



PGS HERITAGE

HERITAGE IMPACT ASSESSMENT

PROPOSED ACCESS ROADS AT THE MODIKWA PLATINUM MINE, NEAR STEELPOORT,
GREATER TUBATSE LOCAL MUNICIPALITY, GREATER SEKHUKHUNE DISTRICT
MUNICIPALITY, LIMPOPO PROVINCE.

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Declaration of Independence

I, Wouter Fourie, declare that –

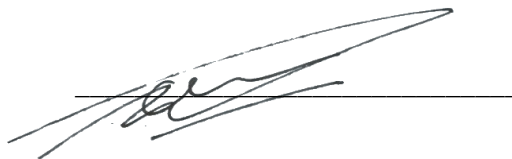
- I act as the independent heritage practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting heritage impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in section 38 of the NHRA when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- All the particulars furnished by me in this form are true and correct;
- I will perform all other obligations as expected from a heritage practitioner in terms of the Act and the constitutions of my affiliated professional bodies; and
- I realise that a false declaration is an offence in terms of regulation 71 of the Regulations and is punishable in terms of section 24F of the NEMA.


Disclosure of Vested Interest

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

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Report Title	Proposed Merensky Shaft Project and access roads at the Modikwa Platinum Mine, near Steelpoort, Greater Tubatse Local Municipality, Greater Sekhukhune District Municipality, Limpopo Province.		
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EXECUTIVE SUMMARY

Introduction

PGS Heritage (Pty) Ltd (PGS) was appointed by WSP Golder (Pty) Ltd to undertake a Heritage Impact Assessment (HIA) for the proposed access roads at the Modikwa Platinum Mine, near Steelpoort, Greater Tubatse Local Municipality, Greater Sekhukhune District Municipality, Limpopo Province. The study areas is located on the farms Hendriksplaats 281 KT Portion 281 and Onverwacht 292 KT Portion 1.

Associated Reports and Processes

This heritage study is undertaken with other heritage studies for the Modikwa Platinum Mine. During 2019 PGS completed a Heritage Impact Assessment for the proposed widening of the South 2 Shaft access road and the proposed construction of a new road to the Samancor Operations. While in 2021 and 2022 fieldwork was undertaken for the Merensky shaft and vent shaft access roads as contained in this report.

General Desktop Study

An archaeological and historical desktop study was undertaken to provide a historical framework for the project area and surrounding landscape (refer to **Chapter 5**). This was augmented by an assessment of previous archaeological and heritage studies completed for the study area and surrounding landscape. Furthermore, an assessment was made of the early editions of the relevant topographic maps.

Fieldwork

Intensive field surveys of the study area were undertaken on 12 May 2022. This work was undertaken on foot and by vehicle by an experienced fieldwork team comprising two archaeologist/heritage specialists (Michelle Sachse and Wynand van Zyl).

- The fieldwork resulted in the identification of one heritage site consisting of one burial ground with 10 identifiable graves close to the northern access road (**MPM05**)

Palaeontology

No specialist palaeontological studies formed part of the current scope of work. According to the SAHRIS palaeontological sensitivity map the proposed project area falls within an insignificant to low sensitivity zone.

Impact Assessment and Mitigation

An overlay of the identified archaeological and heritage sites over the proposed development footprint areas was made, which was used to assess the impact of the proposed development on these identified archaeological and heritage sites. Both pre-mitigation and post-mitigation impact assessments were undertaken. Please refer **Chapter 10** for the impact assessment calculations. A series of site-specific mitigation measures are outlined in **Chapter 11** of this report.

General Recommendations

The following general recommendations are made:

- **MPM 05** has a high heritage significance due to the cultural significance associated with graves and burial grounds.
- A series of site-specific mitigation measures are outlined in **Chapter 11** of this report.

Conclusions

While the unmitigated impact of the proposed development is expected to result in a moderate negative impact in terms of the identified archaeological and heritage sites located here, these impacts can be suitably mitigated to acceptable levels by way of a range of mitigation measures outlined in this report. As a result, on the condition that the recommendations made in this report are adhered to, no heritage reasons can be given for the development not to continue.

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TERMINOLOGY AND ABBREVIATIONS

Archaeological resources

This includes:

- material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Cultural significance

This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

Cultural Landscapes Terminology

“perceptual qualities” Aspects of a landscape which are perceived through the senses, specifically views and aesthetics.

“cultural landscape” A representation of the combined worlds of nature and of man illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal (World Heritage Committee, 1992). Includes and extends beyond the study site boundaries.

