

Prepared for:
Alta van Dyk Environmental Consultants cc
PO Box 1005
Midstream Estate 1692
Tel 0119409457
Fax 0866343967

**A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY
INCLUDING ADDITIONAL PORTIONS OF THE FARMS
ZWARTFONTEIN 814LR AND MOORDKOPJE 813LR FOR THE
PROPOSED AKANANI MINING (PTY) LTD PROJECT NEAR
MOKOPANE IN THE LIMPOPO PROVINCE**

Prepared by:
Dr Julius CC Pistorius
Archaeologist & Heritage Consultant
Member ASAPA

8 5TH Avenue
CASHAN X 1
RUSTENBURG 0299

Cell 0825545449
August 2021

EXECUTIVE SUMMARY

The Akanani Mining (Pty) Ltd Project is planned as an underground platinum mining operation on the farms Zwartfontein 814 LR and Moordkopje 814 LR (Mining Rights Area) in the Mokopane District in the Limpopo Province. This Phase I Heritage Impact Assessment (HIA) for the proposed Akanani Project which included additional portions of the farms Zwartkopjes 814LR and Moordkopje 813LR was conducted in terms of Section 38 of the National Heritage Resources Act (No 25 of 1999).

The aims of the Phase HIA study were the following, namely:

- To establish whether any of the types and ranges of heritage resources as outlined in Section 38 of the NHRA do occur within the Akanani Project Area.
- To establish the significance of the heritage resources in the Akanani 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 Akanani Project.

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

- Stone tools which date from the Stone Age which occur here and there along the banks of the Mohlosane River;
- Remains dating from the Late Iron Age/Historical Period that consist of a scatter of metal working slag;
- Remains from the recent past which consist of the disintegrated remains of dwellings; and
- Possible and positively identified graves occurring in association with remains of homesteads which date from the more recent past.

All these heritage resources, except the stone tools which are 'mobiles' and all remains from the recent past which are extensive, were geo-referenced and mapped (Figures 2, 3 & 4; Tables 1-5). (The extensive nature of the remains from the recent past did not allow for all these remains to be mapped). The significance of the heritage resources that may be affected by the Akanani Project was determined by means of stipulations derived from the National Heritage Resources Act (No 25 of 1999) and by means of various other criteria (Tables 6-8). The significance of the impact of the Akanani Project was determined according to a rating scheme outlined in Part 7.5

'Significance ratings' (Tables 9-11). Mitigation and well as chance-find procedures are proposed for the Akanani Project.

The significance of the heritage resources

The significance of these heritage resources was determined as well as the significance of possible impacts on any of these heritage resources to propose appropriate mitigation measures for those heritage resources which may be affected by the Akanani Project.

Stone tools

The stone tools along the banks of the Mohlosane River will not be affected by the proposed Akanani Project. These artefacts are limited in numbers and are also 'mobile' as they are continuously moved during floods. Due to their mobility, they do not occur in any archaeological context any longer. Consequently, these stone tools have low archaeological or heritage significance.

Metal working slag

These remains date either from the Late Iron Age (AD1600 to AD1850) and/or from the Historical Period (AD1850 onwards). It is even possible that the remains may be associated with the residential remains from the recent past.

The metal working slag has low heritage significance. It probably dates from the more recent past; is limited to a few pieces that may not be retraceable again after rain or other natural occurrences; is not associated with furnace debris or other metal working features and artefacts and occur in an eroded area without any archaeological context.

Remains from the recent past

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

The remains from the recent past are rated as of low to medium significance. This rating is based on the use of two rating (grading) schemes, namely (Tables 6 & 7):

- 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 6).
- 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 7) (Section 7 of the NHRA [Act No 25 of 1999]).

Possible and positive identified graves

No distinction is made between possible and positive identified graves as possible grave sites must be treated as if they in fact represent definite graves.

All graveyards and graves can be considered of high significance and are protected by various laws (Table 8). Legislation about graves includes Section 36 of the NHRA in instances where graves are older than sixty years. Other legislation about graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended). Municipal laws about graves and graveyards may differ and professionals involved with the exhumation and relocation of graves and graveyards must adhere to these laws.

Possible impact on the heritage resources

According to the layout plan for the Akanani Project the following can be noted (Figures 2, 3 & 4):

- The scatter with metal working slag will be destroyed when infrastructure for the proposed Akanani Project is constructed.
- The remains of the recent past will be destroyed when infrastructure for the proposed Akanani Project is constructed.
- The possible and positive identified graves will be destroyed when infrastructure for the proposed Akanani Project is constructed.

Significance of the impact on the metal working slag

The significance of the impact on the metal working slag is high. However, the metal working slag has low heritage significance. Consequently, the impact of the Akanani Project on the metal working slag is of low significance and no mitigation is required (Table 9).

Significance of the impact on the remains from the recent past

The significance of the impact on the remains from the recent past is medium to high. However, the remains from the recent past have low to medium significance. Consequently, the impact of the Akanani Project on the remains from the recent past is of low to medium significance and mitigation measures are required (Table 10).

Significance of the impact on the possible and positive identified graves

The significance of the impact on the possible and positive identified graves is very high. The possible and positive identified graves are rated as of high heritage significance. Consequently,

the impact of the Akanani Project on the possible and positive identified graves are of high significance and mitigation measures are required (Table 11).

Mitigating the heritage resources

The metal working slag

The metal working slag has low heritage significance and can be destroyed during the implementation of the Akanani Project.

The remains from the recent past

The remains from the recent past has low to medium significance and can only be destroyed after these remains have been documented by an archaeologist. This requires that the remains be mapped, photographed and described in a report which must be furnished to the South African Heritage Resources Authority (SAHRA).

The documentaion of the remains from the recent past, which in some instances accommodates graves, will also provide an opportunity to uncover more possible or definte graves in the Akanani Project Area.

The archaeologist has to apply for a permit from SAHRA for the documentation of the remains from the recent past. After a permit has been issued and the documentaion has been completed the archaeologist must provide SAHRA with a report outlining the results of the documentation process. Hereafter, Akanani Mining can apply for a permit from SAHRA for the destruction of the remains from the recent past.

The possible and positive identified graves

All graves must be exhumed and relocated. It is most likely that all graves are older than sixty years. The exhumation of human remains, and the relocation of graveyards are regulated by various laws, regulations, and administrative procedures. This task is undertaken by forensic archaeologists or by reputed undertakers who are acquainted with all the administrative procedures and relevant legislation that must be adhered to whenever human remains are exhumed and relocated. This process also includes social consultation with a 60 day statutory notice period for graves older than sixty years. Permission for the exhumation and relocation of human remains must be obtained from the descendants of the deceased (if known), the National Department of Health, the Provincial Department of Health, the Premier of the Province and the local police. Municipal laws about graves and graveyards may differ and professionals involved with the exhumation and relocation of graves and graveyards must be acquainted with these laws and adhere to these laws.

Chance-find procedures

Detailed procedures are outlined for chance-finds involving both heritage resources and graves within the Akanani Project Area.

General (disclaimer)

It is possible that this Phase I HIA study may have missed heritage resources within the Akanani Project Area. Consequently, detailed procedures for chance-finds are outlined in the report and are applicable during the construction, operation, and closure phases of the Akanani Project and apply to all contractors, subcontractors, subsidiaries, or service providers. If any heritage resources of significance are exposed during the Akanani 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 notified 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.

ACRONYMS AND ABBREVIATIONS

ASAPA	Association of South African Professional Archaeologists
BP	Before Present
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIA	Early Iron Age
EMPr	Environmental Management Programme
EMPR	Environmental Management Programme Report
ESA	Early Stone Age
GPS	Global Positioning System
GY	Graveyard
HIA	Heritage Impact Assessment
LIA	Late Iron Age
LSA	Late Stone Age
MIA	Middle Iron Age
MPRDA	Mineral and Petroleum Resources Development Act, Act No 28 of 2002
MSA	Middle Stone Age
NEMA	National Environmental Management Act, Act No 107 of 1998
NEM:WA	National Environmental Management: Waste Act, Act No 59 of 2008
NHRA	National Heritage Resources Act, Act No 25 of 1999
No	Number
NWA	National Water Act, Act No 36 of 1998
PHRA	Provincial Heritage Resource Agency
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
ToR	Terms of Reference
VDDC	Vandyksdrift Central
WUL	Water use licence

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 archaeological 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.

CONTENTS

EXECUTIVE SUMMARY	2
ACRONYMS AND ABBREVIATIONS	6
TERMINOLOGY	8
1 INTRODUCTION	14
1.1 Background and context	14
1.2 Aims with this report	15
1.3 Assumptions and limitations	15
2 DETAILS OF THE SPECIALIST	18
3 DECLARATION OF INDEPENDENCE	19
4 LEGAL FRAMEWORK	21
4.1 Legislation relevant to heritage resources	21
4.1.1 NEMA	23
4.1.2 MPRDA	23
4.1.3 NHRA	23
4.1.3.1 Heritage Impact Assessment studies	23
4.1.3.2 Section 34 (Buildings and structures)	24
4.1.3.3 Section 35 (Archaeological and palaeontological resources and meteorites)	25
4.1.3.4 Section 36 (Burial grounds and graves)	25
4.1.3.5 Section 37 (Public monuments and memorials)	27
4.1.3.6 Section 38 (HRM)	27
4.4.4 NEMA Appendix 6 requirements	28
5 THE AKANANI PROJECT	31
5.1 Location	31
5.2 The nature of the Akanani Project	31
5.3 Human intervention from the earliest times	35
5.4 Heritage character of the project area; earlier heritage studies	37

6	CONTEXTUALISING THE AKANANI PROJECT AREA	41
6.1	Background	41
6.2	Ndebele pre-history and history	42
6.3	Historical period	44
6.4	The Makapans Valley	46
6.5	Mining history	47
7	APPROACH AND METHODOLOGY	48
7.1	Field survey	48
7.2	Databases, literature survey and maps	51
7.3	Spokespersons consulted	51
7.4	Consultation process undertaken and comments received from stakeholders	51
7.5	Significance rating	52
8	HERITAGE SURVEY FOR THE AKANANI PROJECT	55
8.1	Types and ranges of heritage resources	55
8.2	Stone tools	56
8.3	Metal working slag	57
8.4	Remains from the recent past	61
8.5	Graves and graveyards	66
8.5.1	Possible and positive identified graves on Zwartfontein 814LR and Sandsloot 236LR	66
8.5.1.1	Possible graves	
8.5.1.1.1	Possible grave 01	66
8.5.1.1.2	Possible grave 02	67
8.5.1.1.3	Possible grave 03	68
8.5.1.1.4	Possible graves 04	68
8.5.1.1.5	Possible Grave 05-06	68
8.5.1.2	Positive identified graves	69
8.5.1.2.1	Grave 01	69
8.5.1.2.2	Grave 02	70
8.5.1.2.3	Grave 03	70
8.5.1.2.4	Grave 04	70

8.4.1.2.5	Grave 05 and Grave 06	71
8.4.1.1.2.6	Graves 07 to Grave 10	72
8.4.1.1.2.7	Grave 11	72
8.4.1.1.2.8	Grave 12	73
8.4.1.1.2.9	Grave 13	74
8.4.1.1.2.10	Grave 14	74
8.5.2	Positive identified graves on remaining portions of Zwartfontein 814LR and Moordkopje 813LR	74
8.5.1.2.1	Graveyard 01	75
8.5.1.2.2	Graveyard 02	75
8.5.1.2.3	Graveyard 03	76
8.5.1.2.4	Grave 01	77
8.5.1.2.5	Graveyard 04	78
8.5.1.2.6	Graveyard 05	79
8.5.1.2.7	Graveyard 06	80
8.5.1.2.8	Graveyard 07	81
8.5.1.2.9	Graveyard 08	82
8.5.1.2.10	Graveyard 09	83
8.5.1.2.11	Grave 02	84
8.5.1.2.12	Graveyard 10	84
8.5.1.2.13	Graveyard 11	85
8.5.1.2.14	Graveyard 12	86
8.6	Tables	87

9	THE SIGNIFICANCE, POSSIBLE IMPACT ON AND MITIGATION OF THE HERITAGE RESOURCES	92
9.1	The significance of the heritage resources	92
9.1.1	Stone tools	92
9.1.2	Metal working slag	93
9.1.3	Remains from the recent past	93
9.1.3.1	Criteria to be part of the national estate	93
9.1.3.2	Field rating scheme for heritage resources	95
9.1.4	Possible graves and positive identified graves	96
9.2	Impact on the heritage resources	96

9.3	The significance of the impact on the heritage resources	97
9.3.1	The significance of the impact on the metal working slag	97
9.3.2	The significance of the impact on the remains from the recent past	97
9.3.3	The significance of the impact on the possible and positive identified graves	98
9.4	Mitigating the heritage resources	99
9.4.1	The metal working slag	99
9.4.2	The remains from the recent past	99
9.4.3	The possible and positive identified graves	99
9.5	Chance-find procedures	100
9.5.1	Chance-find procedures for heritage resources	100
9.5.2	Chance-find Procedures for graves	101
10	CONCLUSION AND RECOMMENDATIONS	102
11	SPOKESPERSONS CONSULTED	107
12	SELECT BIBLIOGRAPHY	108
13	BIBLIOGRAPHY RELATING TO HERITAGE STUDIES	110

1 INTRODUCTION

1.1 Background and context

In June 2019, Sibanye-Stillwater acquired the entire capital share of Lonmin Plc. Lonmin's assets included the Marikana PGM mining operations and associated retreatment, smelter, base metal refinery and precious metal refinery assets in South Africa. The acquisition also included the Akanani project area. Akanani Mining (Pty) Ltd is therefore a wholly owned subsidiary of Sibanye-Stillwater.

The Akanani Project is planned as an underground mining operation on the farms Moordkopje 813 LR and Zwartfontein 814 LR in the Mokopane District in the Limpopo Province. The proposed mining project is located approximately 25 km northwest from Mokopane immediately to the west and bordering the Anglo Platinum Mogalakwena Mine.

In terms of the converted prospecting right (MPT No. 249/2006) Akanani has the right to prospect for Platinum Group Metals, Gold, Silver, Nickel, Copper and Cobalt.

The proposed mining related surface infrastructure will be located on a portion of the farm Zwartfontein 814 LR. The proposed tailings storage facility was initially planned to be located on a portion of the farm Sandsloot 236 KR however the client has requested an additional area within Zwartfontein 814 LR and Moordkoje 815 LR to be assessed for the possible placement of the TSF and associated RDW to stay within the Mining Rights Area . The surface ownership on the farms vests with the State in terms of title deeds BC3267/1999 (Zwartfontein), T61008/2002 (Moordkopje) and T66157/2001 (Sandsloot).

It is the intention of Akanani Mining (Pty) Ltd to complete its Mining Right application on this area which will be supported by a full Environmental Impact Assessment (EIA) Process as to commence mine development while undertaking further prospecting activities on this area.

A Phase I Heritage Impact Assessment (HIA) study was undertaken in terms of Section 38 of the National Heritage Resources Act, 1999 (Act No 25 of 1999, NHRA) for portions of the farms Zwartfontein 814 LR and Sandsloot 236 KR for of this process (Pistorius 2020).

However, Sibanye-Stillwater (Akanani Mine) is in the process of moving their TSF and RWD location from the farm Sandsloot 236 KR to portions of the farms Zwartfontein 814LR and Moordkopje 813 LR as part of comments received during the Public Participation Process for the Draft Scoping Report (Environmental Impact Assessment Process). Consequently, the Phase I HIA study was updated to include the additional portions of Zwartfontein 814LR and Moordkopje 813, the results of which is published in this report.

