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A PHASE I HERITAGE IMPACT ASSESSMENT STUDY FOR LION SMELTER IN THE STEELPOORT, LIMPOPO PROVINCE

Prepared by:

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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

EPS Environmental Performance Standards

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

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

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

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

- Heritage resources: The various natural and cultural assets that collectively form the heritage. These assets are also known as cultural and natural resources. Heritage resources (cultural resources) include all human-made phenomena and intangible products that are the result of the human mind. Natural, technological or industrial features may also be part of heritage resources, as places that have made an outstanding contribution to the cultures, traditions and lifestyles of the people or groups of people of South Africa.

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

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

- Maintenance: Keeping something in good health or repair.

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

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

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

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

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

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

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

- Stone Age: Refers to the prehistoric past, although Late Stone Age 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 was done according to Section 36 of the National Heritage Resources Act (No 25 of 1999) for the Glencore Lion Smelter in the Steelpoort Valley in the Limpopo Province. The aims with the heritage survey and impact assessment for the Lion Smelter Project were the following:

- To establish whether any of the types and ranges of heritage resources as outlined in Section 38 of the National Heritage Resources Act (No 25 of 1999) do occur in the project area.
- To establish the significance of the heritage resources in the project area and the level of significance of any possible impact on any of these heritage resources.
- To propose mitigation measures for those types and ranges of heritage resources that may be affected by the proposed Lion Smelter Project.

The heritage survey for the various developmental components of the Lion Smelter Project revealed the following heritage resources outlined in Section 38 of the National Heritage Resources Act (No 25 of 1999), namely:

- Iron Age remains in close proximity of the footprint of the proposed new RWD to the north of the R555.

These remains have been geo-referenced (Table 1) and its significance has been determined (Tables 2 & 3).

The significance of the heritage resources

These remains comprise archaeological remains which are older than sixty years and therefore are protected by the National Heritage Resources Act (No 25 of 1999).

The archaeological remains are rated as of low 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 4). According to these criteria the cultural historical significance of the Iron Age remains is graded as of low significance.
- 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 (Tables 4 & 5) (Section 7 of the NHRA [Act No 25 of 1999). According to the highlighted field

rating scheme the Iron Age remains can be rated as of low significance and can be destroyed without mitigation and acquiring a permit from SAHRA (Table 5).

Mitigating the heritage resources

The Iron Age remains have low significance. The remains are also located at some distance from the proposed footprint on the RWD.

No mitigation measures are necessary for the Iron Age remains.

Chance-find procedures

Chance-Find Procedures are applicable during the construction, operation or closure phases of the Lion Smelter Project and apply to all contractors, subcontractors, subsidiaries or service providers. If any of the institutions employees find any heritage resources during any developmental activity the person and institution must cease work at the site of the find. They must report this find to their immediate supervisor and through their supervisor to the senior on-site manager.

Chance-find procedures for heritage resources

The initial procedure to follow when heritage resources are uncovered during development is aimed at avoiding any further possible damage to the heritage resources. The following procedures must now be followed:

- The person or group (identifier) who identified or exposed the heritage resource or burial ground must cease all activity in the immediate vicinity of the site.
- The identifier must immediately inform the senior on-site manager of the discovery.
- The senior on-site manager must make an initial assessment of the extent of the find and confirm that further work has stopped and ensure that the site is secured and that controlled access is implemented.
- The senior on-site manager will inform the EO and Health and Safety (HS) officers of the chance find and its immediate impact on the Lion Project. The EO will then contact the project archaeologist.
- The project archaeologist will do a site inspection and confirm the significance of the discovery, recommend appropriate mitigation measures to Lion Smelter mine and notify the relevant authorities.
- Based on the comments received from the authorities the project archaeologist will provide the mine with a Terms of References Report and associated costs if mitigation measures have to be implemented.

Chance-Find Procedures for burials and graves

In the event that unidentified burial grounds or graves are identified and/or exposed during any of the developmental phases of the Lion Project the following steps must be implemented subsequent to those outlined above:

- The project archaeologist must confirm the presence of graveyards and graves and follow the following procedures.
- Inform the local South African Police (SAP) and traditional authority.
- The project archaeologist in conjunction with the SAP and traditional authority will inspect the possible graves and make an informed decision whether the remains are of forensic, recent, cultural-historical or archaeological significance.
- Should it be concluded that the find is of heritage significance and therefore protected in terms of heritage legislation the project archaeologist will notify the relevant authorities.
- The project archaeologist will provide advice with regard to mitigation measures for the burial grounds and graves.

CONTENTS

1 INTRODUCTION

1.1 Background and context

This Phase I Heritage Impact Assessment (HIA) study is one of a series of specialist study reports which are compiled for the Glencore Lion Smelter near Steelpoort in the Limpopo Province. The HIA study has been done for JMA Consulting who has been appointed by Glencore to act as Environmental Assessment Practitioner (EAP) in support of an application towards obtaining an EIA/Waste Management Licence and Water Use Licence

Previous heritage surveys conducted in the Steelpoort Valley in the Mpumalanga and the Limpopo Provinces indicated that the most common types and ranges of heritage resources which exist in this part of the two provinces consist of sites dating from the Stone Age as well as the Iron Age. However, various types and ranges of heritage resources that qualify as part of South Africa's 'national estate' as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) do occur across the Steelpoort Valley in the Limpopo Province (see Box 1, next page).

