria	Low	Medium	High
Historical significance		x	x
Social significance		x	x
Technical significance		x	x
Scientific significance (research, use, application, e.g. in tourism industry)		x	x

Table 3- Rating the stone walled settlements’ significance according to criteria outlined in the NHRA (25 of 1990) (above).

The highlighted criteria reflect aspects of the historical, social, technical or scientific significance (research, use and application, e.g. in tourism industry) of the stone walled sites. According to these criteria the significance of the stone walled sites is graded as of medium to high significance (Table 3).

9.1.1.2 Field rating scheme for stone walled sites

Grading of heritage resources remains the responsibility of heritage resources authorities. However, in terms of minimum standards SAHRA requires that heritage reports include field ratings in order to comply with Section 38 of the NHRA (No 25 of 1999). The NHRA (No 25 of 1999, Section 7) provides for a three-tier grading system for heritage resources. The field rating process is designed to provide a qualitative and quantitative rating of heritage resources. The rating system distinguishes three categories of heritage resources:

- Grade I Heritage resources hold qualities so exceptional that they are of special national significance.
- Grade II Heritage resources hold qualities which make them significant within the context of a province or a region.
- Grade III heritage resources are worthy of conservation, i.e. are generally protected in terms of Sections 33 to 37 of the NHRA (No 25 of 1999).

Field rating	Grade	Significance	Recommended mitigation
National significance	Grade 1	High significance	Nominate national site. Conservation
Provincial significance	Grade 2	High significance	Nominate provincial site. Conservation
Local significance	Grade 3A	High significance	Conservation. Mitigation not advised.
Local significance	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected (GP.A)	-	Medium to High significance	Mitigation before destruction
Generally Protected (GP.B)	-	Medium significance	Recording before destruction
Generally Protected (GP.C)	-	Low significance	Destruction

Table 4- Field rating (grading) for stone walled sites in the project area (above).

According to the highlighted field rating scheme the stone walled sites can be rated as of medium to high significance and can be destroyed after the remains have been recorded and a permit obtained from SAHRA for allowing for the destruction of the remains (Table 4).

9.2 Possible impact on the stone walled sites

According to the current layout plan for the PPM Plant Expansion Project the following can be noted:

- None of the stone walled sites identified in the project area will be directly affected by the PPM Plant Expansion Project.
- The stone walled complex occurs at a safe distance from where the proposed Training Centre could be established (Figure 7).

9.3 The significance of the impact on the stone walled sites

None of the stone walled sites will be affected by the proposed PPM Plant Expansion Project. The significance of the impact on these remains therefore is very low (Table 5)

Table 5- The significance of the impact on the stone walled sites is very low (below).

	Probability of impact	Magnitude of impact	Duration of impact	Scale	Significance points	Significance rating	Significance after management
Stone walled sites	1	2	1	1	4	Very low	Very low

9.4 Managing the stone walled sites

The stone walled sites along the lower foot slope of Mukukunupu must be avoided by all developmental activities. Notice boards with the following inscriptions can be erected along the fence and dirt road that border the settlements: 'Caution Archaeological sites. Avoid as any damage caused may lead to prosecution'.

9.5 Summary

None of the stone walled sites identified in the Project Area need to be affected by the PPM Plant Expansion Project. Consequently, there is no reason from a heritage point of view why the proposed PPM Plant Expansion Project cannot proceed.

10 CONCLUSION AND RECOMMENDATIONS

The Phase I HIA for the proposed Plant Expansion 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) in the PPM Project Area, namely:

- A stone walled complex along the eastern foot of Mukukunupu

This stone walled complex was geo-referenced, tabulated and mapped (Figure 6 - 9; Table 1).

The significance of the stone walled sites must be determined in order to establish the significance of the impact on any of these remains. This will determine whether any mitigation measures may be required for the stone walled complex which may be negatively affected by the PPM Plant Expansion Project.