1.2 Aims with this report

This study comprises a heritage survey and a HIA assessment for the Akanani Project which include additional areas on portions of the farms Zwartfontein 814LR and Moordkopje 813 LR for the possible location of a TSF and a RWD. The aims with this heritage survey and impact assessment for the Akanani Project area were the following:

- To establish whether any of the types and ranges of heritage resources as outlined in Section 38 of the NHRA do occur in the Akanani Project area.
- To establish the significance of the heritage resources in the Akanani 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 Akanani 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 region as he was involved in

several Heritage Impact Assessment studies in the area during the last fifteen years (See Part 12, 'Bibliography relating to earlier heritage studies').

The report's findings are based on accepted archaeological survey and assessment techniques and methodologies considering the limitations present at the time (season) and under the circumstances (large surface area) that the survey was conducted.

Areas that were not covered on foot comprise current and older agricultural fields which have been utilized for agricultural activities in the past as well as in the present. Parts of the Akanani Project Area were also surveyed on at least two former occasions when heritage surveys were done for the proposed Akanani Mine as well as for Eskom's proposed Akanani Substation although not covering the whole of the current Akanani Project Area.

The author preserves the right to modify aspects of the report including the recommendations when new information becomes available particularly if this information may have an influence on the results and recommendations of the report. This applies to the uncovering of graves as all recorded graves may not be fully representative of all possible graves which may exist in the Akanani Project Area. Informal graves may have been missed during the surveys due to various reasons. It is also expected that graves may be obscured by vegetation or may be inconspicuous as they have been abandoned a long time ago. Some graves may also occur underground and may only be exposed once development commences.

It is also possible that heritage resources may simply have been missed because of human failure, either to observe or to recognise them as such.

Consequently, chance-find procedures for graves and other types of heritage resources have been outlined in the report (Part 9.5, 'Chance-find procedures').

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-)

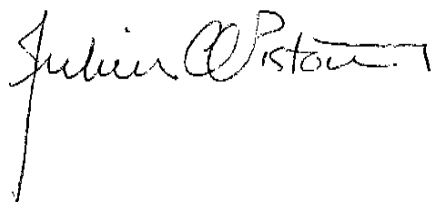
Accreditation: Member of the Association for Southern African Professional Archaeologists. (ASAPA)

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, Hartbeespoort 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 INDEPENDANCE

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 an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

A handwritten signature in black ink, appearing to read 'Julius CC Pistorius', with a long vertical line extending downwards from the end of the signature.

1 September 2021

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 NHRA (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 NHRA. According to the NHRA, 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 NHRA 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 SAHRA and the 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 No 107 of 1998
- Minerals and Petroleum Resources Development Act (MPRDA), Act No 28 of 2002
- National Heritage Resources Act (NHRA), Act No 25 of 1999.

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;
- (1) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- (2) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- (3) 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

4.1.1.1 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 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) 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).

4.1.1.2 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.

4.1.3 NHRA

According to Section 3 of the NHRA 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 NHRA, a 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 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. If archaeological resources are discovered during 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:

- 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 SAHRA. 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 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 about 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 No 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 (Heritage Resource Management)

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 about such development have been considered prior to the granting of the consent.

4.2 NEMA (Appendix Six requirements)

NEMA Regulations, 2014 (as amended 2107) Appendix 6 Relevant section in report	
Details of the specialist who prepared the report and 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 Part 1.2. Aims with this report
An indication of the quality and age of base data used for the specialist report	Part 7. Approach and Methodology
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 Part 7.1. Field survey
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
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 alternative	Part 8. Heritage survey
An identification of any areas to be avoided, including buffers	Part 9.3 Impact on 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;	Figures 2 and 3
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, including identified alternatives, on the environment	Part 10 Conclusion and recommendations
Any mitigation measures for inclusion in the EMPr	Part 9.4 Mitigation measures
Any conditions for inclusion in the environmental authorisation	Part 9.5 Chance-find procedures
Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Part 9.5 Chance-find procedures
A reasoned opinion – <ul style="list-style-type: none"> • whether the proposed activity, activities or portions thereof should be authorised; • regarding the acceptability of the proposed activity or activities; and if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr.	Part 10 Conclusion and recommendations Part 9.5 Chance-find procedures
A description of any consultation process that was undertaken during the course of preparing the specialist report	Part 7.4 Consultation process undertaken and comments received from stakeholders
A summary and copies if any comments that were received during any consultation process	Part 7.4 Consultation process undertaken and comments received from stakeholders

Any other information requested by the competent authority.	None
---	------

5 THE AKANANI PROJECT

5.1 Location

The Akanani project area is situated approximately twenty-five kilometres to the north-west of Mokopane (Potgietersburg) in the Limpopo Province of South Africa. The project area is situated between the two national roads that run from Mokopane to Bakenberg and from Mokopane to Steilloop. The proposed Akanani project will be established on the Merensky Reef, locally and historically known as the 'Platreef', which was discovered in the 1920's by Hans Merensky. The proposed underground mine will be located in the south-eastern corner of the farm Zwartfontein 814 (2428BB Tinmyne 2328DD & Limburg; 1:50 000 topographical maps) (Figure 1).

The proposed Akanani underground mine is amid communities whose ancestors were once part of the sphere of influence of the Langa Ndebele, a community whose origins can be traced to Nguni (Kwa Zulu/Natal) ancestry. The Langa Ndebele intermarried, over centuries, numerous Sotho, and other clans. They occupied villages and homesteads within the general area where the proposed new underground mine will be established. Towns and villages that surround the proposed new mining area include Ga Masenya, Molotswi, Mapela and Ga Mosoge. The descendants of the Ledwaba/Maune Ndebele clans live in the Bergzicht-Kalkspruit and Mašasane townships to the east of the Akanani project area.

Few outstanding geographic features occur in the project area, except the prominent Fonthane mountain range along the western border of the project area whilst the Mhlosane River crosses the project area near its northern perimeter.

5.2 The nature of the Akanani Project

The surface infrastructure for the proposed project will consist of a concentrator; shaft system; stockpiles; Waste Rock Dump; Tailings, Storage Facility office buildings; change houses; backfill plant, ventilation shaft and fan and Waste-Water Treatment Works. The final depth for the sunken shaft will be approximately 1450m below surface

while the furthest mining depth will be at approximately 1650 m below surface (Figure 2).

Bulk water in support of the mining operations will be abstracted from the Doorndraai Dam as per two approved Water Use Licences:

- Water Use Licence No 27/2/1/A761/2/1 dated 23 December 2008 which permits the use of 1 743 322 m³ of water per annum from the Doorndraai Dam for mining purposes. The original purchased agricultural allocation was 2 355 840 m³/annum which was reduced to 74% assurance in supply based on the conversion in use from agricultural to mining: and
- Water Use Licence No 01/A61G/A/2035 dated 27 November 2012 which permits the use of 412 920 m³ of water per annum from the Doorndraai Dam for mining purposes.

To convey the water allocation to the mine there will be a need to construct a 60 km pipeline from the Doorndraai Dam to the Akanani infrastructure area. This pipeline will be buried within the road reserve as per the approval from the Roads Agency Limpopo (RAL) and will have a through-put of 350 m³/hr.

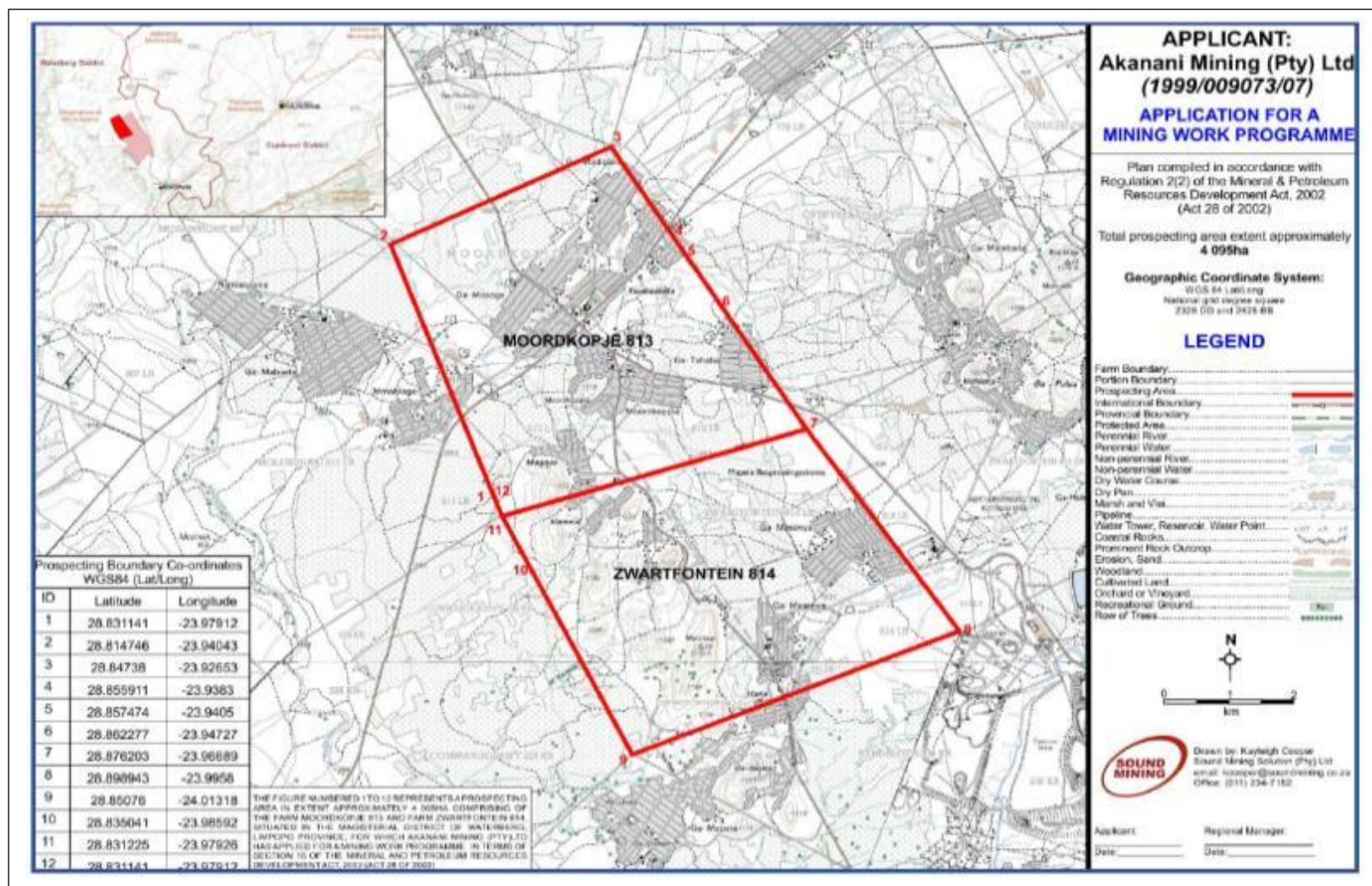


Figure 1- The Akanani Mining (Pty) Ltd Rights Area north-west of Mokopane in the Limpopo Province (above).

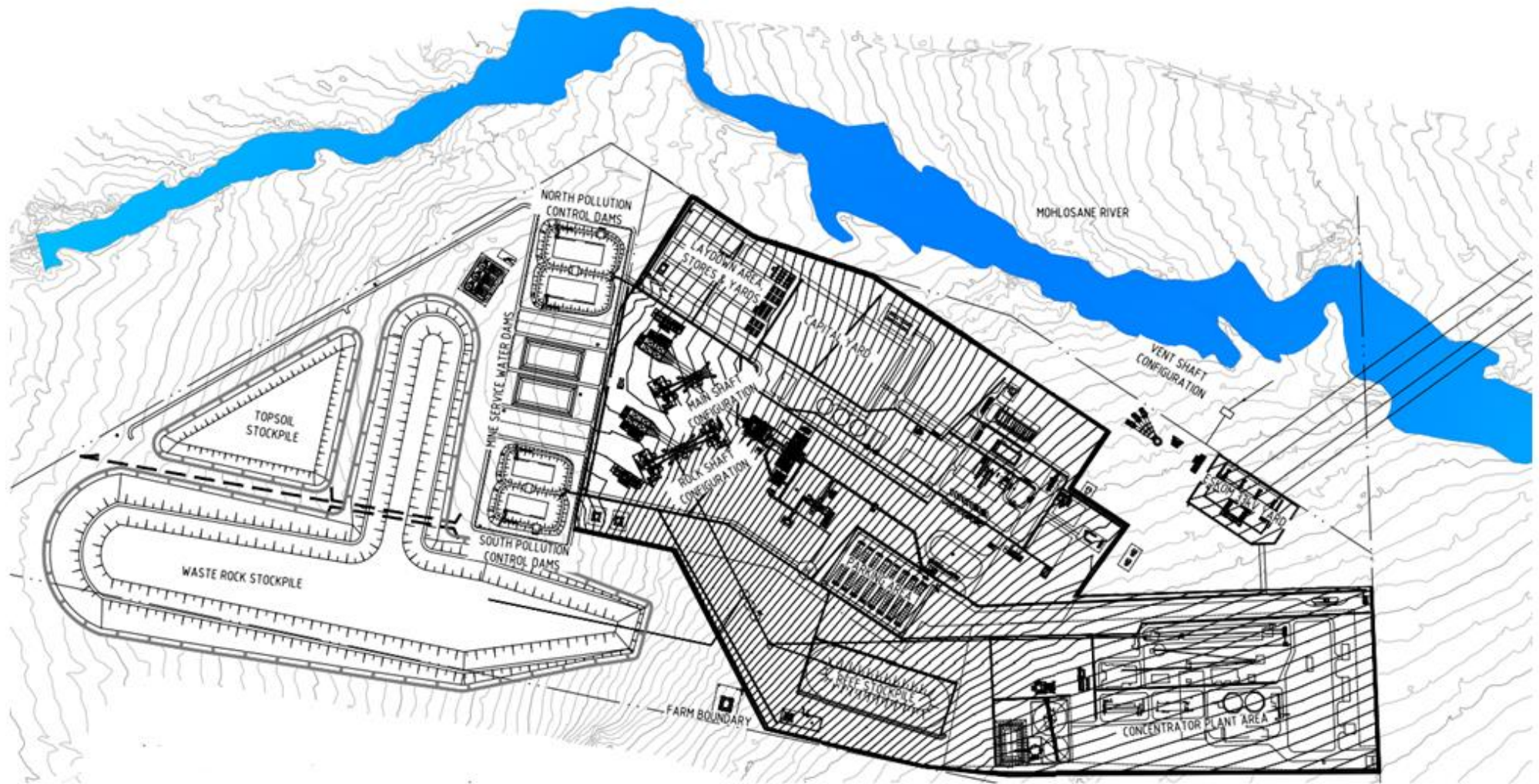


Figure 2- Mining Related surface Infrastructure and layout plan for the proposed Akanani Project on the farms Zwartfontein 814KR (above).

5.3 Human intervention from the earliest times (not conducive to the conservation of heritage resources)

The project area is not an unaffected piece of land as large parts have been exploited for agricultural activities in the past. These agricultural pursuits are visible on the 1983 edition of the 1: 50 000 topographical map of Limburg (1: 50 000; 2328 DD). According to an eighty-six-year-old spokesperson (Jan Tefu) agricultural fields already existed on various farms before the second half of the 20th century. Hunting, gathering, cultivating and stock farming therefore were economic activities of the Langa Ndebele of Ga Mapela for decades. Some people still depend on agriculture and stock farming to supplement their income and communities still maintain agricultural plots and utilise the veldt for grazing.

In the Limpopo Province, in the past, chiefs allocated pieces of land to the heads of wards, who in turn, provided plots to married men. The sizes of these plots were determined by the number of wives a man had, but each plot was usually one to two hectares, which is the maximum that a woman could cultivate using a hoe. The introduction of the plough allowed families to cultivate larger areas of land, up to about 4.5 hectares.