“cultural landscape area” These are single unique areas which are the discrete geographical areas of a particular landscape type. Each will have its own individual character and identity, even though it shares the same generic characteristics with other areas of the same type.

“study site” The study site is assumed to include the area within the boundaries of the proposed development

“characteristics” elements, or combination of elements, which make a particular contribution to distinctive character.

“elements” individual components which make up the landscape, such as trees and fences.

“landscape character” A distinct, and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.

“landscape character assessment” This is the process of identifying and describing variation in the character of the landscape. It seeks to identify and explain the unique combination of elements and

features (characteristics) that make landscapes distinctive. This process results in the production of a Landscape Character Assessment.

“sense of place” The unique quality or character of a place, whether natural, rural or urban. It relates to uniqueness, distinctiveness or strong identity.

“scenic route” A linear movement route, usually in the form of a scenic drive, but which could also be a railway, hiking trail, horse-riding trail or 4x4 trail.

Development

This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in a change to the nature, appearance or physical nature of a place or influences its stability and future well-being, including:

- construction, alteration, demolition, removal or change in use of a place or a structure at a place;
- carrying out any works on or over or under a place;
- subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
- constructing or putting up for display signs or boards;
- any change to the natural or existing condition or topography of land; and
- any removal or destruction of trees, or removal of vegetation or topsoil

Earlier Stone Age

The archaeology of the Stone Age between ~300 000 and 3 300 000 years ago.

Fossil

Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

Heritage

That which is inherited and forms part of the National Estate (historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).

Heritage resources

This means any place or object of cultural significance and can include (but not limited to) as stated under Section 3 of the NHRA,

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, and
- sites of significance relating to the history of slavery in South Africa

Holocene

The most recent geological time period which commenced 10 000 years ago.

Later Stone Age

The archaeology of the last 30 000 years associated with fully modern people.

Late Iron Age (Early Farming Communities)

The archaeology of the last 1000 years up to the 1800's, associated with iron-working and farming activities such as herding and agriculture.

Middle Stone Age

The archaeology of the Stone Age between 30 000-300 000 years ago, associated with early modern humans.

Palaeontology

Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

Site

Site in this context refers to an area place where a heritage resource is located and not a proclaimed heritage site as contemplated under s27 of the NHRA.

Table 1 – List of abbreviations used in this report

Abbreviations	Description
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
ECO	Environmental Control Officer
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
HMP	Heritage Management Plan
IAP	Interested and Affected Party
LSA	Late Stone Age
LIA	Late Iron Age
MSA	Middle Stone Age
MIA	Middle Iron Age
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Authority
PSSA	Palaeontological Society of South Africa
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System