1.2 Aims with this report

This study comprises a heritage survey and a heritage impact assessment study for the Glencore Lion Smelter in the Limpopo Province. The aims with the heritage survey and impact assessment for the Lion Smelter Project were the following:

- To establish whether any of the types and ranges of heritage resources as outlined in Section 38 of the National Heritage Resources Act (No 25 of 1999) do occur in the project area.
- To establish the significance of the heritage resources in the project area and the level of significance of any possible impact on any of these heritage resources.
- To propose mitigation measures for those types and ranges of heritage resources that may be affected by the proposed Lion Smelter 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 report is based on accepted archaeological survey and assessment techniques and methodologies and primarily consisted of a survey with a vehicle and pedestrian surveys. An official from Glencore Lion Smelter who is well acquainted with the project area accompanied the author on the survey (see Part 13, 'Spokespersons consulted').

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.

This heritage survey may have missed heritage resources in the project area as heritage sites may occur in tall grass or thick clumps of vegetation in undisturbed parts of the project area while 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 have been missed as a result of human failure to recognise or to observe them.

2 DETAILS OF THE SPECIALIST

Specialist Details: Dr Julius Pistorius

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)

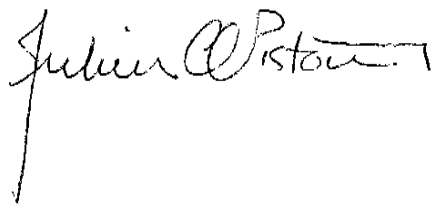
Summary: Julius Pistorius is a qualified archaeologist and heritage specialist with extensive experience as a university lecturer, museum scientist, researcher and heritage consultant. His research focussed on the Late Iron Age Tswana and Lowveld-Sotho (particularly the Bamalatji of Phalaborwa). He has 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 written a guide for Eskom's field personnel on heritage management. He has published twenty scientific papers in academic journals and several popular articles on archaeology and heritage matters. He collaborated with environmental companies in compiling State of the Environmental Reports for Ekhurhuleni, Hartebeespoort and heritage management plans for the Magaliesberg and Waterberg. Since acting as an independent consultant he has done approximately 800 large to small heritage impact

assessment reports. He has a longstanding working relationship with Eskom, Rio Tinto (PMC), Rio Tinto (EXP), Impala Platinum, Angloplats (Rustenburg), Lonmin, Sasol, PMC, Foskor, Kudu and Kelgran Granite, Bafokeng Royal Resources, Pilanesberg Platinum Mine 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 compentent authority all material information in my possession
- All the particulars furnished by me in this form are true and correctthat 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.



20 July 2018

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 000m^2 or which involve three or more existing erven or subdivisions thereof
- Re-zoning of a site exceeding 10 000 m^2
- Any other category provided for in the regulations of SAHRA, 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
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) - 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
The date and season of the site investigation and the relevance of the season to the outcome of the assessment	Part 6. Approach and Methodology Part 6.1. Field survey
A description of the methodology adopted in preparing the report or carrying out the specialised process	Part 6. Approach and Methodology
The specific identified sensitivity of the site related to the activity and its associated structures and infrastructure	Part 7. Contextualising the project area
An identification of any areas to be avoided, including buffers	Part 9.2. Mitigating the heritage resources
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 2
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	Part 8.2 Types and ranges of heritage resources

the proposed activity, including identified alternatives, on the environment	Part 9.1.The significance of the heritage resources 9.1.1 The significance of the Iron Age remains
Any mitigation measures for inclusion in the EMPr	Part 9.2 Mitigating the heritage resources 9.3 Chance-find procedures 9.3.1 Chance-find procedures for heritage resources 9.3.2 Chance-Find Procedures for burials and graves
Any conditions for inclusion in the environmental authorisation	Part 9.4 Mitigating the heritage resources Part 9.5 Managing heritage resources that remain unaffected Part 10 Conclusion and recommendation
Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Part 10 Conclusion and recommendations
A reasoned opinion as to whether the proposed activity or portions thereof should be authorised and	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	9.3 Chance-find procedures
A description of any consultation process that was undertaken during the course of carrying out the study	Part 6.4 Consultation process undertaken and comments received from stakeholders
A summary and copies if any comments that	Part 6.4 Consultation process

were received during any consultation process	undertaken and comments received from stakeholders
Any other information requested by the competent authority.	None

5 THE GLENCORE LION SMELTER OPERATIONS

5.1 Location

Glencore's Lion Smelter is located in the Steelpoort Valley in the Limpopo Province. The Lion Smelter's infrastructure is located to the north and to the south of the R555 which runs between Roossenekal and Steelpoort. The smelter and its associated infrastructure which comprise the bulk of the industry are located to the south of the road. The Glencore Lion Smelter is located on the farm Kennedy's Vale 361KT which is part of the Greater Tubatse Municipality which falls within the Greater Sekhukhune District Municipality (2430CA Steelpoort; 1: 50 000 topographical map, 1:250 000 map & Google imagery) (Figures 1 & 2).

Figure 1- Regional location of the Glencore Lion Smelter in the Steelpoort Valley in the Limpopo Province (above).