Crops included sorghum (*mabele*) and millet (*letsoa*), which were later largely replaced by maize (*mahea*) as a staple food. Supplementary crops included pumpkins (*marotse*), various varieties of gourd (*maraka*), beans (*dinawa*) and a type of groundnut (*ditloo*). Tobacco and sugarcane were also planted.

Although each person usually possessed his own stock, pasturage was used on a communal basis. At a fixed time, the tribal ruler declared the reaped grain fields open for use as winter grazing. Grazing cattle disturbs heritage resources, as deposits on sites are churned under the hooves of the cattle and low stone foundations are broken and scattered.

The scarring effect of earlier ploughing is visible where the veldt has been cleared from trees and bush. Open patches of land covered only with grass mostly represent old agricultural fields.



Figure 3- The Akanani Project Area surveyed on Zwartfontein 814 LR and Moordkopje 813 LR is located behind the Waste Rock Dumps (above).



Figure 4- The Project Area surveyed on Zwartfontein 814LR and Moordkopje 813LR in the winter (above) and summer (next page, above) is overgrown with vegetation sometimes occurring as thick clumps on earlier residential remains that make the identification of graves extremely difficult (above).



Figure 5- The Akanani Project Area on Zwartfontein 814LR surveyed during the summer of February 2020 was covered with lush vegetation amongst others clumps with impenetrable sickle bush (above).



Figure 6- The extended portions of the Akanani Project Area on portions of Zwartfontein 814LR and Moordkop 813LR were surveyed during the winter. These portions of land were used for agricultural purposes in the past and in parts covered with impenetrable sickle bush (above).

5.4 Heritage character of the project area: earlier heritage studies

The Akanani project area is part of a vast plain which is dotted with scattered mountain, isolated kopjes and syenite knolls which are scattered from Mokopane westwards along the eastern fringes of the Waterberg mountain range past Bakenberg to Marken further to the north. This area used to be the sphere of influence of the Langa-Ndebele and other Sotho clans some, according to oral evidence, earlier arrivals in the area than the Ndebele. The Langa Ndebele has Nguni origins and subjugated some of the earlier arrivals from as early as the sixteenth century. Names of some of these early Langa Ndebele settlements appear in bold in the chapter on their history in the report (Part 6, 'Contextualising the Akanani Project Area') (2428BB Tinmyne & 2328DD Limburg, 1:50 000 topographical maps).



Figure 7- A Langa Ndebele settlement, possibly Thutlwane which was occupied during the 19th century. Note the extensive remains of stone walls visible as circles and lines in the yellow grass veld on top of the mountain. The settlement is located outside the Akanani project area (above).

The heritage character of the area surrounding the proposed Akanani project area therefore is characterised by several large mountains and smaller kopjes and knolls scattered over a vast plain. Some of the mountains bear historical names such as Mapela, Masenya and the historically well-known Fonthane and Thutlwane. Further to the north is Bankenberg and still further north in the Masebe Nature Reserve is the mountain of Magagamatala. Some of the mountains in this area serve as important historical settlements, battlefields and as graveyards for the Langa Ndebele. The descendants of these pre-historical and historical communities still live-in numerous villages in close proximity to the proposed new mining area. However, it must be noted that these settlements occur outside the proposed mining area.

Heritage studies done in and near the project area indicate that Stone Age sites do occur. However, only a few occurrences have been recorded close to the project area. These include discoveries of stone tools close or near rivers and streams such as the Vaalsloot, Klein Sandsloot and the Moholosane River in the project area (Pistorius 2002, 2009e) A cave settlement with stone tools dating from the MSA and the LSA as well as several rock paintings were investigated several decades ago in the Brabant rock shelter on the farm Noord Brabant 774LR a few kilometres to the north of the proposed mining area (Schoonraad & Beaumont 1968). Other studies such as the one for a residential development on the farm Lisbon 288KR south-west of Mokopane refer to scatters of stone tools dating from the MSA and the LSA (Hutten 2009). These Stone Age sites were mainly recorded in open veld such as the survey for a platinum mine on Volspruit 326KR and Zoetveld 294KR south of Mokopane revealed (Pelser 2011). The sites here recorded also ranged in age between the MSA and LSA.

Settlement from the Iron Age and particularly the Late Iron Age (LIA) received more thorough attention than heritage sites from other time periods in this part of the Limpopo Province. Whilst Loubser (1994) recorded all pre-historical and historical settlements of the Ndebele around Polokwane several others were investigated as a result of mitigation work for developmental projects. A settlement recorded on the farm Rietfontein 2KS (Site PLA1677/S.35-006) with possible Sotho or Ndebele cultural affiliations (Higgit, Karodia, Nel & Du Piesanie 2013) was excavated as part of a mitigation process for the Platreef Platinum Mine (Van Der Walt 2017, 2020). Others archaeological salvage projects include an excavation of a settlement at Planknek

closer to Mokopane (Huffman and Steel 1996). Stone walled settlements that were occupied by the Langa Ndebele in a poort in Thaba Tšweu were reported in a heritage report close to Eskom's Witkoppen Substation (Pistorius 2009e). The Ficus cave site near the historic Makapans Cave was investigated as part of a post graduate study and recorded more than fifty sites in close range of the Makapan Cave which is part of a world heritage site (Moore 1981).

Historical remains from the more recent past are numerous in the wider area as this category includes graveyards, residences, farmsteads, and mining remains from the more recent past. Most heritage reports include references to these types and ranges of heritage resources. Roodt's (2009) investigation of the Mooiplaas Residential Development project on a 'farm in the Waterberg' revealed graveyards whilst Pelser's (2011) survey of the farms Volspruit 326KR and Zoetveld 294KR for a platinum mine revealed next to Stone Age sites, graves, scatters of potsherds, historical farm residences and infrastructure to be associated with earlier mining activities. Historical mining remains were also documented, described and researched in an archaeological mitigation report for Potgietersrust Platinum Mine (PPRust) on the farm Zwartfontein 818LR before these remains were destroyed to make way for a new open cast pit (Pistorius 2002e).

6 CONTEXTUALISING THE AKANANI PROJECT AREA

6.1 Background

When referring to the human past in archaeological (heritage) terms the following time periods are usually distinguished, namely:

Stone Age

The Stone Age (SA) 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). Stone Age hunter-gathers seasonally moved around in small bands and lived in temporary settlements such as open sites or caves and mainly lived by means of hunting and gathering. LSA hunter-gatherers and Khoekhoe herders are also associated with rock art.

Iron Age

The Iron Age (IA) 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). The Iron Age (IA) is associated with the first agro-pastoralists (farming) communities who lived in semi-permanent villages, manufactured pottery and in some instances practised specialised activities such as mining, metal working and trade.

Historical Period

The Historical (Colonial) Period refers to the appearance of the first written records provided by hunters, traders, adventures and missionaries who moved into the interior from the 1830's onwards. Their diaries, memoirs and journals contain amongst others descriptions of the indigenous peoples, places, fauna and flora, minerals and events that occurred in this part of the country.

The types and ranges of heritage resources associated with these time periods and their relevance to the Akanani Project Area is now briefly discussed.

6.1 The Makapans Valley

The Makapans Valley to the north of Mokopane, one of South Africa's world heritage sites, incorporates an extensive cave complex which holds paleontological, archaeological, and historical remains. Makapans Caves is situated fifteen kilometres to the north of the town of Mokopane in the Makapan Valley, which is a broad, shallow valley which is bounded on the east and south-east by the dolomitic Maribashoek Mountains, Buffelshoek Mountains and Highveld mountain ranges. East of the Highland Mountains the land drops away to the Pietersburg plateau. The Dorps River, which flows through the valley, originates on the high altitudes of the Highland Mountains in the east. A continuation of these dolomitic ranges executes a sharp westward turn to form the Makapan Valley's northern slopes.

The Makapansgat Valley holds a complex of caves of which the Makapans lime works is the oldest, spanning an age of greater than 4 million years until perhaps 1.6 million years ago. Thousands of fossil bones have been excavated from the site, amongst others those of *Australopethicus Africanus* which are between 3.03 and 2.58 million years old based on paleomagnetism dating techniques. Caves in the Makapans Valley include amongst others Ficus Cave, Buffalo Cave, Historic Cave or Makapansgat and others. Ficus Cave's name is derived from a fig tree (*Ficus Ingens*) which curtains its entrance. This cave has yielded IA and 19th century colonial relics, a large bat colony and an underground lake (Maquire, n.d.).

Dr. Robert Broom collected a small sample of fossils from Buffalo Cave including the remains of the extinct buffalo, *Bos Makapania*. More recent excavations brought to light an extensive Cornelian Land Mammal Age fauna including antelopes, horses, monkeys and carnivores. The fauna along with palaeomagnetic age estimates suggests an age of between 780 000 and 1,07 million years for the fossil bearing deposits (Maquire, n.d.).

The Cave of Hearths is part of the Historic Cave complex and is one of two sites in the world which holds a complete record of human occupation from the earliest period of human existence, from the ESA (with remains of *Australopethicus Africanus*) through the MSA, the LSA up to the IA. The Historic Cave (also known as Makapansgat) lies

immediately adjacent to the Cave of Hearths. It is well remembered as a result of the sieged of the cave which was occupied by the Kekana Ndebele and which lasted from 25 October to 21 November 1854. The cave was proclaimed a National Monument in 1936 (Erasmus 1995).

At least fifty settlements dating from the LIA and Historical period were recorded during an archaeological survey in the Makapan Valley. The identity of the valley's previous inhabitants is unknown although the Cave of Hearth's complex can historically be linked to the Ndebele of Makapan. After the massacre of Voortrekker families at Moorddrift and Pruissen, including members of Hermanus Potgieter's party at Fonthane Hill (Moordkopje) in 1854, Commandant General Piet Potgieter assembled a commando of 500 men who took siege of the huge cavern into which the Ndebele had withdrawn. The Ndebele was finally overtaken on 21 December 1854 having lost more than 2 000 members of the clan. Piet Potgieter was killed during the siege. Makapan (Mokopane) escaped with other members and retrieved to his capital where he took poison and shortly afterwards died.

After the runderpest which lasted until the 1890's impoverished Tsonga and Shangaan arriving from the Lowveld moved into the Makapan Valley. Here they joined local Pedi and Ndebele. In 1905 the Ndebele chief Johannes Kekane and his followers moved into the valley from Zebediela. In 1926 the first white farmers began work in the Makapan Valley which was subsequently divided in four farms.

Excavations of three of the fifty sites revealed an Iron Age sequence (primarily derived from the Ficus Cave deposits) stretching from the EIA (AD500-600), an Eiland phase (AD900-1000), an ambiguous fifteenth century cultural entity and a superficial early twentieth century Ndebele occupation (Esterhuysen 2008; Maquire n.d.; Moore 1981).

The Makapan Valley and its heritage resources have no direct bearing on the current project area but are noted as a result of the fact that the history of the Langa and Kekana Ndebele are intertwined and that the site holds World Heritage status.

6.3 Ndebele pre-history and history

The Ndebele of Langa are of Hlubi (Nguni) origin. The name of their clan, Langa, was derived from the name of their original chief when the clans were part of the Hlubi. They originated from eNgungunglovu (Pietermaritzburg) where they occupied a place known as Langalibalele. Other clans such as the Mbo (Mkize), Bhele, Phuti, Polane and Swazi also trace their genealogies back to a Chief Langa who lived during the latter half of the 17th century (Van Warmelo 1930; De Beer 1986).

The second half of the 17th century was a turbulent period in Hlubi history, as the Langa clan hived off from the main body in AD1650. They were led by Langalibalele/Masebe I (Masebethêla) from Hlubi country through what is today Swaziland. Their first significant stop was near Leydsdorp or Mafefera. They moved to Bosega, an area around Bonye, east of Pietersburg, and the present territory of the Molepo chiefdom. After a short stay, the Langa moved to Thaba Tšweu (Witkoppen Mountain), a few kilometres to the south-east of Pietersburg, where they remained for four generations. The chiefs who ruled and died at **Thaba Tšweu** were Masebe I, Mapuso, Podile and Masebe II.

During their sojourn and stay in the Limpopo Province, the Langa adopted the Sotho language and culture fully. They adopted the custom of circumcision from the Matlala (Koni). The fact that they accepted 'medicated' (treated) pumpkin, a symbolic gesture by which seniority is acknowledged, from the Ndebele of Kekana (near Zebediela) proves that they acknowledged the seniority of this clan which had also moved to the Transvaal from the KwaZulu/Natal region.

Seritarita, who succeeded Masebe II at **Thaba Tšweu**, led the clan to **Maleoko** (on the farm Bultongfontein [239KR]), where he remained for three years. From here, the clan moved to **Moumong-wa-Matswake** on the farm Zuid-Holland 773LR. Their settlement was known as **Mokgokong**. Seritarita was succeeded by Mapela, son of Seritarita's third ranking wife.

Two sons of Seritarita higher in rank than Mapela namely Mosogo (son of the second ranking wife) and Mamaala (Makgenene) established several villages around the royal

lineage of Mapela during the 19th century, e.g., **Mabyanamatshwaana**, **Tsotsodi** and **Segodini**. These lineages still enjoy seniority, as can be seen during initiation lodges.

During Mapela's stay at **Moumong wa Matswake**, numerous smaller Sotho clans were subjugated and incorporated in the Langa tribe. (Clans that were incorporated before Mapela's rule were the Tlhaloga Kwena of Tshaba, the Bakwena of Lelaka and the Dikgomo of Lebelo). The Phalane Nareng of Mabuêla and the Pedi of Matlou were attacked before the Langa Ndebele settled at **Moumong wa Matswake**. Internal strife amongst the Phalane enabled the Langa to incorporate a section of this group, as well as the Pedi of Matlou. When the Phalane fled (to Ramakôka), the Bididi (or Tlhatlherwa) fled to **Bobididi** near Villa Nora.

Also incorporated amongst the Langa were the Kwena of Ramorulane and the Hurutshse of Molokomme, after the latter were defeated at Senta Hill and Swartkop (north of Thutlwane). Groups that voluntarily joined the Langa were the Koni of Masenya and Puka; the Tlôkwa of Pila; the people of Tshokwe and the Koni of Seema.

When Thulare of the Pedi undertook his great expedition up the Steelpoort River at the end of the 18th century, the move did not affect the Langa Ndebele. When Mzilikazi moved through Mpumalanga and the Bankeveld during the early 19th century, groups such as the people of Mabuela became dislocated and occupied mountains in the area.

When he was old, Mapela moved his village to **Fothane Hills** (Moordkopje) where he died in 1825. Maleya (a son of Mapela by a minor wife) ruled until Mankopane (the rightful heir) ousted him. Maleya fled to **Magagamatala** on Ruigtevlei 710LR but ruled from **Ditlotswana** hills.

Magagamatlala is a high flat-topped mountain with steep cliffs. On 14 April 1858 this stronghold was attacked by a punitive expedition sent by the Voortrekkers and 800 of Mankopane's subjects were killed. (This is known as the war of 'Nterekane' or the 'War of Maruputlase'). After the Langa's defeat, the Mankopane settled on **Thutlwane** Hill (Kromkloof 744 LR). The first mission stations of the Berlin Missionary Society were established in Langa country in 1867.

Other events were the following:

- The Langa expedition in 1837 aimed to expedite Mzilikazi's departure from what is today the North-West Province into Botswana.
- The Langa (and Kekana) were involved in the massacre of Voortrekker parties and the siege of the Makapans Caves in 1854.
- The Langa Ndebele (Lamola clan) scattered the copper miners of Mussina (Messina) with whom they bartered copper shortly before 1854.
- The Langa subjugated the Bididi (Songwana) until 1890, exacting heavy tribute from this clan.