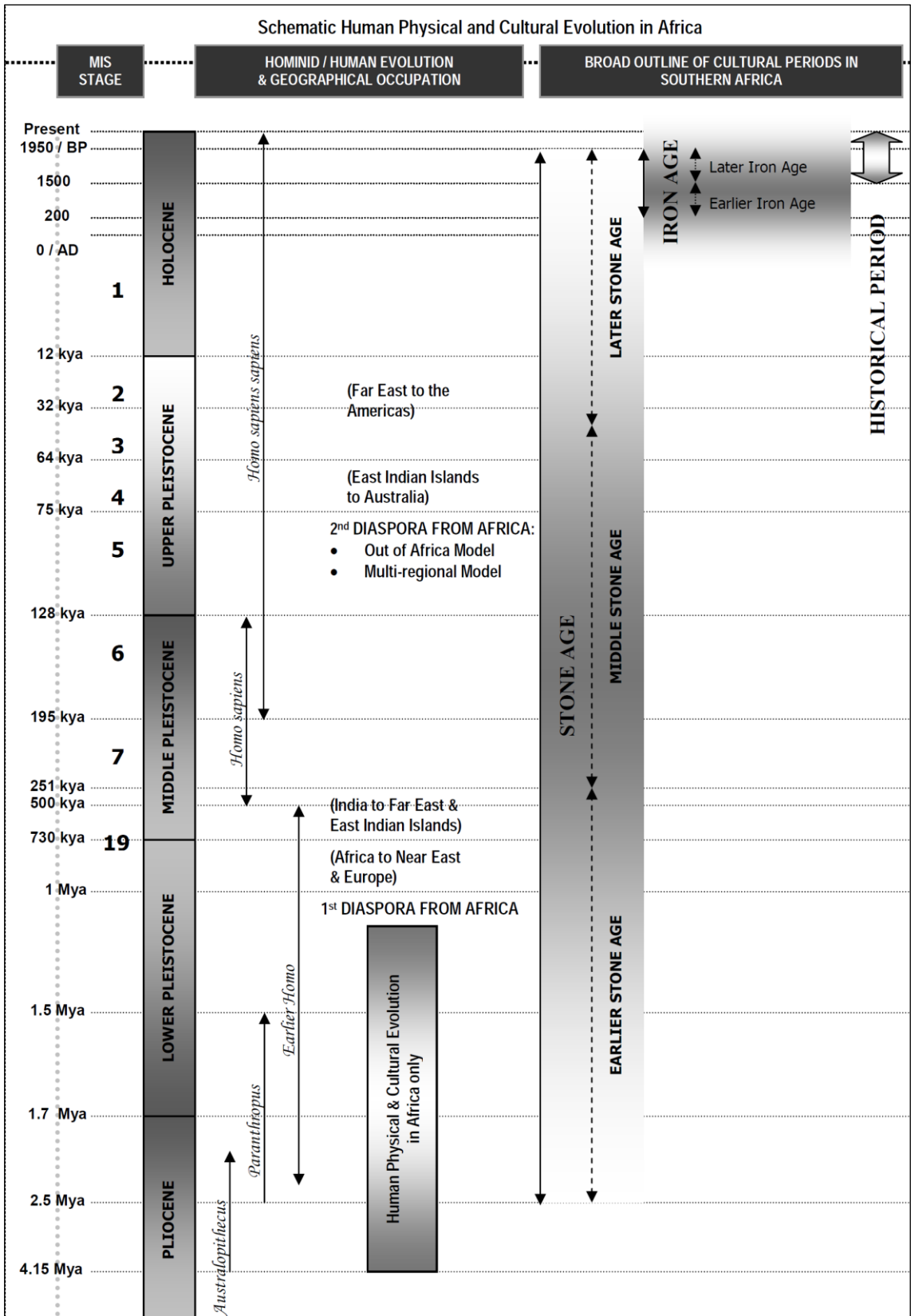


Figure 1 – Human and Cultural Timeline in Africa (Morris, 2008)

1 INTRODUCTION

PGS Heritage (Pty) Ltd (PGS) was appointed by WSP Golder (Pty) Ltd to undertake a Heritage Impact Assessment (HIA) for the two (2) proposed access roads at the Modikwa Platinum Mine, near Steelpoort, Greater Tubatse Local Municipality, Greater Sekhukhune District Municipality, Limpopo Province. The study areas is located on the farms Hendriksplaats 281 KT Portion 281 and Onverwacht 292 KT Portion 1.

1.1 Scope of the Study

The aim of this HIA is to identify possible heritage sites and finds that may occur in the proposed development area and to assess the impact of the proposed development on these identified heritage sites. The study also aims to inform the developers to manage the discovered heritage resources in a responsible manner, in order to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999) (NHRA).

1.2 Specialist Qualifications

This HIA was compiled by PGS. The staff at PGS has a combined experience of nearly 90 years in the heritage consulting industry and has extensive experience in managing HIA processes.

PGS will only undertake heritage assessment work where the staff has the relevant expertise and experience to undertake that work competently.

The following staff members from PGS compiled this Heritage Impact Assessment report:

- **Wouter Fourie**, is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist and is accredited as a Principal Investigator; he is further an Accredited Professional Heritage Practitioner with the Association of Professional Heritage Practitioners (APHP).
- **Michelle Sachse**, the author of this report, is registered with the Association of Southern African Professional Archaeologists (ASAPA) as a Professional Archaeologist. She holds a master's degree (MA) in Archaeology from the University of Pretoria.

1.3 Assumptions and Limitations

The following assumptions and limitations to this study exist:

- Not detracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites, as well as the density of vegetation cover found in some areas. As such, should any heritage features and/or objects not included in the present study be located or observed, a heritage specialist must immediately be contacted. Such observed or located heritage features and/or objects may not be disturbed or removed in any way, until such time that the heritage specialist has been able to assess as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. If any graves or burial places are identified or exposed during the development, the procedures and requirements pertaining to graves and burials will apply as set out below (refer **Appendix A**).
- The study area boundaries depicted in this report were provided by the client. As a result, these were the areas assessed during the fieldwork. Should any additional development footprints located outside of these study area boundaries be required, such additional areas will have to be assessed in the field by an experienced archaeologist/heritage specialist before construction can commence.

1.4 Legislative Context

The identification, evaluation and assessment of any cultural heritage site, artefact or find in the South African context is required and governed by certain legislation and legislative measures. These will be outlined in more detail below.