5.2 The nature of the Lion Smelter project area

The Lion Smelter project area comprises a piece of land which has largely been transformed by mining and industrial activities with only a few patches of land which have not been disturbed by developmental activities in the past. The parts of the project

area which have not been affected by development activities are covered with a knee-high grass cover and indigenous trees whilst erosion dongas associated with tributaries of the Steelpoort River occur to the north as well as to the south of the R555. In general, however, the project area cannot be described as conducive to the conservation of any heritage resources which may have existed on this piece of land in the past.

5.3 The nature of the Lion Smelter's Operations

JMA Consulting has been appointed by Glencore to act as Environmental Assessment Practitioner (EAP) in support of an application towards obtaining an EIA/Waste Management Licence and Water Use Licence Application for new water and waste management activities at the Glencore Lion Ferrochrome Smelter near Steelpoort in the Limpopo Province.

JMA Consulting therefore will be responsible to assist with the necessary environmental authorizations for the construction and operation of the New Slimes Dam (Tailings Storage Facility, TSF) in two phases; a TSF Return Water Dam (RWD); a new Storm Water Pollution Control Dam (PCD) and a new Slag Dump Pollution Control Dam (PCD) at Lion Smelter.

The current TSF will reach the end of life in roughly four years. Project planning and design therefore needs to start so that the new facilities will be available in three and a half to four years' time (Figure 4).

The footprint components that are relevant to this heritage impact survey and assessment were the following (Figure 4), namely:

- The Development of a new Tailings Storage Facility (TSF) in two phases.
- The Development of a new TSF Return Water Dam (RWD).
- The Development of a new Storm Water Pollution Control Dam (PCD) for the Raw Materials Area.
- The Diversion of a Stream to accommodate the footprint of the proposed TSF.

- The Development of a new Slag Dump Pollution Control Dam (PCD) prior to the development of Phase 2 of the TSF.
- The Decommissioning of the current Slag Dump Pollution Control Dam (PCD) prior to the development of Phase 2 of the TSF.
- The Development of a new Service Road to the new TSF.
- The re-alignment of the existing Slag Overland Conveyer from the Smelting Plant to the Slag Dump.

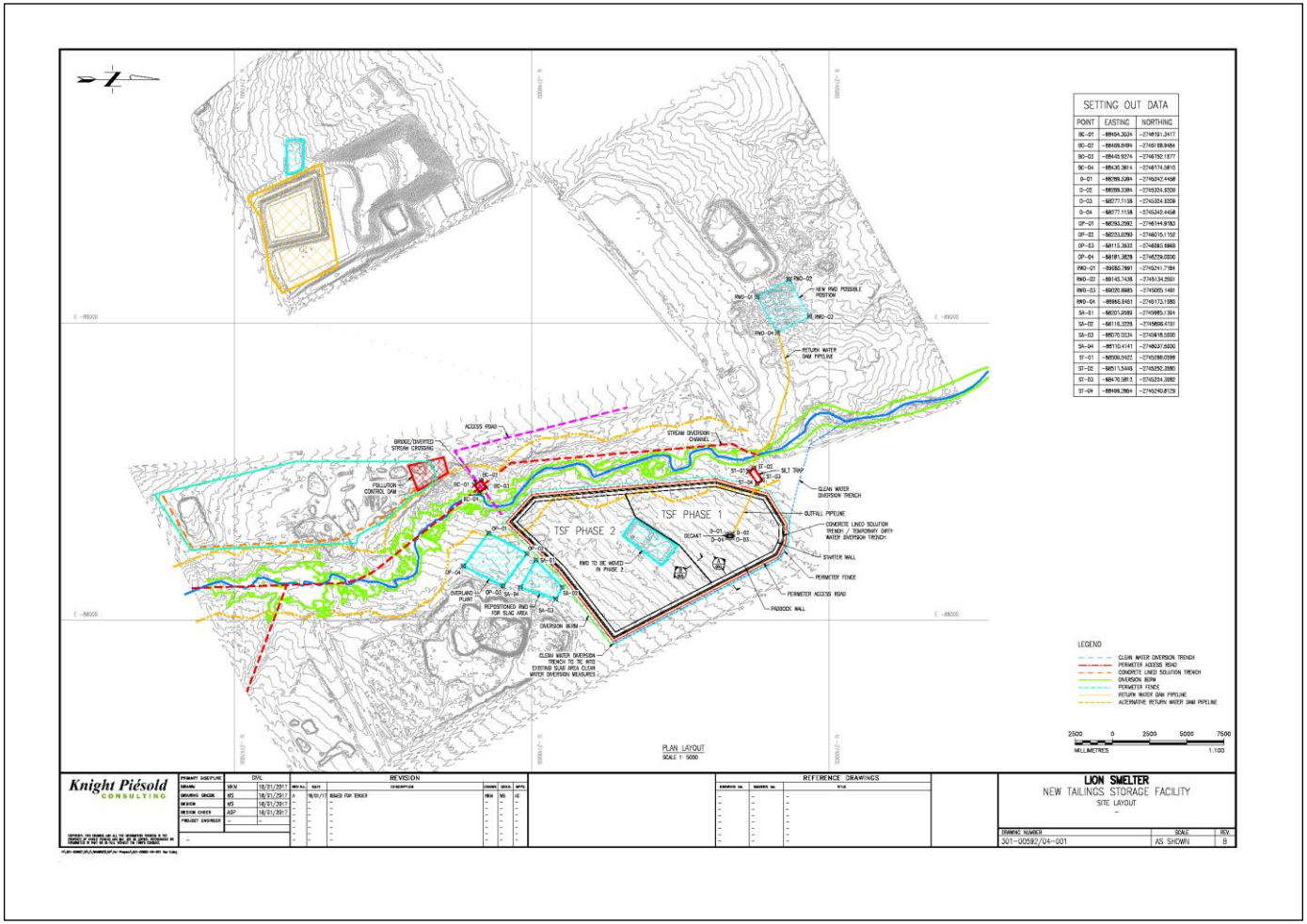


Figure 2- Footprint of the proposed new developmental components at Glencor Lion Smelter in the Steelpoort Valley in the Limpopo Province (above).