The second encounter between the Voortrekkers and the Langa took place in 1868. At the time, the Langa were in an alliance with the Kekana Ndebele of Mogemi. Mogemi acted as regent for Mankopane. While the Boers besieged **Sefakaulo** Hill where Mogemi lived, Mankopane raided white farmers and outposts. The Voortrekkers attacked Mankopane on 12 June 1868 at **Thutlwane** and raided large numbers of cattle and small stock, but they could not take the highest part of the mountain where Mankopane's headquarters were. The Boers could also not achieve much success with their raids on Mogemi's mountain fortress. The Voortrekkers then evacuated Potgietersrus (Jackson 1982, Bergh 1998).

Mankopane died on 30 May 1877 and was buried in his cattle kraal on the mountain **Thutlwane**. Masebe III was proclaimed chief on 3 June 1877. Sporadic wars continued between the Langa and the Kekana chiefdoms from 1883 to October 1886, when President Paul Kruger summoned the two chiefs before him.

After the death of Masebe III on 4 May 1890, a succession dispute split the tribe into two sections, namely the Ndebele of Bankenberg and the Ndebele of Hans Langa. Hans Langa became chief of the southern portion and Bankenberg of the northern portion. As the ancient grounds of Mapela (**Fothane Hill**) fall in the southern portion, this section of the Langa became known as the Bagamapela.

The Ledwaba/Maune Ndebele clans, who are related to the Langa-Ndebele, live in the Bergzicht-Kalkspruit and Mašašane townships in the south-eastern part of the region.

The Witkoppen Mountains (Thaba Tšweu) near the Witkop Substation were also occupied by clans of the Langa Ndebele during the 17th century to the 19th century (Pistorius 2009). According to oral tradition they lived here for four successive generations under the leadership of Masebe I, Mapuso, Podile and Masebe II. A concentration of stone walled sites is located in a southern poort of this mountain range (Van Warmelo 1930, Jackson 1982, Esterhuysen, 2008).

6.4 Historical period

The colonial town of Potgietersrus (Mokopane) is situated to the north-east of the project area. After the Voortrekker leaders Hendrik Potgieter and Andries Potgieter were reconciled in 1852, the former established a town at Makapanspoort, between the Waterberg and the Strydpoort Mountains, which he named 'Vredenburg' ('town of peace') to commemorate the reconciliation. Uninterrupted attacks by black groups and the effect of malaria lead to the abandonment of the town which was only re-established in 1890 and the name changed from Potgieterust to Potgietersrus. The town was renamed after Piet Potgieter (who was killed during the siege of the Makapans Caves in 1854) and was called Potgietersrus. In 2002 the name was changed to Mokopane, an alternative name for Makapan the Ndebele chief who sought refuge in the Makapanas Valley during the Ndebele's clash with the Voortrekkers in 1854 (Bergh 1998).

Historical beacons in the area include a cluster of Ana Trees north-west of Mokopane where the explorer and missionary Dr. D. Livingstone once camped under the canopy of these trees. Commandant-General Piet Potgieter who was killed at Makapansgat was buried in the municipal grounds. A monument commemorating the Ndebele's murder of Voortrekker families was erected along the R101 near the entrance to Mokopane. The Arend Dieperink Museum houses an extensive collection of Voortrekker memorabilia and an aloe garden with 4 000 specimens representing more than 200 species. The Percy Five, Ntabeni and Welgevonden Nature Reserves occur in the general area (Erasmus 2003).

6.5 Mining history

Early exploration for platinum on the Platreef was done by the Northern Platinums Ltd Company's during the 1920's. (The Platreef is part of the Merensky Reef that curves 20km south of Mokopane northwards for approximately 100km). Potgietersrust Platinum Mine's first pilot plant was built on Zwartfontein 818LR in 1927. The world's consumption of platinum and its price became extremely depressed by 1930. This led to the collapse of all the platinum mines in the 1930's. Evidence for early exploration and mining still exist on the vast plain north-west of Mokopane and mining heritage remains include trenches, shafts and old mine infrastructure some of which still survives (Pistorius 2009b).

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 for the Akanani Project on 13 and 14 February as well as on 28 and 29 February 2020. Earlier surveys for parts of the Akanani Project Area were also undertaken during 2008, 2009, 2013 and 2015 when heritage surveys were conducted for the proposed Akanani Mine, for Eskom's proposed Akanani Substation and for other Eskom power lines (see Part 12, 'Select bibliography'). Field surveys for the extended Akanani Project Area were conducted on 2 to 3 August 2021 and from 25 to 27 August 2021. The project area, a decade ago, was already in parts disturbed because of developmental activities. All surveys covered both winter and summer months.

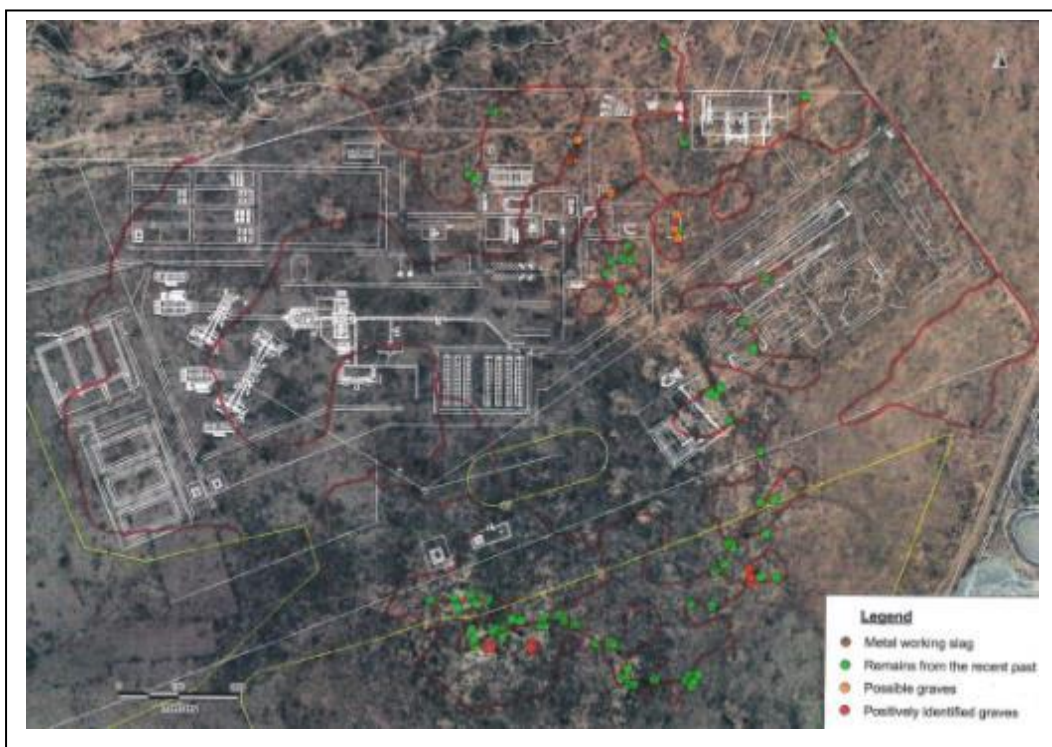


Figure 8(a)- Some pedestrian routes travelled by several surveyors. Not all tracks were recorded. Neither were all the areas covered in full due to their sizes, thick impenetrable sickle bush and the presence of old agricultural fields in all portions of land investigated (above).



Figure 8(b)- Some pedestrian routes travelled by several surveyors. Not all tracks were recorded. Neither were all the areas covered in full due to their sizes, thick impenetrable sickle bush and the presence of old agricultural fields in all portions of land investigated (above).

The recent surveys that were done for the Akanani Project occurred during the latter part of the summer rain fall season (2020) and during the winter months (2021) for Limpopo. During the summer agricultural fields carried crops whilst undisturbed areas were covered with natural vegetation including sickle bush, weeds and other intruder plants which reached a climax at the time of the survey. This dense vegetation therefore cover was not conducive for uncovering all possible heritage resources, particularly graves which have not been decorated, demarcated with fences or which are not visited and maintained any longer. Although this thick vegetation covered receded during the winter of 2021 large tracks of land were still covered with thick stands of impenetrable sickle bush.

Several individuals partook in the surveys and not all tracks could be logged due to a shortage of logistic equipment. Consequently, only main track that were walked are indicated in Figures 8(a) and 8(b).

Remains from the recent in all areas which were survey were not recoded in full as these are extensive whilst others covered are covered with vegetation and not approachable.

The fact that a large part of the project area has been utilized for agricultural over a long period restricts the possibilities that outstanding significant heritage resources may still occur. However, it is expected that undecorated graves which are part of earlier homesteads may have been missed because of the thick vegetation cover, since graves are undecorated or not maintained any longer whilst some graves may be an intricate part of residential remains. Graves may also have been missed during the survey or because of human failure to recognise them.

The field survey was conducted by means of travelling at random through the bush as footpaths only occurred in the northern eroded part of the project area. Even here foot paths were largely obscured because of vegetation growth. At the time of the survey the veld was heavily overgrown with grass, patches with thick impenetrable sickle bush and other invader plant species. Open or bald patches occurred here and there in the northern eroded part of the project area. These open patches were brought about as a result of earlier development such as the drilling of boreholes, quarrying for soil, grading of the road that crosses the Mohlosane River and over- grazing by livestock.

The central parts of Zwartfontein 814LR, Sandsloot 236LR and Moordkopje 813LR are largely covered with agricultural fields which were utilized as part of the abandoned Mapela irrigation scheme. Residents, occupying small plots, raising stock and planting vegetable gardens, occupy the peripheries of these farms.

Google Earth imagery served as a supplementary source (*prior* and after fieldwork) to establish the presence of heritage resources such as earlier homesteads. Ecological indicators such as alternations in vegetation patterns; open or bald spots in the veld; protrusions of boulders, patches with grass or clusters of Marula trees, aloes and sisal plants were searched as these could harbour former dwellings of residents.

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 5.4 'Human intervention from the earliest times').

7.2 Databases, literature surveys 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 (referred to as the South African Heritage Resources Information System, (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.

Nevertheless, heritage resources may have been missed during the surveys which were done for the Akanani project area because of various factors (Part 1.3, 'Assumptions and limitations').

7.3 Spokesperson consulted

Various spokespersons were consulted regarding the possible presence of graves and graveyards in the Akananai Project Area. These included people living in the area, two of which assisted with the surveys, individuals who did drilling work for the Akanani Project, one of Sibanye-Stillwater's geologists as well as woodcutters and herders who roamed the Akanani Project Area at the time the surveys were conducted. These people are well acquainted with the larger project area (see Part 11, 'Spokespersons consulted').

7.4 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 Alta van Dyk Environmental Consultants cc as part of their Environmental Impact Assessment Process.

7.5 Significance ratings

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

Evaluation Component	Rating	Scale	Description / criteria
MAGNITUDE of negative impact (at the indicated spatial scale)	10	Very high	Bio-physical and/or social functions and/or processes might be <i>severely</i> altered.
	8	High	Bio-physical and/or social functions and/or processes might be <i>considerably</i> altered.
	6	Medium	Bio-physical and/or social functions and/or processes might be <i>notably</i> altered.
	4	Low	Bio-physical and/or social functions and/or processes might be <i>slightly</i> altered.
	2	Very low	Bio-physical and/or social functions and/or processes might be <i>negligibly</i> altered.
	0	Zero	Bio-physical and/or social functions and/or processes will remain <i>unaltered</i> .
MAGNITUDE of POSITIVE IMPACT (at the indicated spatial scale)	10	Very high	Positive: Bio-physical and/or social functions and/or processes might be <i>substantially</i> enhanced.
	8	High	Positive: Bio-physical and/or social functions and/or processes might be <i>considerably</i> enhanced.
	6	Medium	Positive: Bio-physical and/or social functions and/or processes might be <i>notably</i> enhanced.
	4	Low	Positive: Bio-physical and/or social functions and/or processes might be <i>slightly</i> enhanced.
	2	Very low	Positive: Bio-physical and/or social functions and/or processes might be <i>negligibly</i> enhanced.
	0	Zero	Positive: Bio-physical and/or social functions and/or processes will remain <i>unaltered</i> .
DURATION	5	Permanent	Impact in perpetuity. –
	4	Long term	Impact ceases after operational phase/life of the activity > 60 years.
	3	Medium term	Impact might occur during the operational phase/life of the activity – 60 years.
	2	Short term	Impact might occur during the construction phase - < 3 years.
	1	Immediate	Instant impact.
EXTENT (or spatial scale/influence of impact)	5	International	Beyond the National boundaries.
	4	National	Beyond provincial boundaries, but within National boundaries.
	3	Regional	Beyond 5 km of the project and within the provincial boundaries.
	2	Local	Within a 5 km radius of the project.
	1	Site-specific	On site or within 100 meters of the site boundaries.
	0	None	Zero extent.
IRREPLACEABLE loss of resources	5	Definite	Definite loss of irreplaceable resources.
	4	High potential	High potential for loss of irreplaceable resources.
	3	Moderate potential	Moderate potential for loss of irreplaceable resources.
	2	Low potential	Low potential for loss of irreplaceable resources.
	1	Very low potential	Very low potential for loss of irreplaceable resources.
	0	None	Zero potential.
REVERSIBILITY of impact	5	Irreversible	Impact cannot be reversed.
	4	Low irreversibility	Low potential that impact might be reversed.
	3	Moderate reversibility	Moderate potential that impact might be reversed.
	2	High reversibility	High potential that impact might be reversed.
	1	Reversible	Impact will be reversible.

	0	No impact	No impact.
PROBABILITY (of occurrence)	5	Definite	>95% chance of the potential impact occurring.
	4	High probability	75% - 95% chance of the potential impact occurring.
	3	Medium probability	25% - 75% chance of the potential impact occurring.
	2	Low probability	5% - 25% chance of the potential impact occurring.
	1	Improbable	<5% chance of the potential impact occurring.
	0	No probability	Zero probability.
Evaluation Component	Rating scale and description / criteria		
CUMULATIVE impacts	<p>High: The activity is one of several similar past, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the natural, cultural, and/or socio-economic resources of local, regional or national concern.</p> <p>Medium: The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern.</p> <p>Low: The activity is localised and might have a negligible cumulative impact.</p> <p>None: No cumulative impact on the environment.</p>		

Once the Environmental Risk Ratings have been evaluated for each potential environmental impact, the Significance Score of each potential environmental impact is calculated by using the following formula:

- **SS (Significance Score) = (magnitude + duration + extent + irreplaceable + reversibility) x probability.**

The maximum Significance Score value is 150.

The Significance Score is then used to rate the Environmental Significance of each potential environmental impact as per Table below. The Environmental Significance rating process is completed for all identified potential environmental impacts both before and after implementation of the recommended mitigation measures.

Significance Score	Environmental Significance	Description / criteria
125 – 150	Very high (VH)	An impact of very high significance will mean that the project cannot proceed, and that impacts are irreversible, regardless of available mitigation options.
100 – 124	High (H)	An impact of high significance which could influence a decision about whether or not to proceed with the proposed project, regardless of available mitigation options.
75 – 99	Medium-high (MH)	If left unmanaged, an impact of medium-high significance could influence a decision about whether or not to proceed with a proposed project. Mitigation options should be relooked at.
40 – 74	Medium (M)	If left unmanaged, an impact of moderate significance could influence a decision about whether or not to proceed with a proposed project.
<40	Low (L)	An impact of low is likely to contribute to positive decisions about whether or not to proceed with the project. It will have little real effect and is unlikely to have an influence on project design or alternative motivation.

+	Positive impact (+)	A positive impact is likely to result in a positive consequence/effect, and is likely to contribute to positive decisions about whether or not to proceed with the project.
---	----------------------------	---

8 HERITAGE SURVEY FOR THE AKANANI PROJECT

8.1 Types and ranges of heritage resources

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

- Stone tools which date from the Stone Age which occur here and there along the banks of the Mohlosane River;
- Remains dating from the Late Iron Age/Historical Period that consist of a scatter of metal working slag;
- Remains from the recent past which consist of the disintegrated remains of dwellings; and
- Possible and positively identified graves occurring in association with the remains of homesteads which date from the more recent past.