1.4.1 Statutory Framework: The National Heritage Resources Act (Act 25 of 1999)

The National Heritage Resources Act (NHRA) (Act 25 of 1999) has applicability, as the study forms part of an overall HIA in terms of the provisions of Sections 34, 35, 36 and 38 of the NHRA and forms part of a heritage scoping study that serves to identify key heritage resources, informants, and issues relating to the palaeontological, archaeological, built environment and cultural landscape, as well as the need to address such issues during the impact assessment phase of the HIA process.

More detail on the specific measures and protections offered by the NHRA are outlined below.

1.4.2 Section 35 – Archaeology, Palaeontology and Meteorites

According to Section 35 (Archaeology, Palaeontology and Meteorites) and Section 38 (Heritage Resources Management) of the NHRA, PIAs and AIAs are required by law in the case of developments in areas underlain by potentially fossiliferous (fossil-bearing) rocks, especially where substantial bedrock excavations are envisaged, and where human settlement is known to have occurred during prehistory and the historic period.

1.4.3 Section 36 – Burial Grounds & Graves

A section 36 permit application is made to the SAHRA or the competent provincial heritage authority which protects burial grounds and graves that are older than 60 years and must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit. SAHRA must also identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with these graves and must maintain such memorials. A permit is required under the following conditions:

Permit applications for burial grounds and graves older than 60 years should be submitted to the South African Heritage Resources Agency:

- a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of the conflict, or any burial ground or part thereof which contains such graves.
- b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.
- d) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant.

1.4.4 Section 38 - HIA as a Specialist Study within the EIA in Terms of Section 38(8)

A NHRA Section 38 (Heritage Impact Assessments) application to MP-PHRA is required when the proposed development triggers one or more of the following activities:

- a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- b) the construction of a bridge or similar structure exceeding 50 m in length;
- c) any development or other activity which will change the character of a site,

- i. exceeding 5 000 m2 in extent; or
 - ii. involving three or more existing erven or subdivisions thereof; or
 - iii. involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - iv. the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- d) the re-zoning of a site exceeding 10 000 m2 in extent; or
- e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority

In this instance, the heritage assessment for the property is to be undertaken as a component of the EIA for the project. Provision is made for this in terms of Section 38(8) of the NHRA, which states that:

- An HIA report is required to identify, and assess archaeological resources as defined by the NHR Act, assess the impact of the proposal on the said archaeological resources, review alternatives and recommend mitigation (see methodology above).

Section 38 (3) Impact Assessments are required, in terms of the statutory framework, to conform to basic requirements as laid out in Section 38(3) of the NHRA. These are:

- The identification and mapping of heritage resources in the area affected;
- The assessment of the significance of such resources;
- The assessment of the impact of the development on the heritage resources;
- An evaluation of the impact on the heritage resources relative to sustainable socio/economic benefits;
- Consideration of alternatives if heritage resources are adversely impacted by the development;
- Consideration of alternatives; and
- Plans for mitigation.

1.4.5 Notice 648 of the Government Gazette 45421

Although minimum standards for archaeological (2007) and palaeontological (2012) assessments were published by SAHRA (2016), Government Notice (GN) 648 requires sensitivity verification for a site selected on the national web-based environmental screening tool for which no specific assessment protocol related to any theme has been identified. The requirements for this GN are listed in **Table 3** and the applicable section in this report noted.

Table 2 - Reporting requirements for GN648.

GN 648	Relevant section in report	Where not applicable in this report
2.2 (a) a desktop analysis, using satellite imagery	Section 5	-

GN 648	Relevant section in report	Where not applicable in this report
2.2 (b) a preliminary on-site inspection to identify if there are any discrepancies with the current use of land and environmental status quo versus the environmental sensitivity as identified on the national web-based environmental screening tool, such as new developments, infrastructure, indigenous/pristine vegetation, etc.	Section 4 and 5	-
2.3(a) confirms or disputes the current use of the land and environmental sensitivity as identified by the national web-based environmental screening tool	Section 1 and 5	-
2.3(b) contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity	Section 4 provides a description of the current use and confirms the status in the screening report	-