5.4 The heritage character of the Lion Smelter Project area

The heritage character of the project area is outlined in Part 7 ('Contextualising the Lion Smelter Project Area') of this report.

The most common types and ranges of heritage resources which have been uncovered during earlier heritage surveys in the project area as well as across the Steelpoort region include the following:

- Stone tools which occur as surface finds in dongas and in eroded areas near the foot slopes and between the foothills of the Leolo Mountain range. These artefacts date from the MSA and the LSA.
- Remains dating from at least three phases of the Iron Age, namely Doornkop pottery (AD650-AD900) from the Early Iron Age; Icon pottery (AD1300-AD1500) dating from the early part of the Late Iron Age and Pedi pottery (AD1600-AD1880) which is part of the Late Iron Age and the early Historical Period. Several LIA settlements' occupation stretches well into the Historical Period such as Tsjate, Phiring, Thaba Mosega, Mofofolo, and others.
- Remains which date from the more recent past which may include material cultural remains such as Pedi pottery, tin wares, porcelain, structures such as houses which were constructed with clay and bricks.
- Isolated graves or graveyards which are mostly associated with the historical remains.

6 APPROACH AND METHODOLOGY

This Phase I HIA study was conducted by means of the following:

6.1 Field survey

A field survey was conducted on 24 July 2018. The author was accompanied by Mr. David Paila an employer with Glencore Lion Smelter and attached to the environmental division. Although the survey was conducted in mid-winter archaeological visibility was not good where the proposed new TSF is to be developed. This is a result of the presence of a knee-high grass cover together with thick clumps of trees amongst others 'swart haak' thorn trees which prevented that the total surface area could be walked and searched for heritage resources. Several access points were used from the main dirt roads to do pedestrian surveys of the proposed footprint of the new TSF.

Ecological indicators such as alternations in vegetation patterns; open or bald spots in the veld; protrusions of boulders, low hills or patches with grass or dense accessible vegetation were searched as these could harbour remains of dwellings or even stone walls although the latter seldom occur on flat or level land where there are no building material to construct these features.

Earlier surveys of the X Strata Lion Smelter project area illuminated the original nature and character of the project area (Huffman and Schoeman 2004; Huffman 2005) whilst mitigation work which followed from the Phase I HIA surveys were also conducted (Huffman 2005). However, the greater part of the project area where the proposed new infrastructure is to be established is already disturbed as it falls within the core of the Lion Smelter's Operations.

Google imagery was also used as a supplementary source (*prior* and after fieldwork) to establish and to confirm the possible presence of heritage resources which could be observed by means of using this imagery.

The nature and character of the project area is further illuminated with descriptions and photographs in Part 8.1 ‘Types and ranges of heritage resources’ in the report.

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

Figure 3- GPS track log registered with a GPS instrument. Pedestrian surveys were conducted from main dirt roads which criss-cross the TSF’s footprint. Not all tracks are recorded as two people surveyed the project area (above).

6.2 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 to determine whether any heritage resources of significance had been identified during earlier heritage surveys in or near the project area.

The author is acquainted with the project area at large as he has done several heritage impact assessment studies near the proposed project area. Several earlier heritage impact assessment studies have also been done by other fieldworkers in and close to the project area. These studies provided information regarding the nature and

heritage character of the area, namely (see Part 11 ‘Bibliography relating to earlier heritage studies’).

The literature relating to the pre-historical and the historical unfolding of the larger project area was reviewed. This review focused on local historical groups such as the Pedi who occupied the capital Tsjate in the northern Steelpoort Valley as well as the historical period which included prospecting and early mining. Contextualising the pre-historical and historical background of the region assist with understanding the identity and meaning of heritage sites in the project area; determining the significance of any remains and possible mitigation and/or management measures which may be implemented if any heritage resources may be negatively influenced by the proposed Lion Smelter’s Operations (see Part 7, ‘Contextualising the Project Area’ and Part 11, ‘Select Bibliography’).

In addition, the project area was also studied by means of maps on which it appears (2530AA Draaikraal, 1:50 000 topographical map).

6.3 Spokespersons consulted

No community or community members occupy the project area. Consequently, nobody was consulted regarding the possible presence of heritage resources in the project area.

The field survey was done in conjunction with Mr David Paila, Environmental Officer with Glencore Lion Smelter who is familiar with the project area at large (See Part 12, ‘Spokespersons consulted’).

6.4 Consultation process undertaken and comments received from stakeholders

No specific consultation process was undertaken for the purposes of the heritage study as stakeholder engagement for the project is being handled by JMA Consulting as part of the EMP Amendment process.

6.5 Significance rating

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.