All these heritage resources, except the stone tools which are 'mobile', were geo-referenced and mapped (Figures 2 & 3; Tables 1-5). (It must be noted that the remains from the recent past are extensive and that not all remains were mapped, particularly in the extended area where they are, together with the graveyards, confined to the peripheries of these areas).

The significance of the heritage resources that may be affected by the Akanani Project was determined by means of stipulations derived from the National Heritage Resources Act (No 25 of 1999) and by means of various other criteria. The significance of the impact of the Akanani Project was determined according to a rating scheme outlined in Part 7.5, 'Significance ratings'. Mitigation and well as chance-find procedures are proposed for the Akanani Project.

The Phase I HIA study is now briefly discussed and illuminated with photographs.

8.2 Stone tools

Stone tools occur in older beds of the Mohlosane River. These stone tools are mostly derived from the Middle Stone Age, dating back 200 000 years to 22 000 years ago.

The scatterings of stone tools were not geo-referenced as they occur at random along the Mohlosane River. The stone tools were limited in numbers and do not occur as large concentrations (assemblages) in a closed (sealed) stratigraphic context. The stone tools do not have an archaeological context any longer as they have been washed and moved by water or have been exposed by erosion activities.

Due to the fact that the stone tools occur out of an archaeological context they have very little significance any longer. The stone tools will also not be affected by the proposed development project and therefore are not further discussed in the report.



Figure 9- Stone tools manufactured from red felsite dating from the Middle Stone Age, 200 000 years to 22 000 years ago. Note: core (top left), points, (middle top, below left and right) (above).

8.3 Metal working slag

A scattered occurrence of metal working slag was observed at one locality in the project area. Isolated, single pieces of slag also occur scattered in this locality. However, no concentrated occurrence of large quantities of metal working slag associated with smelting or smithing (forging) activities was observed.

It is possible that these remains date from the Late Iron Age (AD1600-AD1850) and/or from the Historical Period (AD1850 onwards). It is not clear whether these remains are associated with any of the residential remains from the recent past as specialised metal working activities in the past usually were geographically separated from residential areas during the Late Iron Age and/or Historical Period.

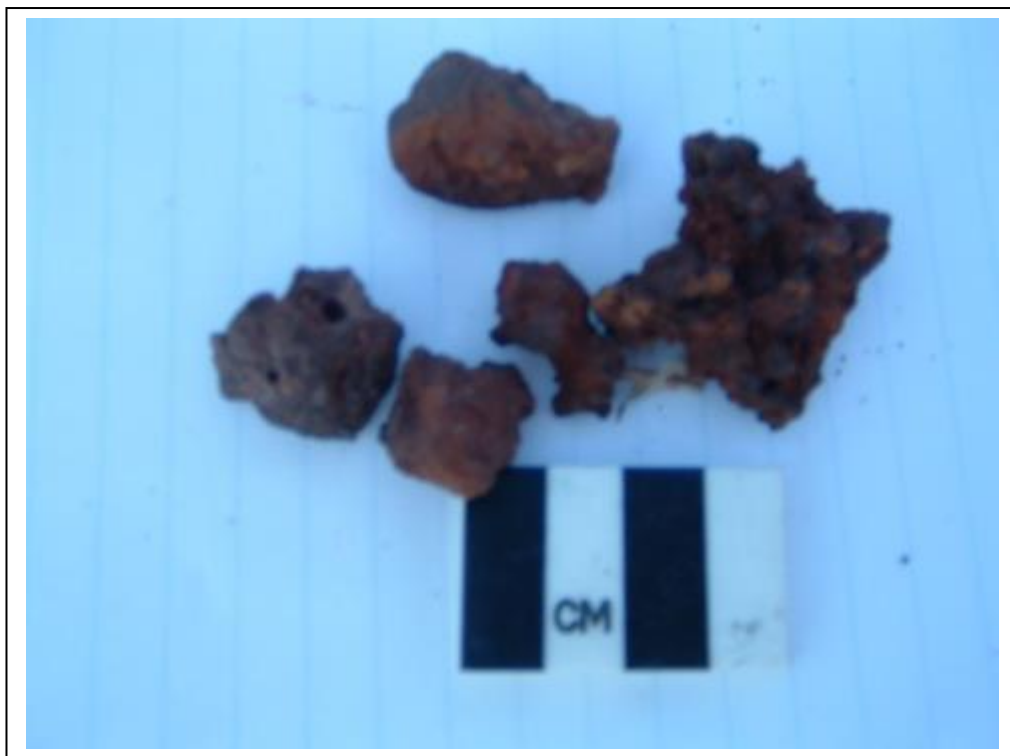


Figure 10- Scatters of slag which probably date from the Late Iron Age (AD1600-1840) or the Historical Period (AD1840-1880) (above).

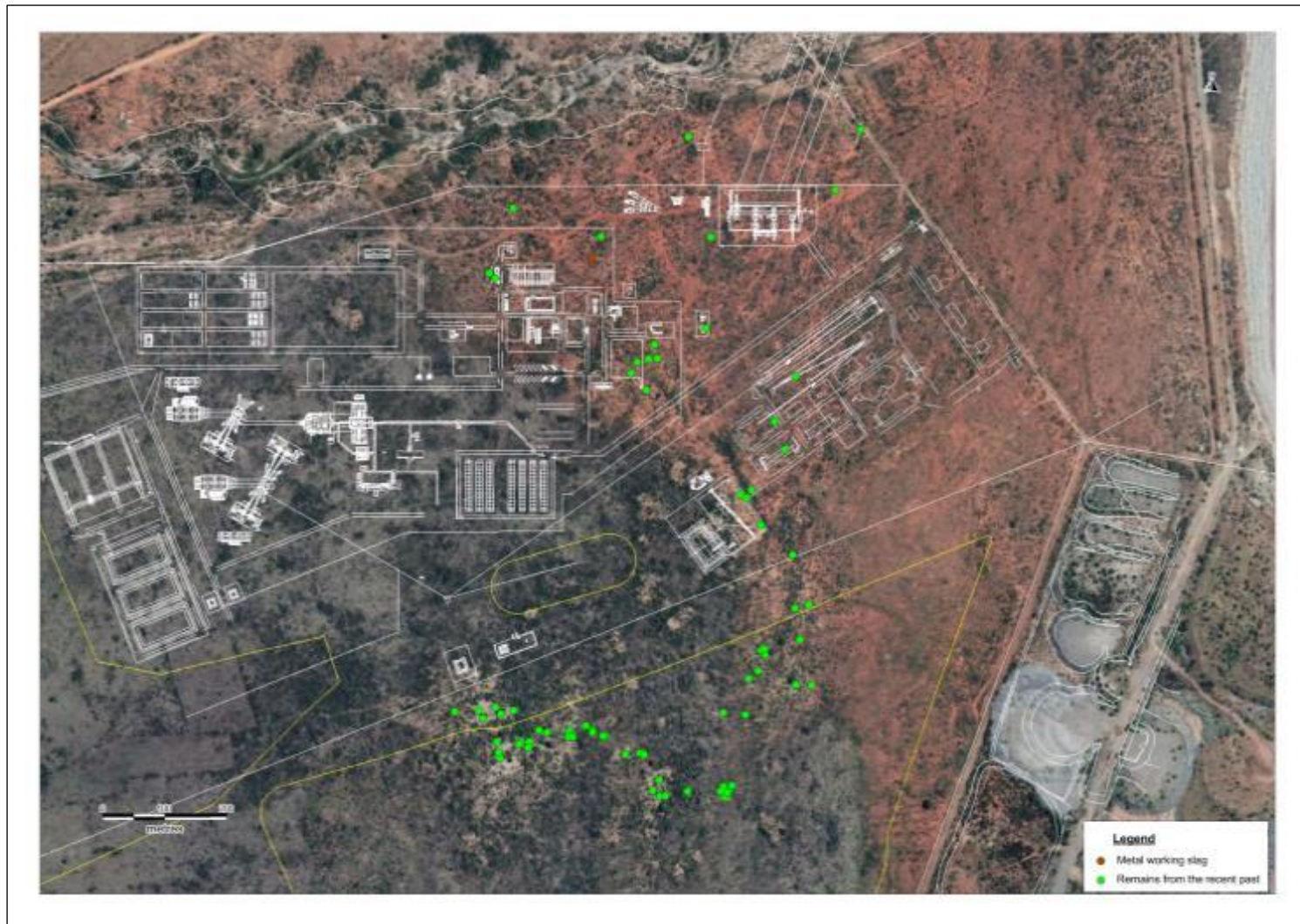


Figure 11- Evidence for earlier homesteads on Sandsloot 236LR and Zwartfontein 814LR in the project area (above).

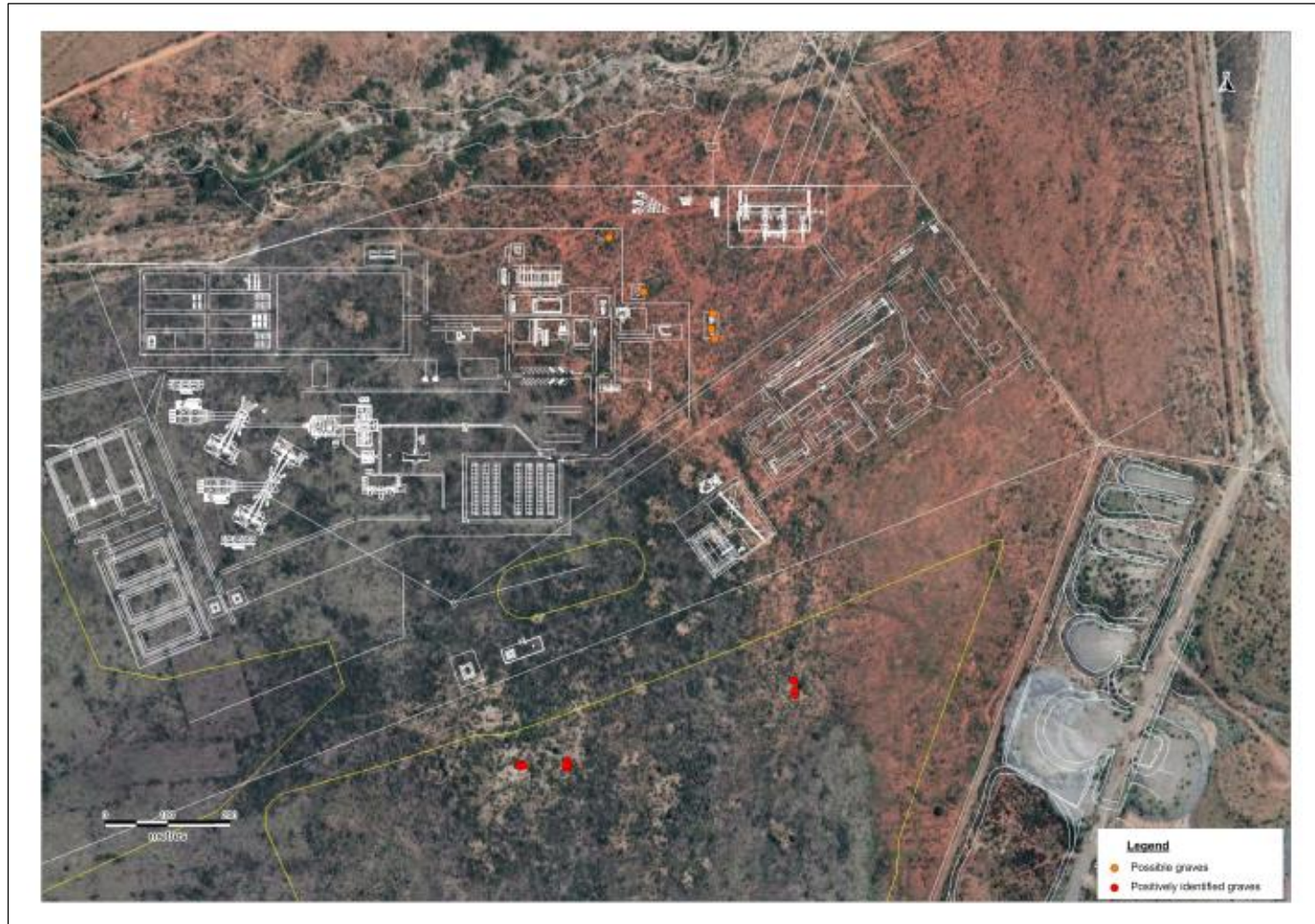


Figure 12- Possible and positive identified graves on Sandsloot 236LR and Zwartfontein 814LR in the project area (above).

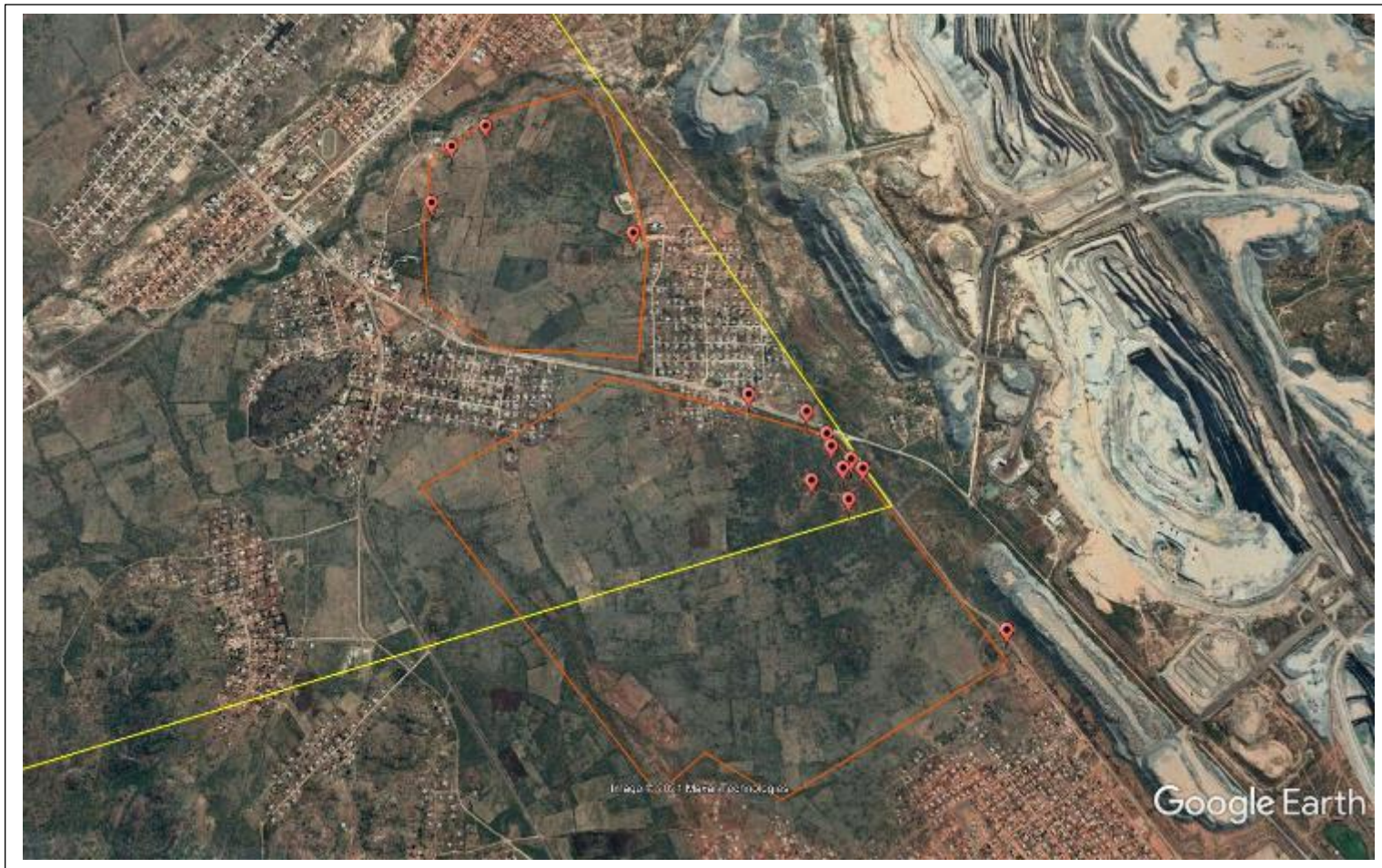


Figure 13- Positive identified graves on Zwartfontein 814LR and Moordkopje 813LR in the extended project area (above).