Archaeological and cultural sensitivity map

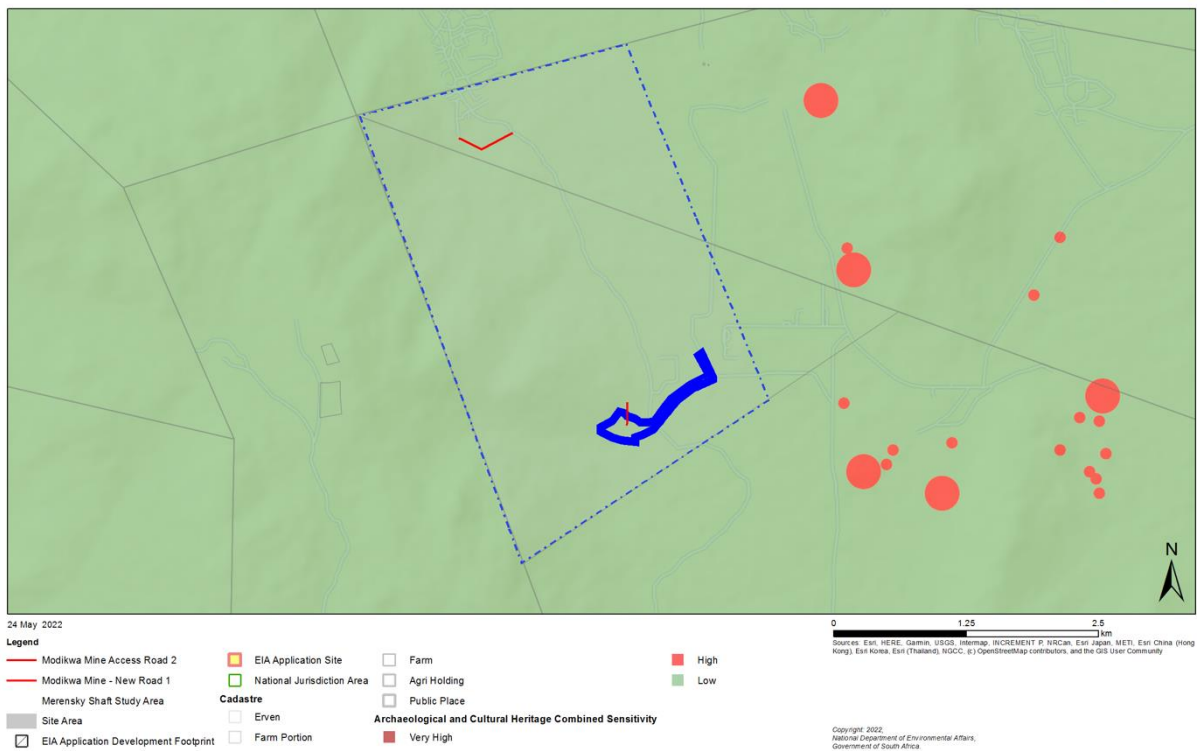


Figure 2 - Environmental screening tool's depiction of the archaeological and heritage sensitivity of the study area and surroundings.