7 CONTEXTUALSING THE LION SMELTER PROJECT AREA

The larger study area falls within a geographical area which includes parts of southern Sekhukhuneland and the Steelpoort Valley which are important historical beacons close to the project area. The following overview of pre-historical, historical and cultural evidence indicates the wide range of heritage resources which do occur across the larger study area (see Part 11 ‘Select Bibliography’ and Part 12 ‘Bibliography of earlier heritage studies’).

7.1 Early Stone Age

Stone Age sites are marked by stone artefacts that are found scattered on the surface of the earth or as parts of deposits in caves and rock shelters. The Stone Age is divided into the Early Stone Age (ESA) (covers the period from 2.5 million years ago to 250 000 years ago), the Middle Stone Age (MSA) (refers to 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 200 years ago). The earliest ancestors of modern humans emerged some two to three million years ago (Deacon & Deacon 1999; Keykendall & Strkalj 2007)

The project area which partly involves the Steelpoort Valley and majestic Leolo Mountain range may have been occupied from the earliest times although remains dating from the ESA have not yet been discovered. The earliest occupation of the area may have been by Homo Erectus who lived 500 000 years ago.

Acheulian hand axes and cleavers may occur along a well forested Steelpoort (Tubatse) River in the distant past. Homo Erectus successful adaptation contributed to the Acheulian having a wide distribution over the world with a preference for wooded areas. Towards the end of the Acheulian phase (Sango industry) Home Erectus manufactured picks, plains and other tools that were successfully utilized in forested areas (Deacon and Deacon 1999).

7.2 Middle Stone Age

Middle Stone Age (MSA) sites dating from as early as two hundred thousand years ago have been found all over South Africa. Therefore, MSA hunter-gatherer bands once lived and hunted across the larger part of the country. MSA people, who probably looked like modern humans, occupied camp sites near water but also occupied sites in cave. They manufactured a wide range of stone tools, including blades and points that have been hafted in long wooden sticks which were used as spears. They also used bow and arrows making them skilled hunters (Deacon & Deacon 1999).

Middle Stone Age (MSA) sites are numerous and date from 250 000 years ago and are associated, initially, with an archaic form of *Homo sapiens* and later with modern humans (*Homo sapiens sapiens*). MSA people have roamed the Steelpoort area as numerous artefacts from this time period have been discovered in eroded areas across the Steelpoort (Huffman & Schoeman 2004). Some sites have been observed by the author on farms such as Hendriksplaats 281, Derde Gelid 278, Onverwacht 292, Winterveld 293, Annex Grootboom 335 and Apiesboomen 295 (Pistorius 2005a, 2005b). MSA people manufactured stone tools with prepared surface platforms, points (for arrows) and stone tools that were hafted in wooden handles such as spears and knives. They also occupied caves and rock shelters (Deacon and Deacon 1999).

7.3 Later Stone Age

Later Stone Age San (LSA) hunter-gathers established base camps in caves and on level plains. Some of these sites may be as old as 20 000 years. LSA occupation of the Steelpoort Valley may have been less intense than during the MSA as it seems as if less LSA sites than MSA sites have been recorded. The LSA has also been researched at Bushman Rock Shelter near Lydenburg where it dates back 12 000BP (Before Present) to 9 000BP and at Höningnestkrans near Badfontein where a LSA site dates back to 4 870BP to 200BP (Esterhuysen & Smith 2007).

The LSA period is also associated with rock engravings and rock paintings. Rock art sites can be divided into San rock art which is the most wide spread, herder or Khoe

Khoe (Khoi Khoi) paintings occurring as thin scattering from the Limpopo Valley through the Lydenburg district into the Nelspruit area and late white farmer paintings which were done by Iron Age farmers. The latter group can be divided into Sotho-Tswana finger paintings and Nguni engravings (Only 20 engravings occur at Boomplaats, north-west of Lydenburg). Farmer paintings are more localised than San or herder paintings and were mainly used by the painters for instructional purposes (Smith & Zubieta 2007).

According to the author's knowledge no rock engravings or paintings have been recorded close to the project area.

7.4 Early Iron Age

The Iron Age is associated with the first agro-pastoralists or farming communities who lived in semi-permanent villages and who practised metal working during the last two millennia. The Iron Age is usually divided into the Early Iron Age (EIA) (covers the 1st millennium AD) and the Later Iron Age (LIA) (covers the first 880 years of the 2nd millennium AD) (Mason, 1986; Huffman 2007)

Bantu-Negroid farmers and metalworkers, the first Early Iron Age (EIA) people established large settlements in the Steelpoort Valley and near Lydenburg 1 500 years ago. EIA sites were investigated at Sterkspruit (near Lydenburg, AD720) and in Nelspruit where the provincial governmental offices were constructed. One 0f the best known EIA site in South Africa is the Lydenburg head site which provided two occupation dates, namely AD600 and from AD900 to AD1100. At this site the Lydenburg terracotta heads were discovered. Doornkop, located south of Lydenburg, dates from AD740 and AD810 (Evers 1981; Whitelaw 1996). Sites dating from the Doornkop facies of the IA seem to occur in great numbers in the Steelpoort Valley

7.5 The Late Iron Age

The LIA is well represented in the Steelpoort Valley and stretches from AD1600 into the nineteenth century and the Historical Period. Several spheres of influence,

mostly associated with stone walled sites, can be distinguished in the region. Historically spheres of influence close to the study area include the following:

- The Bakgatla (Pedi) chiefdom in the Steelpoort Valley rose to prominence under Thulare during the early 1800's and was later ruled by Sekwati and Sekhukune from the village of Tsjate in the Leolo Mountains. The Pedi maintained an extended sphere of influence across the Limpopo and Mpumalanga Provinces during the nineteenth century (Mönnig 1978; Delius 1984).