8.4 Remains from the recent past

Remains dating from the recent past consisting of disintegrated dwellings associated with graves occur across the Akanani Project Area. It seems as if these remains may be more confined to the peripheries of the extended project areas on Zwartfontein 814LR and Moordkopje 813LR. Due to the general abundance and scattered occurrence of these remains, not all occurrences could be recorded. The visibility of these remains is also severely hampered because of thick vegetation and the state of preservation of most of these remains. Some of the remains are severely eroded. Only those which occur in association with stone walls can be more easily recognised.

Some of these dilapidated residential remains are associated with graves. Some of the graves are decorated and therefore can be recognised as such whilst others seem to be represented by upright standing stones which serve as headstones for graves. Some of the graves may be part of earlier walls where stones from the walls were used to cover the graves. In such instances graves and walls are not clearly separable from each other. It is also possible that individuals may have been buried within the confines of residential remains sometime after the latter was abandoned. Such graves may not have been decorated and may not be visible any longer.



Figure 14- The remains of a disintegrated dwelling documented in the summer in the project area (above).



Figure 15- The remains of former houses are indicated by upright standing stones which demarcate the lower foundations of the houses (above).



Figure 16- A heap of soil represents the remains of a collapsed dwelling which was constructed with mud (above).



Figure 17- A circular outline of stones indicates the former presence of a dwelling which was constructed with mud (above).



Figure 18- A wall constructed with large stones (above).



Figure 19- The wall of a homestead constructed with a double row of stones in the extended part of the project area is part of remains from the recent past (above).



Figure 20- Pieces of modern 'rubbish' such as glass together with potsherds are found in association with the remains of dwellings from the recent past (above).



Figure 21- Old agricultural fields which used to be part of the Mapela irrigation scheme occur across the Akanani Project Area. Stands with sickle bush, in some places impenetrable, set root in these fields (above).



Figure 22- Ecological indicators for finding remains from the recent past include aloes, sisal, and marula trees (above).

The remains from the recent past comprise of upright stones outlining circular foundations for homes; various lengths of stone walls which demarcated homes within the boundaries of homesteads; possible entrances to homesteads; piles of stone; solidly constructed stone structures which probably served as the lower parts of homes; surfaces which are paved with stone and heaps of soil which represent the collapsed remains of dwellings constructed with mud.

These buildings structures mostly are linear, curved, circular, square, or elongated in ground plan and in some instances are still associated with 'modern' rubbish such as tin plate and pieces of ceramics or glass. Potsherds are also present.

8.5 Graves and graveyards

Graves and graveyards observed in the Akanani Project Area were divided into those which occur on Zwartfontein LR and Sandsloot LR which again were divided into possible graves and graveyards and those graves and graveyards which were positively identified as such. Most of the graves and graveyards identified in the extended Akananai Project Area which include remaining portions of Zwartfontein and Moordkopje LRT were positive identified as such and are separately mapped, listed, and tabulated.

8.5.1 Possible and positive identified graves on Zwartfontein 814LR and Sandsloot 236LR

8.5.1.1 Possible graves

Most of these possible graves were recorded in the northern part of the Akanani Project Area during earlier surveys which were done in the winter when visibility was good.

8.5.1.1.1 Possible grave 01

This possible grave is marked by upright stones demarcating an elliptical area. The dilapidated remains of residences occur near the grave.

8.5.1.1.2 Possible grave 02

It is not unequivocally clear if ' Grave 02' actually represents a grave or merely a heap of stones. This feature is represented by a heap of stones which amongst other include a lower grinding stone. It is therefore likely that this stone feature may cover the remains of a woman.



Figure 23- A circle outlined with stones indicate the presence of a possible grave (above).



Figure 24- A heap of stones with a lower grinding stone may cover the remains of a woman (above).

8.5.1.1.3 Possible grave 03

This possible grave is demarcated with upright stones.



Figure 25- Possible G03 is demarcated with stones (above).

8.5.1.1.4 Possible grave 04

This small graveyard incorporates the remains of at least four individuals. The four graves are demarcated with upright stones. The graveyard is totally inconspicuous as it occurs in tall grass. A metal signpost with the following barely decipherable inscription is nailed on the trunk of a tree next to the graveyard, namely: ' Zone 1. Mahwelereng Jackson?'

8.5.1.1.5 Possible Grave 05

A prominent stone feature occurs on the periphery of remains from the recent past. It is not quite clear whether this feature may represent a grave or whether it is merely part of an elaborate stone wall.



Figure 26- A stone feature which may either be part of an elaborate structure such as a short wall or a possible grave (above).

8.5.1.2 Positive identified graves

Die following graves were positively identified, namely:

8.5.1.2.1 Grave 01

The grave of Ramotso Ramolo is demarcated with bricks and holds a signpost bearing his name.



Figure 27- The grave of Ramotso Ramolo (above).

8.5.1.2.2 Grave 02

An unmarked grave covered with a few stones is located adjacent to the grave of Ramotso Ramolo.



Figure 28- An unmarked grave next to that of Ramotso Ramola (above).

8.5.1.2.3 Grave 03

The graves of Tlhasila Ramolo and Ramadimetsa Ramola are located next to each other and are both demarcated with bricks.

8.5.1.2.4 Grave 04

The graves of Ramadimetsa Ramola and Tlhasila Ramolo are located next to each other and are both demarcated with bricks.



Figure 29- The graves of Tlhasila Ramola and Ramadimetsa Ramola are both demarcated with bricks (above).

8.5.1.2.5 Grave 05 and Grave 06

Two possible graves with upright headstones are located next to each other and part of walls of former residences. Another four graves may be present judged from upright stones which may serve as headstones.



Figure 30- Two possible graves with upright headstones which are part of homestead walls (above).

8.5.1.2.6 Graves 07 to Grave 10

These four graves are represented by upright stones which are part of walls of former homesteads.



Figure 31- Four graves indicated by upright stones. These headstones are in remains of walls which were part of walls of former homesteads (above).

8.5.1.2.7 Grave 11

G11 belongs to Dr A.M. Maila and is fitted with a granite headstone with the following inscription, namely:

Dr A.M. Maila
Died 1953
Rest in Peace



Figure 32- The grave of Dr A.M. Maila (above).

8.5.1.2.8 Grave 12

G12 is fitted with a granite headstone with the following inscription, namely:

Mphutla Seemole

Psalm 23:1

Morena ke Modisi Waka



Figure 33- The grave of Seemole Mphutla (above).

8.5.1.2.9 Grave 13

G13 is fitted with a granite headstone with the following inscription, namely:

Mphutla Lesetjana Mmakanong Kgasago

Psalm 23:1

Morena ke Modisi Waka



Figure 34- The grave of Lesetjana Mphutla (above).

8.5.1.2.10 Grave 14

G14 comprises a heap of stones in tall grass next to the grave of Dr A.M. Maila. According to the size of the stone pile the grave may be that of a child

8.5.2 Positive identified graves on remaining portions of Zwartfontein 814LR and Moordkopje 813LR

The following graves and graveyards were positively identified in the extended Akanani Project Area on portions of Zwartfontein 814LR and Moordkopje 813LR. Some graveyards are located in the northern and others in the southern part of the area.

8.5.2.1 Graveyard 01

This is a large formal cemetery. According to spokesperson Peter Langa it belongs to the Motlhasedi clan. It holds many individuals, is neatly maintained, and clearly demarcated and fitted with an entrance gate.

Many of these graves are older than sixty years.



Figure 35 - A large cemetery in the northern extended area which is well maintained and demarcated with a fence (above).

8.5.2.2 Graveyard 02

This formal cemetery is situated next to a school in the northern extended area.

GY02 also holds many deceased, is neatly maintained, and demarcated with a fence and fitted with an entrance gate.

Many of these graves are older than sixty years.



Figure 36- A second large cemetery in the northern extended area which is well maintained and demarcated with a fence (above).

8.5.2.3 Graveyard 03

This large cemetery which is taking on the form of a formal cemetery is in the northern extended part of the project area. At the time the graveyard was visited some of the graves were being furnished with new tombstones.

It may hold as many as twenty to twenty-five graves many of the deceased, according to Mathew Makgamatho, belonging to the Sekhu family.

It is highly likely that many of these graves are older than sixty years.



Figure 37- Contractors furnishing graves in GY03 with new tombstones and other decorations and trimmings (above).

8.5.2.4 Grave 01

A single grave belonging to the family of the Makgamatho's was recorded in open veld close to a supermarket.

It was fitted with an unmarked tombstone and covered with a cement slab.

It is most likely that more graves may occur in proximity of this grave. It is highly likely that these graves are older than sixty years.



Figure 38- A single grave which may be part of several graves in open veld in the northern extended area belonging to the Makgamatho family (above).

8.5.2.5 Graveyard 04

This graveyard is one of several that were part of earlier homesteads which were located along the tar road which runs to Fonthane.

GY04 holds at least three graves two of which seem to be newly demarcated with lines of stone.

One of the graves is fitted with a granite tombs and headstone and bears the following inscription: 'Ramokone Nano Rabalae. Born 1928 08 28 Deceased 1961 06 30'



Figure 39- One of several small graveyards with three graves located next to the tar road running to Fonthane (above).

8.5.3.6 Graveyard 05

GY05 is situated amid the remains of disintegrated dwellings and holds what seems to be eight graves (some which seems to be doubled or paired).

Most of the graves are covered with cement slabs. Inscriptions on two of the graves read as follow:

- Makgoba Sebarehlare Born 19380403 Deceased 19680607
- Nthata Phillemon Makgoba



Figure 40- GY06 within the midst of disintegrated homesteads next to the tar road running to Fonthane (above).

8.5.3.7 Graveyard 06

This informal graveyard holds two graves next to each other which are neatly demarcated with stones. No signposts with inscriptions occur.



Figure 41- These two graves are merely demarcated with stones and are situated amid remains of disintegrated homesteads (above).

8.5.3.8 Graveyard 07

This graveyard holds at least six graves five of which are neatly decorated with granite tomb and headstones with inscriptions. These graves belong to the Bonoko family.

Inscriptions on some of the headstones read as follow:

In loving memory of:

- Mokgaetji Matsokotja Bonoko Born 14091880 Deceased 10051963
- Ramadimetja Motsepi Bonoko Born 06021915 Deceased 12051942
- Mogkgaetji Bonele Bonoko Born 12111940 Deceased 17051941'

A second cluster of at least five, but probably more, graves, all undecorated are attached to this demarcated lot. Many of the graves in both lots are older than sixty years.



Figure 42- Six graves belonging to the Bonoko family is situated next to a second lot of graves which are attached to their backside, outside the demarcated part of this graveyard (above).

8.5.3.9 Graveyard 08

This graveyard is located next to a low kopje which is situated near the shoulder of the tar road running to Fonthane.

GY08 holds two sections with graves both located between the rubble of a demolished homestead. The first section holds at least four graves one of a child. Two of the graves are demarcated with lines of stone. The main grave in this section is decorated with granite tomb and headstone. It holds the following inscription:

- 'Tsetsenowa Raysibe Joyce Mputla'.

The second part of the graveyard is limited to a single grave which is decorated with a headstone with the following inscription:

- 'Malose Johannes Mputlha Born 1902 Deceased 29041961'



Figure 43- Two sections of graves belonging to the Mputlha family near the foot of a low kopje (below).

8.5.3.10 Graveyard 09

This graveyard is situated near Aloe trees close to the tar road leading to Fonthane. It holds several graves, perhaps as many as seven or more, all of which are undecorated.

Consequently, the number of graves cannot be ascertained. At least one of the graves, probable belonging to a child, is clearly demarcated with stones.

It is most likely that these graves are older than sixty years.



Figure 44- One of several unmarked graves near Aloe trees and the shoulder of the Fonthane road (above).

8.5.3.11 Grave 02

The grave of Monethe Kgape is neatly decorated with granite and holds the following inscription:

‘Kgapa Mosima Monethe Robala ka khutso Mokgala’

The grave is demarcated with a steel framework and is probably older than sixty years.



Figure 45 -The grave of Monethe Kgape is neatly decorated and demarcated with a steel framework (above).

8.5.3.12 Graveyard 10

The grave of Langa Jack Dinkwenya is neatly decorated with granite and fenced. It holds the following inscription:

‘Langa Jack Dinkwenya Born 10-07-1882 Died 15-02-1939 Robala Kakutso Tlou’

The grave is older than sixty years.



Figure 46- The grave of Langa Jack Dinkwenya is fenced-in and was recently decorated with a granite tombstone (above).

8.5.3.13 Graveyard 11

This graveyard comprises two graves which both are demarcated with large upright stones. The graves are surrounded by remains from the recent past.

Both graves are probably older than sixty years.



Figure 47- Two graves demarcated with upright stone slabs (above).

8.5.3.14 Graveyard 12

This graveyard holds an unknown number of graves.

At least one of the graves could be observed close to the Fonthane tar road. The graveyard could not be accessed directly as it is situated in a fenced-in area. The caretaker to the property (Minora Chaba/ Martin) was not available to make access to this part of the project area possible.

It is most likely that the unknown number of graves in this graveyard are all older than sixty years.



Figure 48- One of several possible graves located next to the tar road running to Fonthane (above).

8.6 Tables

The following tables contain the coordinates for heritage resources.

Table 1- Coordinates for disintegrated dwellings from the recent past as well as metal slag on Sandsloot 236LR and Zwartfontein 814LR (above).

Heritage remains	Coordinates	Significance
Northern part of Akanani project area		
Scatter with metal slag	29Y0011079 X2654537	LOW
Remains from the recent past		
North and central		
Collapsed dwelling	29Y0010896 X2654648	LOW-MED
Collapsed dwelling	29Y0010974 X2654696	LOW-MED
Collapsed dwelling	29Y0010992 X2654747	LOW-MED
Collapsed dwelling	29Y0011016 X2654720	LOW-MED
Collapsed dwelling	29Y0011006 X2654702	LOW-MED
Collapsed dwelling	29Y0010988 X2654697	LOW-MED
Collapsed dwelling	290010979 X2654674	LOW-MED
Collapsed dwelling	29Y0011065 X2654502	LOW-MED
Collapsed dwelling	29Y0010888 X2654502	LOW-MED
Collapsed dwelling	29Y0011245 X2654560	LOW-MED
Collapsed dwelling	29Y0011235 X2654568	LOW-MED
Collapsed dwelling	29Y0011206 X2654456	LOW-MED
Collapsed dwelling	29Y0010924 X2654342	LOW-MED

Table 2- Coordinates for possible graves dating from the recent past associated with disintegrated dwellings on Sandsloot 236LR and Zwartfontein 814LR (above).

Possible graves	Coordinates	Significance
Northern part of the project area		
G01 Stone circle near remains from the recent past	23° 59.39.5' 28° 53.34.5'	HIGH
G02 Stone cairn with lower grinding stone	23° 59.39.0' 28° 53.34.3'	HIGH
G03 Stone circle near remains from the recent past	23° 59.38.2' 28° 53.34.4'	HIGH
G04 Four graves demarcated with stones	23° 59.37.1' 28° 53.30.5'	HIGH

G05 Possible stone feature or grave	29Y0011065 X2654502'	HIGH
GY06 Formal graveyard located in Skimming	23° 59.183' 28° 53.498'	HIGH

Table 3- Coordinates for disintegrated dwellings from the recent past some with graves on Sandsloot 236LR and Zwartfontein 814LR (above).