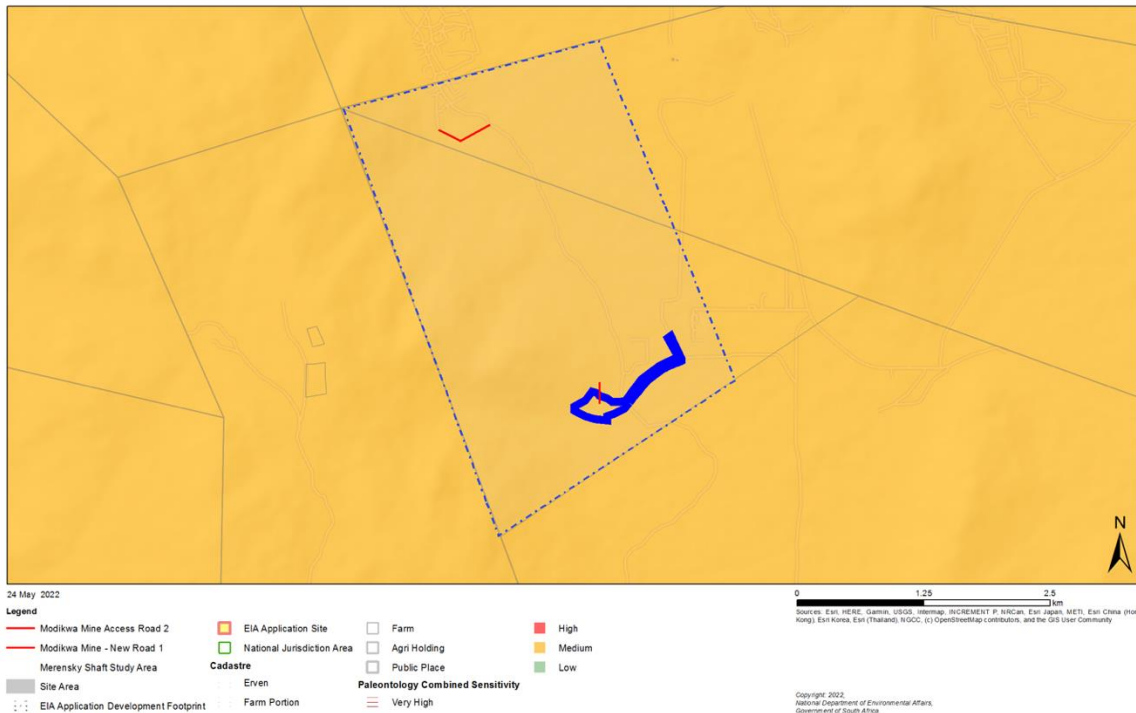


Figure 3 - Environmental screening tool's depiction of the palaeontological sensitivity of the study area and surroundings.

An assessment of the Environmental Screening tool provides the sensitivity ratings for archaeological as low (refer **Figure 2**) and for palaeontological resources in and surrounding the project study area as combined medium (refer **Figure 3**).

1.4.6 NEMA – Appendix 6 requirements

The HIA report has been compiled considering the National Environmental Management Act (Act No. 107 of 1998) (NEMA) and Environmental Impact Assessment (EIA) Regulations (2014, and as amended in 2017).

Table 3 below sets out the relevant sections as listed in Appendix 6 of the EIA Regulations (2017), which describes the requirements for specialist reports.

For ease of reference,

Table 3 provides cross-references to the report sections where these requirements have been addressed. It is important to note, that whenever something is not applicable to this HIA, this has been indicated in the table below.

Table 3 - Reporting requirements as per NEMA, as amended, Appendix 6 for specialist reports.

Requirements of Appendix 6 – GN R326 EIA Regulations of 7 April 2017	Relevant section in report	Comment where not applicable.
1.(1) (a) (i) Details of the specialist who prepared the report	Pages ii & iii – Contact details and company	-
(ii) The expertise of that person to compile a specialist report including a curriculum vita	Section 1.2 – refer to Appendix B	-
(b) A declaration that the person is independent in a form as may be specified by the competent authority	Page ii of the report	-
(c) An indication of the scope of, and the purpose for which, the report was prepared	Section 1.1	-
(cA) An indication of the quality and age of base data used for the specialist report	Section 5	-
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Sections 4 and 6	-
(d) The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 3 and 4	-
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 3	-
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Sections 4, 5 & 6	-
(g) An identification of any areas to be avoided, including buffers	Section 6	-
(h) A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Figure 22 and Section 6	
(i) A description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.3	-
(j) A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment	Section 8	
(k) Any mitigation measures for inclusion in the EMPr	Section 9	
(l) Any conditions for inclusion in the environmental authorisation	Section 10	

Requirements of Appendix 6 – GN R326 EIA Regulations of 7 April 2017	Relevant section in report	Comment where not applicable.
(m) Any monitoring requirements for inclusion in the EMPr or environmental authorisation		None required
(n)(i) A reasoned opinion as to whether the proposed activity, activities or portions thereof should be authorised and	Section 10	
(n)(iA) A reasoned opinion regarding the acceptability of the proposed activity or activities; and		
(n)(ii) 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, and where applicable, the closure plan	Section 10	-
(o) A description of any consultation process that was undertaken during the course of carrying out the study		Not applicable. A public consultation process was handled as part of the BA and EMPr process.
(p) A summary and copies if any comments that were received during any consultation process		Not applicable. To date no comments regarding heritage resources that require input from a specialist have been raised.
(q) Any other information requested by the competent authority.		Not applicable.
(2) Where a government notice by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	NEMA Appendix 6 and GN648 SAHRA guidelines on HIAs, PIAs and AIAs	

2 PROJECT DESCRIPTION

2.1 Site Location

Study Area Coordinates	North: S: 24.639099 E 30.116238	East S 24.640983 E 30.117473
	South S 24.645685 E 30.110198	West S 24.644696 E 30.107935
Location	The Modikwa Platinum mine is located approximately 18 km northwest of the town of Steelpoort, 20 km west of Burgersfort and 58 km northwest of Mashishing (Lydenburg). It is located in the Greater Tubatse Local Municipality	

	and is situated within the Greater Sekhukhune District Municipality of the Limpopo Province.
Property	Sections of the farm Onverwacht 292 KT and Hendriksplaats 281 KT
Topographic Map	2430CA

2.2 Technical Project Description

The content of this section was provided by WSP|Golder (Pty) Ltd.