The majestic Leolo Mountain range in close proximity of the project area is an important historical beacon in the origin history of many indigenous Sotho speaking groups which now are scattered across the Limpopo Province.

7.6 Historical Period

The railway line between Steelpoort and Lydenburg was constructed in 1924 due to an increase in the mining of chrome and magnetite. The name Steelpoort is derived from a hunting expedition that took place either in the late 19th century or the early 20th century. When a group of Voortrekkers from Natal under Frans Joubert had settled there, a man called Scholtz shot an elephant at dusk and on returning next morning found that the tusks had been removed. When the wagons were searched, the tusks were found in the possession of a man called Botha, after which the farm Bothashoek was named. Because an elephant had been killed there, the poort was named Olifantspoort. The river flowing through the poort was called Steelpoort River ('steel' meaning steal).

The Pedi were governed by Thulware until his death in 1824. His main village was Monganeng on the banks of the Tubatse River. His son, Sekwati, fled to the Soutpansberg in the north during the raids of Mzilikazi in 1822. He returned in 1828 and occupied the mountain fortress Phiring, his capital from where he united the Pedi.

The Pedi initially maintained good relations with the Voortrekkers who arrived in Ohrigstad from 1845. However, after a clash with Andries Hendrik Potgieter in 1852 Sekwati moved his capital to Thaba ya Mosego. Border disputes with the Zuid-Afrikaansche Republiek (ZAR) were settled in 1857 with an accord that stated that the Steelpoort River served as the border between Pedi land and the Lydenburg Republic.

Sekwati gave the Berlin Missionary Society permission to establish the Maandagshoek missionary station in Pedi territory. After Sekwati's death in 1861, his son Sekhukhune succeeded his father and also established his village at Thaba Mosego. He ordered the Berlin Missionary Society to discontinue their work and the mission station was burn down. Alexander Merensky, one of the missionaries, thereafter established the well-known Botšabelo missionary station at Middelburg.

The good relationship between the ZAR and the Pedi was gradually weakened. The period from 1876 to 1879 was one of conflict and war, first with the ZAR and then with the British who annexed the Transvaal in 1877. During the First Sekhukhune War in August 1876 the Voortrekkers attacked Thaba Mosego and partly destroyed the settlement.

The Second Sekhukhune War followed in November 1879 during which Sekhukhune was captured in the Mamatamageng cave and sent to prison in Pretoria. Two divisions attacked the Pedi. The main division, comprised of 3 000 whites and 2 500 black allies, attacked from the north-east. The Lydenburg division consist of 5 000 to 8 000 Swazi *impi*, 400 other black allies and 400 white soldiers who attacked from Burgersfort in the south. The Second Sekhukhune War is associated with the settlements of Thaba Mosego and Tšate, a new village established by Sekhukhune close to Thaba Mosego (Mönnig 1978; Delius 1984, 2007).

7.7 The early mining period

The project area is located on the eastern limb of the Merensky Reef in the southern part of the Steelpoort Valley. The Merensky Reef is composed of the crescent-shaped Bushveld Complex that stretches across the central part of South Africa.

This Reef is known for its wealth of mineral resources, generally referred to as the platinum-group metals (PGM's) (Wilson & Anhauser 1998). The first discovery of the eastern limb of the Merensky Reef can be traced back to the early decades of the 20th century when the reef was exposed from the Leolo Mountain range in the north to where the Steenkampsberg, west of the Dwars River (Dwars River range), commences as a continuation of the Leolo Mountain range in the south (Wagner 1973).

The Merensky Reef occurs, geographically, in the westerly and the easterly parts of the Bushveld Complex. These two limbs of the Complex are confined to the North-West, Mpumalanga and northern Limpopo Provinces. The norite zone in which the Merensky Reef outcrops is a rugged mountainous terrain, except in the extreme north-western sector. The area is dominated by high, rough-looking scrub-covered hills and ridges that alternate with flat-bottomed valleys. Four perennial streams, the Olifants, Tubatse, Dwars and Moopetsi Rivers traverse the platinum fields with a number of powerful springs in them. The Merensky Reef has been traced for a total distance strike extent of 283km of which 138km is part of the eastern limb and 145 km in the western limb of the Bushveld Complex. Vertical depths of 1 900m have been registered along the Reef, which also indicates its continuity. The eastern limb of the Reef is geologically less well known than the western limb, because mining activities in this part of the Reef have been limited (Wagner 1973, Viljoen and Reimold 1999).

Andries Lombaard's discovery of platinum nuggets in the Moopetsi River on the farm Maandagshoek in the Steelpoort area in 1924 can be considered the initial discovery of the Merenky Reef (Lombaard 1945).

7.8 Earlier archaeological and heritage studies

The project area is located near the heartland of the pre-historical and the historical Pedi chiefdom. A part of this landscape around the village of Tšate was declared a Provincial Heritage Site by the Limpopo Government on 23 February 2007 (Provincial Gazette No 1333 33). A small museum was also developed in the village of Tšate.