Remains from the recent past (some with graves)	Coordinates	Significance
Central, eastern part of Akanani project area		
Foundations of a dwelling	23° 59.481's; 28° 53.727'e	LOW-MED
Foundation of a dwelling	23° 59.481's; 28° 53.722'e	LOW-MED
House foundation	23° 59.533's; 28° 53.698'e	LOW-MED
Bald spot, former living area	23° 59.694's; 28° 53.660'e	LOW-MED
House foundation	23° 59.733's; 28° 53.640'e	LOW-MED
Natural stones with piece of wall	23° 59.757's; 28° 53.650'e	LOW-MED
Soil heap, disintegrated dwelling	23° 59.792's; 28° 53.618'e	LOW-MED
Wall	23° 59.799's; 28° 53.613'e	LOW-MED
Circular house foundation	23° 59.796's; 28° 53.608'e	LOW-MED
House rubble	23° 59.822's; 28° 53.627'e	LOW-MED
House foundation	23° 59.848's; 28° 53.657'e	LOW-MED
Wall and foundation	23° 59.891's; 28° 53.672'e	LOW-MED
Wall	23° 59.894's; 28° 53.659'e	LOW-MED
Wall with appearance of grave	23° 59.921's; 28° 53.664'e	LOW-MED
Prominent wall	23° 59.955's; 28° 53.615'e	LOW-MED
Prominent high wall and small kraal	23° 59.948's; 28° 53.624'e	LOW-MED
Prominent high wall	23° 59.934's; 28° 53.631'e	LOW-MED
Beautiful well preserved wall	23° 59.930's; 28° 53.627'e	LOW-MED
Several walls in this space	23° 59.929's; 28° 53.630'e	LOW-MED
Small kraal or house wall (circular)	23° 59.986's; 28° 53.612'e	LOW-MED
Wall (in water)	23° 59.984's; 28° 53.591'e	LOW-MED
Foundation resemble a grave	24° 00.051's; 28° 53.597'e	LOW-MED
Paved stone circle, approximately 3m diam.	24° 00.052's; 28° 58.596'e	LOW-MED
Long wall	23° 59.960's; 28° 53.660'e	LOW-MED
Long wall	23° 59.961's; 28° 53.675'e	LOW-MED
Further south		
Short stone wall	24° 00.047's; 28° 53.599'e	LOW-MED
Circular foundation	24° 00.048's; 28° 53.591'e	LOW-MED

Stone wall	24° 00.052's; 28° 53.588'e	LOW-MED
House constructed with stone	24° 00.052's; 28° 53.557'e	LOW-MED
Stone heap	23° 59.999's; 28° 53.467'e	LOW-MED
Stone wall	23° 59.999's; 28° 53.445'e	LOW-MED
Stone wall	24° 00.003's; 28° 53.444'e	LOW-MED
Stone wall	24° 00.056's; 28° 53.535'e	LOW-MED
Circular hut foundation	24° 00.056's; 28° 53.531'e	LOW-MED
Circular stone kraal	24° 00.051's; 28° 53.524'e	LOW-MED
Prominent stone wall	24° 00.019's; 28° 53.512'e	LOW-MED
Prominent stone wall	24° 00.004's; 28° 53.479'e	LOW-MED
Further south		
Prominent wall	24° 00.009's; 28° 53.407'e	LOW-MED
Prominent wall	24° 00.014's; 28° 53.406'e	LOW-MED
Prominent wall	24° 00.009's; 28° 53.399'e	LOW-MED
Prominent wall	24° 00.011's; 28° 53.397'e	LOW-MED
Further west		
Prominent wall	24° 00.023's; 28° 53.379'e	LOW-MED
Prominent wall	24° 00.018's; 28° 53.378'e	LOW-MED
Prominent wall	24° 00.009's; 28° 53.376'e	LOW-MED
Collapsed house	23° 59.989's; 28° 53.363'e	LOW-MED
Entrance to homestead	23° 59.982's; 28° 53.359'e	LOW-MED
Entrance to homestead	23° 59.979's; 28° 53.375'e	LOW-MED
Further north		
Prominent wall	23° 59.985's; 28° 53.380'e	LOW-MED
Collapsed house	23° 59.983's; 28° 53.336'e	LOW-MED
Prominent wall	23° 59.982's; 28° 53.392'e	LOW-MED
Prominent wall	23° 59.999's; 28° 53.416'e	LOW-MED
Prominent wall	24° 00.001's; 28° 53.424'e	LOW-MED
Prominent wall	24° 00.005's; 28° 53.444'e	LOW-MED
Circular hut foundation	24° 00.005's; 28° 53.448'e	LOW-MED
Wall	23° 59.995's; 28° 53.461'e	LOW-MED
Stone pile	24° 00.001's; 28° 53.467'e	LOW-MED
Stone pile	24° 00.004's; 28° 53.477'e	LOW-MED
Collapsed house	24° 00.020's; 28° 53.498'e	LOW-MED
Prominent wall	24° 00.020's; 28° 53.516'e	LOW-MED
Prominent wall	24° 00.042's; 28° 53.530'e	LOW-MED
Prominent	24° 00.056's; 28° 53.536'e	LOW-MED
Collapsed house	24° 00.057's; 28° 53.593'e	LOW-MED
Wall	24° 00.053's; 28° 53.595'e	LOW-MED

Table 4- Coordinates for positively identified graves on Sandsloot 236LR and Zwartfontein 814LR (above).

Positive identified graves	Coordinates	Significance
Grave 01 (next to G02) Ramotso Lamolo	23° 59.952's; 28° 53.649'e	HIGH
Grave 02 (next to G01) (No name)	23° 59.952's; 28° 53.648'e	HIGH
Grave 03 (next to G04) Thlasila Lamola	23° 59.964's; 28° 53.650'e	HIGH
Grave 04 (next to G03) Ramadimetsa Lamola	23° 59.960's; 28° 53.650'e	HIGH
Further south		
G05 and G06 Two graves adjacent to each other with upright headstones part of wall	24° 00.020's; 28° 53.436'e	HIGH
G07 to G10 One grave with upright headstone part of wall	24° 00.025's; 28° 53.437'e	HIGH
G08 Upright headstone	24° 00.026's; 28° 53.435'e	HIGH
G09 Upright headstone	24° 00.024's; 28° 53.436'e	HIGH
G10 Upright headstone	24° 00.024's; 28° 53.434'e	HIGH
Further south		
Grave 11 Dr AM Maila	24° 00.023's; 28° 53.394'e	HIGH
Grave 12 Seemole Mputla	24° 00.023's; 28° 53.391'e	HIGH
Grave 13 Lesetjana Phutla	24° 00.025's; 28° 53.391'e	HIGH
Grave 14 Undecorated grave of a possible child	24° 00.024's; 28° 53.395'e	HIGH

Table 5- Coordinates for positively identified graves on Zwartfontein 814LR and Moordkopje 813LR (above).

Positive identified graveyards	Coordinates	Significance
Northern extension		
Graveyard 01 (Motlhasedi clan)	23° 57.131's; 28° 51.030'e	HIGH
Graveyard 02 (next to school)	23° 57.204's; 28° 51.746'e	HIGH
Graveyard 03 (Makgamothiso's neighbours)	23° 56.878's; 28° 51.225'e	HIGH
Grave 01 A single grave belonging to the Makgamothiso family)	23° 56.942's; 28° 51.118'e	HIGH
Southern extension		
Graveyard 04 (three graves)	23° 57.930's; 28° 52.445'e	HIGH
Graveyard 05 (eight graves)	23° 57.930's; 28° 52.445'e	HIGH
Graveyard 06 (two graves)	23° 57.958's; 28° 52.489'e	HIGH
Graveyard 07 (six graves) (Bonoko clan)	23° 57.995's; 28° 52.309'e	HIGH
Graveyard 08 (next to kopje)	23° 58.424's; 28° 52.914'e	HIGH
Graveyard 09 (Several unmarked graves)	23° 57.787's; 28° 52.305'e	HIGH
Grave 02 (Monethe Kgapa)	23° 57.856's; 28° 52.371'e	HIGH
Graveyard 10 (Langa Jack Dinkwenya)	23° 57.895's; 28° 52.384'e	HIGH
Graveyard 11 (Two graves demarcated with large upright stones)	23° 58.049's; 28° 52.434'e	HIGH
Graveyard 12 (Within demarcated area)	23° 57.735's; 28° 52.119'e	HIGH

9 THE SIGNIFICANCE, POSSIBLE IMPACT ON AND MITIGATION OF THE HERITAGE RESOURCES

The Phase I HIA study for the Akanani Project revealed the following types and ranges of heritage resources in the Akanani project area, namely:

- Stone tools which date from the Stone Age which occur here and there along the banks of the Mohlosane River;
- Remains dating from the Late Iron Age/Historical Period that consist of a scatter of metal working slag;
- Remains from the recent past which consist of the disintegrated remains of dwellings; and
- Possible and positively identified graves occurring in association with the remains of homesteads which date from the more recent past.

9.1 The significance of the heritage resources

The significance of these heritage resources must be determined as well as the significance of any possible impact on any of these heritage resources to propose appropriate mitigation and management measures for those heritage resources which may be affected by the Akanani Project.

9.1.1 Stone tools

The stone tools along the banks of the Mohlosane River will not be affected by the proposed Akanani Project. These artefacts are limited in numbers and are also 'mobile' as they are continuously moved during floods. Due to their mobility, they do not occur in any archaeological context any longer. Consequently, these stone tools have low archaeological or heritage significance.

As the stone tools will have no bearing on the Akanani Project and have low heritage significance they are not further discussed in this report.

9.1.2 Metal working slag

These remains date either from the Late Iron Age (AD1600 to AD1850) and/or from the Historical Period (AD1850 onwards). It is even possible that the remains may be associated with the residential remains from the recent past.

The metal working slag has low heritage significance. It probably dates from the more recent past; is limited to a few pieces that may not be retraceable again after rain or other natural occurrences; is not associated with furnace debris or other metal working features and artefacts and occur in an eroded area without any archaeological context.

9.1.3 Remains from the recent past

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

The remains from the recent past are rated as of low to medium 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 6).
- 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 7) (Section 7 of the NHRA [Act No 25 of 1999]).

9.1.3.1 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.

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

Table 6- Rating the significance of the remains from the recent past according to criteria outlined in the NHRA (25 of 1990) (above).

The highlighted criteria reflect aspects of the social, historical, spiritual and scientific significance (research, use and application, e.g. in tourism industry) of the remains and graves which date from the more recent past. According to these criteria the residential remains from the recent past is graded as of low to medium significance.

9.1.3.2 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 7- Field rating (grading) for remains from the recent past (above).

According to the highlighted field rating scheme, the remains from the recent past can be rated as of low to medium significance (Table 7).

9.1.4 Possible and positive identified graves

No distinction is made between possible and positive identified graves as possible grave sites must be treated as if they in fact represent definite graves.

All graveyards and graves can be considered of high significance and are protected by various laws (Table 8). Legislation regarding graves includes Section 36 of the NHRA in instances where graves are older than sixty years. Other legislation about graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended). Municipal laws about graves and graveyards may differ and professionals involved with the exhumation and relocation of graves and graveyards must adhere to these laws.

Possible and positive identified graves	Low	Medium	High
Possible graves on Zwartfontein 814LR and Sandsloot 236KR (G01 to G05)			X
Positive identified graves on Zwartfontein 814LR and Sandsloot 236KR (G01 -GY14)			X
Positive identified graves on Zwartfontein 814LR and Moordkopje 813LR (G01 -GY14)			

Table 8- Rating the significance of the possible and positive identified graves (above).

9.2 Impact on the heritage resources

According to the layout plan for the Akanani Project the following can be noted (Figures 2, 3 & 4):

- The scatter with metal working slag will be destroyed when infrastructure for the proposed Akanani Project is constructed.
- The remains of the recent past will be destroyed when infrastructure for the proposed Akanani Project is constructed.
- The possible and positive identified graves will be destroyed when infrastructure for the proposed Akanani Project is constructed.

9.3 The significance of the impact on the heritage resources

9.3.1 The significance of the impact on the metal working slag

The significance of the impact on the metal working slag is high. However, the metal working slag has low heritage significance. Consequently, the impact of the Akanani Project on the metal working slag is of low significance and no mitigation is required (Table 9).

Table 9- The significance of the impact on the metal working slag (below).

Metal working slag	M	D	E	I	R	P	SS	Environ Signific	Heritage Signific	Cum Impact	Mitigation Required	Significance after mitigation
	2	1	1	1	0	5	25	Very low	Low	Low	None	Low

9.3.2 The significance of the impact on the remains from the recent past

The significance of the impact on the remains from the recent past is medium to high. However, the remains from the recent past have low to medium significance. Consequently, the impact of the Akanani Project on the remains from the recent past is of medium significance and mitigation measures are required (Table 10).

Table 10- The significance of the impact on the remains from the recent past (below).

Remains from recent past	M	D	E	I	R	P	SS	Environ Signific	Heritage Signific	Cum Impact	Mitigation Required	Significance after mitigation
	6	4	1	4	4	5	95	Med-High	Low-Medium	Low-med	Documentation of remains	60 Medium

9.3.3 The significance of the impact on the possible and positive identified graves

The significance of the impact on the possible and positive identified graves is very high. The possible and positive identified graves are rated as of high heritage significance. Consequently, the impact of the Akanani Project on the possible and positive identified graves are of high significance and mitigation measures are required (Table 11).

Table 11- The significance of the impact on the possible and positive identified graveyards (below).

Possible graves: Zwartfontein/Sands loot G01-G05	M	D	E	I	R	P	SS	Environ Signific	Heritage Signific	Cum Impact	Mitigation required	Significance after mitigation
	10	5	1	5	5	5	130	Very high	Very high	Very high	Social Participat, exhume & relocate	95 Med-high
Positive identified graves: Zwartfontein/Sands loot and Moordkopje G01-G14	M	D	E	I	R	P	SS	Environ Signific	Heritage Signific	Cum Impact	Mitigation required	Significance after mitigation
	10	5	1	5	5	5	130	Very high	Very high	Very high	Social Participat, exhume & relocate	95 Med-high

GY01- GY14												
---------------	--	--	--	--	--	--	--	--	--	--	--	--

9.4 Mitigating the heritage resources

9.4.1 The metal working slag

The metal working slag has low heritage significance and can be destroyed during the implementation of the Akanani Project.

9.4.2 The remains from the recent past

The remains from the recent past has low to medium significance and can only be destroyed after these remains have been documented by an archaeologist. This requires that the remains be mapped, photographed and described in a report which must be furnished to the South African Heritage Resources Authority (SAHRA).

The documentation of the remains from the recent past, which in some instances accommodates graves, will also provide an opportunity to uncover more possible or definite graves in the Akanani project area.

The archaeologist has to apply for a permit from SAHRA for the documentation of the remains from the recent past. After a permit has been issued and the documentation has been completed the archaeologist must provide SAHRA with a report outlining the results of the documentation process. Hereafter, Akanani Mining can apply for a permit from SAHRA for the destruction of the remains from the recent past.

9.4.3 The possible and positive identified graves

All graves must be exhumed and relocated. It is most likely that all graves are older than sixty years. The exhumation of human remains and the relocation of graveyards are regulated by various laws, regulations and administrative procedures. This task is undertaken by forensic archaeologists or by reputed undertakers who are acquainted with all the administrative procedures and relevant legislation that have to be adhered

to whenever human remains are exhumed and relocated. This process also includes social consultation with a 60 days statutory notice period for graves older than sixty years. Permission for the exhumation and relocation of human remains have to be obtained from the descendants of the deceased (if known), the National Department of Health, the Provincial Department of Health, the Premier of the Province and the local police. Municipal laws regarding graves and graveyards may differ and professionals involved with the exhumation and relocation of graves and graveyards must be acquainted with these laws and must adhere to these laws.