The project assessed for the purposes of this report, comprises the following activities:

- New access road to the north vent shaft (to be located on Portion 281 of Hendriksplaats 281 KT); and
- New access road to the Merensky shaft (to be located on Portion 1 of Onverwacht 292KT)

Modikwa Mine access roads projects
Locality and study areas

PGS Heritage (Pty) Ltd
Heritage Management Unit

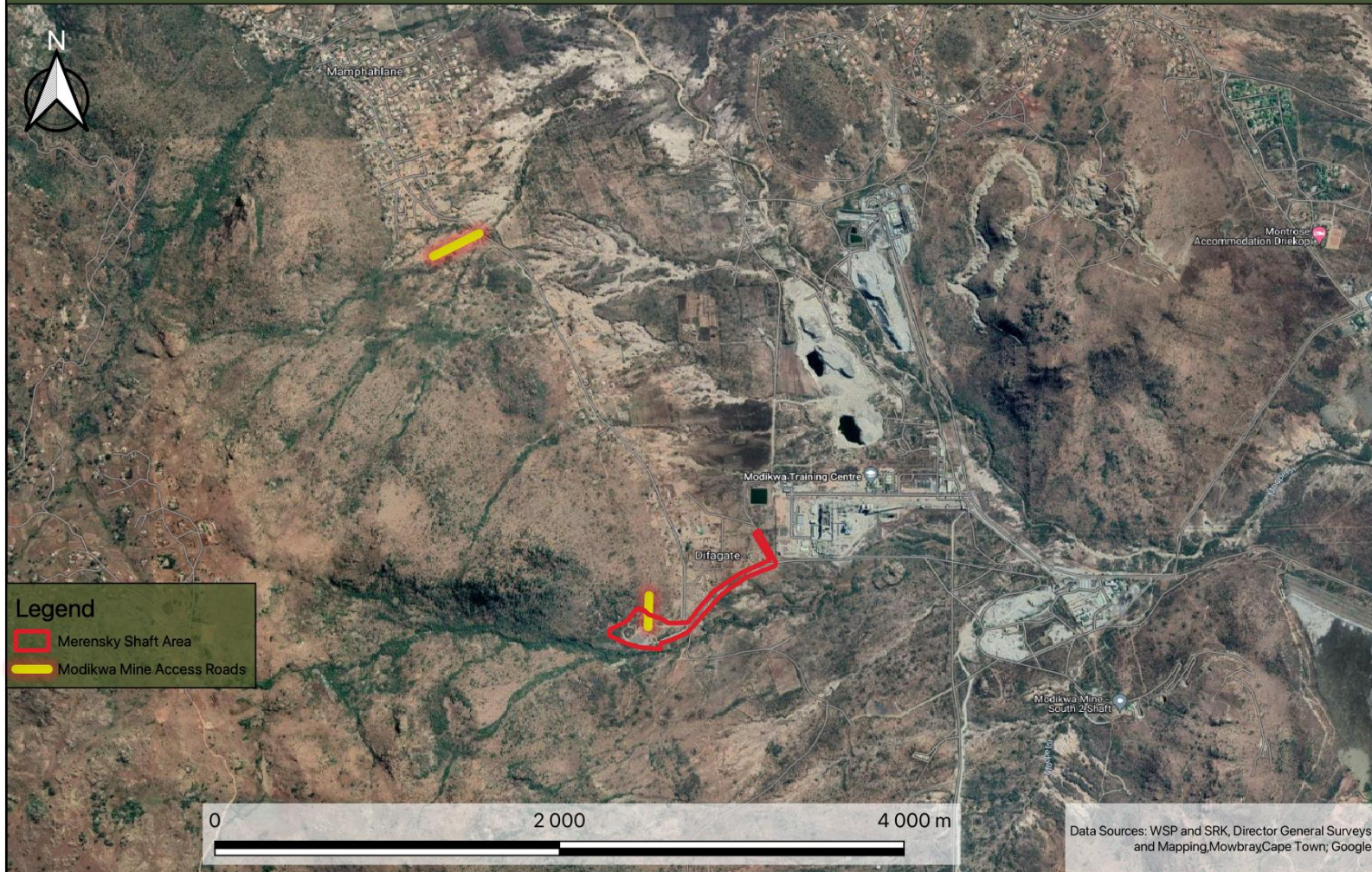


Figure 4 – The boundaries of the study area that were assessed for the purposes of this report.

3 ASSESSMENT METHODOLOGY

3.1 Methodology For Assessing Heritage Site Significance

The HIA process consisted of three steps:

Step I – Desktop Study: An archaeological and historical background study was undertaken using available sources. Previous archaeological and heritage studies from the study area and surroundings were also accessed using inter alia the South African Heritage Resources Information System (SAHRIS) of SAHRA.