Several heritage impact assessment studies have been done in the Lion Smelter Project Area, namely (see Part 12, 'Bibliography relating to earlier heritage studies').

- During 2004 an archaeological investigation for X Strata for Project Lion was done by an archaeological team from the University of the Witwatersrand. Remains dating from the Iron Age as well as from the more recent past were identified.
- The Phase I investigation for Project Lion was followed with an archaeological Phase II mitigation programme during 2005. The archaeological team from the University of the Witwatersrand identified two sites worth applying mitigation measures. These included a Site 1 which belonged to the Doornkop facies (AD650-950) of the Early Iron Age and a Site 2 which was marked site dating from the Icon facies (AD1300-1500) of the Iron Age.
- The Archaeological Resources Management (ARC) team from Wits also examined an area for historic graves (Huffman 2005) during 2005 and documented several features uncovered during mining development. The results of both investigations were published in Huffman & Schoeman (2004).

8 HERITAGE SURVEY FOR GLENCORE LION SMELTER

8.1 The field survey

The field survey undertaken on 24 July 2018 reveals the following observations regarding the footprint of the development.

Figure 4- The new TSF's footprint is covered with what seems like undisturbed patches of veld. A knee-high grass cover despite the fact that the survey was undertaken mid-winter hampered ground visibility (above).

Figure 5- Dense stands with trees amongst others the notorious 'Swarthaak' occur in clumps across the footprint of the new TSF (above).

Figure 4- The existing Slag Overland Conveyer will be re-aligned from the Smelting Plant to the Slag Dump (above).

Figure 5- The new proposed PCD will be established in an eroded area to the north of the R555 (above).

Figure 6- A new access road and a bridge spanning the tributary of the Tubatse River are planned for the new development (above).

8.2 Types and ranges of heritage resources

The heritage survey for the various developmental components of the Lion Smelter Project revealed the following heritage resources outlined in Section 38 of the National Heritage Resources Act (No 25 of 1999), namely:

- Iron Age remains in close proximity of the footprint of the proposed new RWD to the north of the R555.

These remains have been geo-referenced (Table 1) and its significance has been determined (Tables 2 & 3).

8.2.1 Iron Age remains

Interrupted lines of stones demarcating a roughly rectangular area occur on an undisturbed spot (‘island’) within a large eroded area some distance from where the proposed new RWD is to be constructed. These remains are associated with a

broken lower grinding stone and a few upper grinding and/or rubbing stones. A few potsherds observed on the surface are undecorated.

These remains may either date from the Icon facies of the Iron Age (AD1300 to AD1500) as several Icon facies sites were uncovered during an earlier survey to the north of the R555 (Huffman 2004) . It is also possible that the remains may date from the Late Iron Age and/or Historical Period.

Figure 7- Upright stones in lines on an undisturbed 'island' within a large eroded area where the proposed new RWD will be constructed (above).

Figure 8- A broken lower grinding stone associated with upright standing stones (above).

8.2 Table

Lines with upright stones in the proposed RWD	Coordinates	Significance
LIA01	25º 40'.688S 27º 44'.648E	**Low**

Table 1- Coordinates and significance rating for Iron Age remains in close proximity of the RWD (above).

9 HERITAGE ASSESSMENT FOR GLENCORE LION SMELTER

9.1 The significance of the heritage resources

The significance of the heritage resources must be determined in order to establish the significance of the impact on the Iron Age remains. This will determine whether any mitigation or management measures may be required for the heritage resources which may be affected by the Lion Project.

9.1.1 The significance of the Iron Age remains

These remains comprise archaeological remains which are older than sixty years and therefore are protected by the National Heritage Resources Act (No 25 of 1999).

The archaeological remains are rated as of low 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 4).
- 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 (Tables 4 & 5) (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**		
Social significance	X		
Spiritual significance	X		
Scientific significance (research, use, application, e.g. in tourism industry)	X		

Table 2- Rating the Iron Age remains' significance according to criteria outlined in the NHRA (25 of 1990) (above).

The highlighted criteria reflect aspects of the historical, social, spiritual or scientific significance (research, use and application, e.g. in tourism industry) of the Iron Age remains. According to these criteria the cultural historical significance of the Iron Age remains is graded as of low significance.

9.1.1.2 Field rating scheme for heritage resources

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 3- Field rating (grading) for archaeological remains in the project area

According to the highlighted field rating scheme the Iron Age remains can be rated as of low significance and can be destroyed without mitigation and acquiring a permit from SAHRA (Table 3).

9.2 Mitigating the heritage resources

The Iron Age remains have low significance. The remains are also located at some distance from the proposed footprint on the RWD.

No mitigation measures are necessary for the Iron Age remains.

9.3 Chance find procedures

Chance Find Procedures are applicable during the construction, operation or closure phases of the Lion Smelter Project and apply to all contractors, subcontractors, subsidiaries or service providers. If any of the institutions employees find any heritage resources during any developmental activity the person and institution must cease work at the site of the find. They must report this find to their immediate supervisor and through their supervisor to the senior on-site manager.