9.5 Chance-find procedures

It is most likely that heritage surveys that were done may have missed heritage resources due to various reasons outlined in the report. Therefore chance-find procedures must be implemented during the implementation of the Akanani Project, and which are applicable during the construction, operation, or closure phases of the Akanani Project.

The chance-find procedures apply to all contractors, subcontractors, subsidiaries, or service providers. If any of these institutions' employees find any heritage resources during any developmental activity all work at the site must be stopped and kept on hold. Chance-finds must be reported to supervisors and through supervisors to the senior manager on site. Chance-find procedures are summarized for heritage resources and graveyards.

9.5.1 Chance-find procedures for heritage resources

The initial procedure to follow whenever heritage resources are uncovered during development is aimed at avoiding any further possible damage to the heritage resources, namely:

- The person or group (identifier) who identified or exposed the heritage resource or graves 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 Environmental Officer (EO) and Health and Safety (HS) officers of the chance-find and its immediate impact on the Akanani 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 the 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 must be implemented.

9.5.2 Chance-find Procedures for graves

If previously unidentified graves are uncovered and/or exposed during any of the developmental phases of the Akanani Project, the following steps must be implemented after 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 Service (SAPS) and traditional authority.
- The project archaeologist in conjunction with the SAPS and traditional authority will inspect the possible graves and make an informed decision whether the remains are of forensic, recent, cultural-historical or of 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 graveyards and graves.

10 CONCLUSION AND RECOMMENDATION

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

- Stone tools which date from the Stone Age which occur here and there along the banks of the Mohlosane River;
- Remains dating from the Late Iron Age/Historical Period that consist of a scatter of metal working slag;
- Remains from the recent past which consist of the disintegrated remains of dwellings; and
- Possible and positively identified graves occurring in association with the remains of homesteads which date from the more recent past.

All these heritage resources, except the stone tools which are 'mobile', were geo-referenced and mapped (Figures 2, 3 & 4; Tables 1-5). (It must be noted that the remains from the recent past are extensive and that not all were mapped). The significance of the heritage resources that may be affected by the Akanani Project was determined by means of stipulations derived from the National Heritage Resources Act (No 25 of 1999) and by means of various other criteria. The significance of the impact of the Akanani Project was determined according to a rating scheme outlined in Part 7.5 'Significance ratings' (Tables 6-8). Mitigation and well as chance-find procedures are proposed for the Akanani Project.

The significance of the heritage resources

The significance of these heritage resources was determined as well as the significance of possible impacts on any of these heritage resources to propose appropriate mitigation measures for those heritage resources which may be affected by the Akanani Project.

Stone tools

The stone tools along the banks of the Mohlosane River will not be affected by the proposed Akanani Project. These artefacts are limited in numbers and are also 'mobile' as they are continuously moved during floods. Due to their mobility, they do not occur in

any archaeological context any longer. Consequently, these stone tools have low archaeological or heritage significance.

Metal working slag

These remains date either from the Late Iron Age (AD1600 to AD1850) and/or from the Historical Period (AD1850 onwards). It is even possible that the remains may be associated with the residential remains from the recent past.

The metal working slag has low heritage significance. It probably dates from the more recent past; is limited to a few pieces that may not be retraceable again after rain or other natural occurrences; is not associated with furnace debris or other metal working features and artefacts and occur in an eroded area without any archaeological context.

Remains from the recent past

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

The remains from the recent past are rated as of low to medium significance. This rating is based on the use of two rating (grading) schemes, namely (Tables 6 & 7):

- 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 6).
- 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 7) (Section 7 of the NHRA [Act No 25 of 1999]).

Possible and positive identified graves

No distinction is made between possible and positive identified graves as possible grave sites must be treated as if they in fact represent definite graves.

All graveyards and graves can be of high significance and are protected by various laws (Table 8). Legislation regarding graves includes Section 36 of the NHRA in instances where graves are older than sixty years. Other legislation about graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on

Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended). Municipal laws regarding graves and graveyards may differ and professionals involved with the exhumation and relocation of graves and graveyards must adhere to these laws.

Impact on the heritage resources

According to the layout plan for the Akanani Project the following can be noted (Figures 2, 3 & 4):

- The scatter with metal working slag will be destroyed when infrastructure for the proposed Akanani Project is constructed.
- The remains of the recent past will be destroyed when infrastructure for the proposed Akanani Project is constructed.
- The possible and positive identified graves will be destroyed when infrastructure for the proposed Akanani Project is constructed.

Significance of the impact on the metal working slag

The significance of the impact on the metal working slag is high. However, the metal working slag has low heritage significance. Consequently, the impact of the Akanani Project on the metal working slag is of low significance and no mitigation is required (Table 9).

Significance of the impact on the remains from the recent past

The significance of the impact on the remains from the recent past is medium to high. However, the remains from the recent past have low to medium significance. Consequently, the impact of the Akanani Project on the remains from the recent past is of low to medium significance and mitigation measures are required (Table 10).

Significance of the impact on the possible and positive identified graves

The significance of the impact on the possible and positive identified graves is very high. The possible and positive identified graves are rated as of high heritage significance. Consequently, the impact of the Akanani Project on the possible and positive identified graves are of high significance and mitigation measures are required (Table 11).

Mitigating the heritage resources

The metal working slag

The metal working slag has low heritage significance and can be destroyed during the implementation of the Akanani Project.

The remains from the recent past

The remains from the recent past has low to medium significance and can only be destroyed after these remains have been documented by an archaeologist. This requires that the remains be mapped, photographed and described in a report which must be furnished to the South African Heritage Resources Authority (SAHRA).

The documentation of the remains from the recent past, which in some instances accommodates graves, will also provide an opportunity to uncover more possible or definite graves in the Akanani project area.

The archaeologist has to apply for a permit from SAHRA for the documentation of the remains from the recent past. After a permit has been issued and the documentation has been completed the archaeologist must provide SAHRA with a report outlining the results of the documentation process. Hereafter, Akanani Mining can apply for a permit from SAHRA for the destruction of the remains from the recent past.

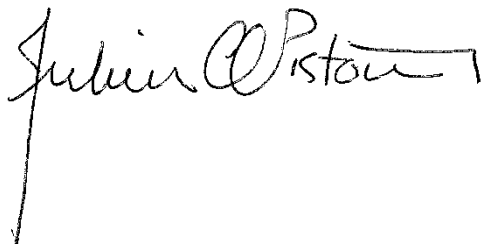
The possible and positive identified graves

All graves must be exhumed and relocated. It is most likely that all graves are older than sixty years. The exhumation of human remains, and the relocation of graveyards are regulated by various laws, regulations, and administrative procedures. This task is undertaken by forensic archaeologists or by reputed undertakers who are acquainted with all the administrative procedures and relevant legislation that must be adhered to whenever human remains are exhumed and relocated. This process also includes social consultation with a 60 days statutory notice period for graves older than sixty years. Permission for the exhumation and relocation of human remains must be obtained from the descendants of the deceased (if known), the National Department of Health, the Provincial Department of Health, the Premier of the Province and the local police. Municipal laws regarding graves and graveyards may differ and

professionals involved with the exhumation and relocation of graves and graveyards must be acquainted with these laws and adhere to these laws.

Chance-find procedures

Detailed procedures are outlined for chance-finds involving both heritage resources and graves in the Akanani project area.

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 first letter 'J'.

DR JULIUS CC PISTORIUS

Archaeologist &

Heritage Management Consultant

Member ASAPA

11 SPOKESPERSONS CONSULTED

Alphius Mongatana. Resident in Skimming.

Collins Lebelo. Resident in Leruleng.

James Makhafola. Local resident acquainted with Akanani Project Area.

Elias Habanakgosi. Foreman. Future Flow Groundwater & Project Management Solutions.

Martiens Prinsloo. Owner. Future Flow Groundwater & Project Management Solutions.

Victor Tseka. Geologist Sibanye Stilwater.

Mathew Makgamatho. Local resident and shop owner.

Willem Matlala. Wood collector and local resident.

Peter Sanyamandwe. Local resident. Employed by Mathew Makgamatho.

Johannes Ngope. Local resident and wood cutter.

Lebohang Ngope. Local resident and wood cutter.

Jacob Makwaesa. Local resident.

Peter Langa. Local resident and funeral undertaker.

Frieda Setlhage. Local resident.

Magdaleen Magamatho. Local resident.

David Alambo. Local resident.

Charles Magopa. Local resident.

Bokang Mofokeng. Local resident and cattle herder.

12 SELECT BIBLIOGRAPHY

Berg, J.S. (red.) 1999. *Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies*. Van Schaik: Pretoria.

De Beer, F. C. 1986. *Groepsgebondenheid in die familie-, erf- en opvolgingsreg van die Noord Ndebele*. Universiteit van Pretoria: Pretoria.

Erasmus, B.P.J. 1995. *Oppad in Suid-Afrika*. Jonathan Ball: Johannesburg.

Esterhuysen, A.B. 2008. Ceramic alliance: pottery and the history of the Kekana Ndebele in the old Transvaal. In: Swanepoel, N., Esterhuysen, A. & Bonner, P. (eds). *Five hundred years rediscovered: southern African precedents and prospects: 197-214*. Johannesburg: Wits University Press.

Jackson, A. O. 1969. *The history and political structure of the Mapela Chiefdom of the Potgietersrus district*. Unpublished manuscript.

Jackson, A. O. s. a. *The Ndebele of Langa*. Ethnological publications no. 54. Department of Co-operation and Development.

Loubser, J.H.N. 1994. *Ndebele archaeology of the Pietersburg area*. Unpublished MA dissertation. University of the Witwatersrand.

Maquire, J. n..d. *A guide to the Makapansgat valley sites*.

Mason, R. 1962. *Prehistory of the Transvaal*. Wits University Press: Johannesburg.

Moore, M. P. J. 1981. *The Iron Age of the Makapan valley area*. Unpublished M.A. dissertation. University of the Witwatersrand.

Schoonraad, M. & Beaumont, B.P. 1968. The North Brabant shelter, north western Transvaal. *South African Journal of Science* 64: 319-31.

Standard Encyclopaedia of Southern Africa. Volumes 7, 8 & 9 (1970). National Educational Publishers: Cape Town.

Van Warmelo, N. J. 1930. *Transvaal Ndebele texts*. Government Printer: Pretoria.

Van Warmelo, N. J. 1944. *The Ndebele of J. Kekana*. Government Printer: Pretoria.

13 BIBLIOGRAPHY RELATING TO HERITAGE STUDIES

Higgit, N. Karodia, S, Nel J & Du Piesanie, J. 2013. Heritage Statement for The Platreef Platinum Project on The Farms Turfspruit 241 KR, Macalacaskop 243 Kr And Rietfontein 2 KS in Mokopane, Limpopo Province.

Huffman, T.N. & Steele, R.H. 1996. Salvage excavations at Planknek, Potgietersrus, Northern Province. *Southern African Field Archaeology* 5:5-56.

Hutten, M. 2009. Heritage Impact Assessment for the Proposed Lake View Township Development on the farm Lisbon 288 KR, southwest of Mokopane, Limpopo Province. Unpublished report for Tekplan Environmental.

Pelser, A, 2011. The proposed new Sylvania Resources Volspruit Mine, a greenfields development, is located on portions of the farms Volspruit 326 KR and Zoetveld 294 KR near Mokopane in the Limpopo province. Unpublished report for Escience Associates.

Pistorius, J.C.C. 1997. *Relocation of Langa Ndebele from Ga-Mapela: An assessment of the archaeological potential of the farm Sterkwater (229KR) and proposal for a cultural heritage management programme in the former sphere of influence of the Langa-Ndebele chiefdom*. Unpublished report for Steffen, Robertson, and Kirsten and for Amplats. (28pp).

Pistorius, J.C.C. 2002a. *A Phase II investigation of cultural heritage remains in or near the proposed new open pit for Potgietersrust Platinums Mine (PPRust) on the farm Zwartfontein 818LR in the Limpopo Province of South Africa*. Unpublished report for SRK Consulting and the South African Heritage Resources Agency. (pp48)

Pistorius, J.C.C. 2002b. *A cultural heritage impact assessment for the proposed Overysel Zwartfontein Project. Amendment to Potgietersrust Platinums Ltd's (PPRust) Environmental Management Programme Report (EMPR)* Unpublished report prepared for SRK Consulting Engineers (pp51).

Pistorius, J. C. C. 2002c. *An extended Phase I Heritage Impact Assessment study for PPRust's new Overysel North Open Cast Mine near Mokopane in the Limpopo Province of South Africa*. Unpublished report prepared for SRK Consulting Engineers (pp27).

Pistorius, J.C.C. 2002d. *A Cultural Heritage Impact Assessment for Eskom's proposed new power line between the Sandsloot Substation and the 400kV transmission line crossing the farm Noord Brabant 774LR in the Limpopo (former Northern) Province of South Africa*. Unpublished report prepared for Eskom (pp58).

Pistorius, J.C.C. 2002e. *An archaeological impact assessment study for the proposed new transmission lines between the Sandsloot Substation and the Overysel Substation in the Northern Province of South Africa*. Unpublished report prepared for Eskom (pp69).

Pistorius, J.C.C. 2008. *A Phase I Heritage Impact Assessment (HIA) study for the proposed new Akanani Platinum Mine near Mokopane in the Limpopo Province of South Africa*. Unpublished report prepared for Golder Associates (pp53).

Pistorius, J.C.C. 2009a. *A Phase I Heritage Impact Assessment study for the proposed new Akanani Substation, 132kV power line and associated works in the Limpopo Province of South Africa*. Unpublished report for Eskom Northern Region.

Pistorius, J.C.C. 2009b. *A Phase I Heritage Impact Assessment study for Eskom's proposed Mokopane Integration Project near Lephalale and Mokopane in the Limpopo Province of South Africa*. Unpublished report for Savannah Environmental Consultants.

Pistorius, J.C.C. 2011. *A Phase I Heritage Impact Assessment study for the proposed Eskom Borotheo Project between Mokopane and PPRust in the Limpopo Province of South Africa*. Unpublished report for Eskom Northern Region.

Pistorius, J.C.C. 2013a. *A Phase I Heritage Impact Assessment study for the proposed Akanani Exploration/Ventilation Shaft near Mokopane in the Limpopo Province of South Africa*. Unpublished report for Golder Associates.

Pistorius, J.C.C. 2013b. *A Phase I Heritage Impact Assessment study for Eskom's proposed new Mokopane Substation and 132kV loop-in and loop-out power line near Mokopane in the Limpopo Province of South Africa*. Unpublished report for Dizolux.

Pistorius, J.C.C. 2015a. *A Phase I Heritage Impact Assessment (HIA) study for the amended Eskom Borutho Project between the Potgietersrust Substation and the proposed Borutho Substation in the Limpopo Province of South Africa*. Unpublished report for Mokwale Consulting.

Pistorius, J.C.C. 2015b. *A Phase I Heritage Impact Assessment (HIA) study for Eskom's proposed construction of 2X132kV power lines from Borutho main transmission substation to the proposed Akanani Substation in the in the Limpopo Province*. Unpublished report for Dynamic Integrated Geo-Hydro Environmental Services (DIGES).

Roodt, F. 2008. *Phase 1 Heritage Resource Impact Assessment (Scoping & Evaluation) Mooiplaas Residential Development Mokopane, Limpopo*. Unpublished report for Enviro-solutions

Van der Walt, J. 2017. *Archaeological Mitigation Report for the Iron Age/Historical Site (PLA1677/S.35-027) and Iron Age Smelting Site (PLA1677/S. 35-006) near Mokopane, Limpopo Province*.

Van der Walt, J. 2020. *Archaeological Monitoring Report for the destruction of Site PLA1677/S.35-006, Platreef Mine, Mokopane, Limpopo Province*. SAHRA Case Number Case ID12192.