The significance of the stone walled sites

The stone walled sites comprise remains which are older than sixty years and which qualify as archaeological remains and which therefore are protected by the National Heritage Resources Act (No 25 of 1999).

The stone walled sites are rated as of medium to high significance. This rating is based on the use of two rating (grading) schemes, namely:

- A scheme of criteria which outlines places and objects as part of the national estate as they have cultural-historical significance or other special value (outlined in Section 3 of the NHRA [Act No 25 of 1999] (see Box 1) (Table 3).
- A field rating scheme according to which heritage resources are graded in three tiers (levels) of significance based on the regional occurrence of heritage resources (Table 4) (Section 7 of the NHRA [Act No 25 of 1999]).

Criteria to be part of the national estate

The NHRA (No 25 of 1999) distinguishes nine criteria for places and objects to be 'part of the national estate' if they have cultural significance or other special value, namely (also see Box 1):

- **Its importance in/to the community, or pattern of South Africa's history;**

- **Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;**
- **Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;**
- Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- **Its importance in demonstrating a high degree of creative or technical achievement at a particular period;**
- **Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;**
- **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
- Sites of significance relating to the history of slavery in South Africa.

The highlighted criteria reflect aspects of the historical, social, technical or scientific significance (research, use and application, e.g. in tourism industry) of the stone walled sites. According to these criteria the significance of the stone walled sites is graded as of medium to high significance (Table 3).

Field rating scheme for stone walled sites

Grading of heritage resources remains the responsibility of heritage resources authorities. However, in terms of minimum standards SAHRA requires that heritage reports include field ratings in order to comply with Section 38 of the NHRA (No 25 of 1999). The NHRA (No 25 of 1999, Section 7) provides for a three-tier grading system for heritage resources. The field rating process is designed to provide a qualitative and quantitative rating of heritage resources. The rating system distinguishes three categories of heritage resources:

- Grade I Heritage resources hold qualities so exceptional that they are of special national significance.
- Grade II Heritage resources hold qualities which make them significant within the context of a province or a region.

- Grade III heritage resources are worthy of conservation, i.e. are generally protected in terms of Sections 33 to 37 of the NHRA (No 25 of 1999).

According to the highlighted field rating scheme the stone walled sites can be rated as of medium to high significance and can be destroyed after the remains have been recorded and a permit obtained from SAHRA for allowing for the destruction of the remains (Table 4).

Possible impact on the stone walled sites

According to the current layout plan for the PPM Plant Expansion Project the following can be noted:

- None of the stone walled sites identified in the project area will be directly affected by the PPM Plant Expansion Project.
- The stone walled complex occurs at a safe distance from where the proposed Training Centre could be established (Figure 7).

The significance of the impact on the stone walled sites

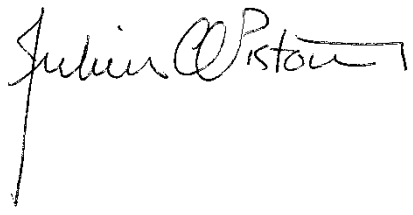
None of the stone walled sites will be affected by the proposed PPM Plant Expansion Project. The significance of the impact on these remains therefore is very low (Table 5)

Managing the stone walled sites

The stone walled sites along the lower foot slope of Mukukunupu must be avoided by all developmental activities. Notice boards with the following inscriptions can be erected along the fence and dirt road that border the settlements: 'Caution Archaeological sites. Avoid as any damage caused may lead to prosecution'.

Summary

None of the stone walled sites identified in the Project Area need to be affected by the PPM Plant Expansion Project. Consequently, there is no reason from a heritage point of view why the proposed PPM Plant Expansion Project cannot proceed.

A handwritten signature in black ink, reading "Julius CC Pistorius". The signature is written in a cursive style with a long vertical line extending downwards from the 'J'.

Dr Julius CC Pistorius
Archaeologist & Heritage Consultant
Member ASAPA

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