9.3.1 Chance-find procedures for heritage resources

The initial procedure to follow when heritage resources are uncovered during development is aimed at avoiding any further possible damage to the heritage resources. The following procedures must now be followed:

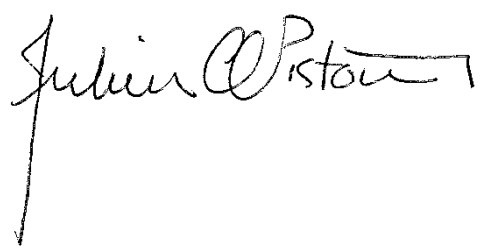
- The person or group (identifier) who identified or exposed the heritage resource or burial ground must cease all activity in the immediate vicinity of the site.
- The identifier must immediately inform the senior on-site manager of the discovery.
- The senior on-site manager must make an initial assessment of the extent of the find and confirm that further work has stopped and ensure that the site is secured and that controlled access is implemented.
- The senior on-site manager will inform the EO and Health and Safety (HS) officers of the chance find and its immediate impact on the Lion Project. The EO will then contact the project archaeologist.

- The project archaeologist will do a site inspection and confirm the significance of the discovery, recommend appropriate mitigation measures to Lion Smelter mine and notify the relevant authorities.
- Based on the comments received from the authorities the project archaeologist will provide the mine with a Terms of References Report and associated costs if mitigation measures have to be implemented.

9.3.2 Chance-Find Procedures for burials and graves

In the event that unidentified burial grounds or graves are identified and/or exposed during any of the developmental phases of the Lion Project the following steps must be implemented subsequent to those outlined above:

- The project archaeologist must confirm the presence of graveyards and graves and follow the following procedures.
- Inform the local South African Police (SAP) and traditional authority.
- The project archaeologist in conjunction with the SAP and traditional authority will inspect the possible graves and make an informed decision whether the remains are of forensic, recent, cultural-historical or archaeological significance.
- Should it be concluded that the find is of heritage significance and therefore protected in terms of heritage legislation the project archaeologist will notify the relevant authorities.
- The project archaeologist will provide advice with regard to mitigation measures for the burial grounds and graves.



DR JULIUS CC PISTORIUS
Archaeologist & Heritage Consultant
Member ASAPA

10 CONCLUSION AND RECOMMENDATION

The heritage survey for the various developmental components of the Lion Smelter Project revealed the following heritage resources outlined in Section 38 of the National Heritage Resources Act (No 25 of 1999), namely:

- Iron Age remains in close proximity of the footprint of the proposed new RWD to the north of the R555.

These remains have been geo-referenced (Table 1) and its significance has been determined (Tables 2 & 3).

The significance of the heritage resources

These remains comprise archaeological remains which are older than sixty years and therefore are protected by the National Heritage Resources Act (No 25 of 1999).

The archaeological remains are rated as of low 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 4). According to these criteria the cultural historical significance of the Iron Age remains is graded as of low significance.
- 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 (Tables 4 & 5) (Section 7 of the NHRA [Act No 25 of 1999). According to the highlighted field rating scheme the Iron Age remains can be rated as of low significance and can be destroyed without mitigation and acquiring a permit from SAHRA (Table 5).

Mitigating the heritage resources

The Iron Age remains have low significance. The remains are also located at some distance from the proposed footprint on the RWD.

No mitigation measures are necessary for the Iron Age remains.

Chance-find procedures

Chance-Find Procedures are applicable during the construction, operation or closure phases of the Lion Smelter Project and apply to all contractors, subcontractors, subsidiaries or service providers. If any of the institutions employees find any heritage resources during any developmental activity the person and institution must cease work at the site of the find. They must report this find to their immediate supervisor and through their supervisor to the senior on-site manager.

Chance-find procedures for heritage resources

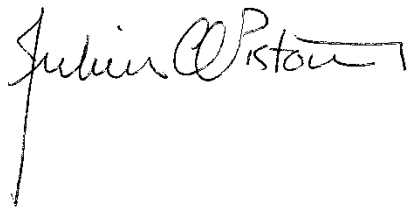
The initial procedure to follow when heritage resources are uncovered during development is aimed at avoiding any further possible damage to the heritage resources. The following procedures must now be followed:

- The person or group (identifier) who identified or exposed the heritage resource or burial ground must cease all activity in the immediate vicinity of the site.
- The identifier must immediately inform the senior on-site manager of the discovery.
- The senior on-site manager must make an initial assessment of the extent of the find and confirm that further work has stopped and ensure that the site is secured and that controlled access is implemented.
- The senior on-site manager will inform the EO and Health and Safety (HS) officers of the chance find and its immediate impact on the Lion Project. The EO will then contact the project archaeologist.
- The project archaeologist will do a site inspection and confirm the significance of the discovery, recommend appropriate mitigation measures to Lion Smelter mine and notify the relevant authorities.
- Based on the comments received from the authorities the project archaeologist will provide the mine with a Terms of References Report and associated costs if mitigation measures have to be implemented.

Chance-Find Procedures for burials and graves

In the event that unidentified burial grounds or graves are identified and/or exposed during any of the developmental phases of the Lion Project the following steps must be implemented subsequent to those outlined above:

- The project archaeologist must confirm the presence of graveyards and graves and follow the following procedures.
- Inform the local South African Police (SAP) and traditional authority.
- The project archaeologist in conjunction with the SAP and traditional authority will inspect the possible graves and make an informed decision whether the remains are of forensic, recent, cultural-historical or archaeological significance.
- Should it be concluded that the find is of heritage significance and therefore protected in terms of heritage legislation the project archaeologist will notify the relevant authorities.
- The project archaeologist will provide advice with regard to mitigation measures for the burial grounds and graves.



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