Step II – Physical Survey: Intensive field surveys of the study area were undertaken on Thursday, 21 January 2021. This work was undertaken on foot and by vehicle by an experienced fieldwork team comprising one archaeologist/heritage specialist (Cherene de Bruyn) accompanied by a fieldwork assistant (Thomas Mulaudzi). Throughout the fieldwork, a hand-held GPS device, as well as a Smartphone Mapping Application (MAPinr), were used to record the tracklogs showing the routes followed by the archaeological fieldwork team. All sites identified during the fieldwork were photographically and qualitatively recorded, and their respective localities documented using a hand-held GPS device.

Step III – The final step involved the recording and documentation of relevant heritage resources, the assessment of resources in terms of the heritage impact assessment criteria and report writing as well as mapping and recommendations.

The significance of heritage sites was based on five main criteria:

- site integrity (i.e. primary vs. secondary context);
- amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures);
- Density of scatter (dispersed scatter);
 - Low - <10/50m².
 - Medium - 10-50/50m².
 - High - >50/50m².
- uniqueness; and
- the potential to answer present research questions.

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:

A - No further action necessary;

B - Mapping of the site and controlled sampling required;

- C - No-go or relocate development position;
- D - Preserve site, or extensive data collection and mapping of the site; and
- E - Preserve site

3.2 Site Significance

Site significance classification standards prescribed by SAHRA (2006) and approved by ASAPA for the Southern African Development Community (SADC) region, were used for the purpose of this report.

Table 4 below provides the site significance classification standard as prescribed by SAHRA that were used for this report.

Table 4 - Site significance classification standards as prescribed by SAHRA

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION	
National Significance (NS)	Grade 1	-	Conservation; National Site nomination	
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination	
Local Significance (LS)	Grade 3A	High	Conservation; Mitigation not advised	
Local Significance (LS)	Grade 3B	High	Mitigation (Part of site should be retained)	
Generally Protected (GP.A)	A	-	High/Medium	Mitigation before destruction
Generally Protected (GP.B)	B	-	Medium	Recording before destruction
Generally Protected (GP.C)	C	-	Low	Destruction

4 METHODOLOGY FOR IMPACT ASSESSMENT

As part of the integrated environmental authorisation process, various specialist studies will need to be undertaken in support of the EIA and the development of the EMP.

All specialists are required to assess each proposed activity/aspect of the access roads in relation to the construction, operational, closure and decommissioning phases in order to identify the potential impacts that may be associated with such activity and to develop appropriate mitigation measures that can be implemented to reduce or eliminate the potential impacts identified.

The specialist will assess the potential impact identified according to the Impact Assessment Methodology described below. This Impact Assessment Methodology has been formalised to comply with the EIA Regulations of 2014 (as amended) promulgated under NEMA, which states the following:

An environmental impact assessment report must contain all information that is necessary for the competent authority to consider the application and to reach a decision, and must include – an assessment of each identified potentially significant impact, including –

- (i) cumulative impacts;*
- (ii) the nature, significance and consequence of the impact and risk;*
- (iii) the extent and duration of the impact and risk;*
- (iv) the probability of the impact and risk occurring;*
- (v) the degree to which the impact and risk can be reversed;*
- (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and*
- (vii) the degree to which the impact and risk can be mitigated.*

Based on the above, the Impact Assessment Methodology requires that each potential impact identified is clearly described (providing the nature of the impact) and be assessed in terms of the following factors:

- **extend** (spatial scale) - *will the impact affect the national, regional or local environment, or only that of the site?;*
- **duration** (temporal scale) - *how long will the impact last?;*
- **magnitude** (severity) - *will the impact be of high, moderate or low severity?;* and
- **probability** (likelihood of occurring) - *how likely is it that the impact may occur?.*

To enable a scientific approach for the determination of the environmental significance (importance) of each identified potential impact, a numerical value has been linked to each factor. Please refer table on the subsequent page.

Once the above factors had been ranked for each identified potential impact, the environmental significance of each impact can be calculated using the following formula:

$$\text{Significance} = (\text{duration} + \text{extend} + \text{magnitude}) \times \text{probability}$$

The maximum value that can be calculated for the environmental significance of any impact is 100. The environmental significance of any identified potential impact is then rated as either: high, moderate or low on the following basis:

- More than 60 significance value indicates a high (H) environmental significance impact;
- Between 30 and 60 significance value indicates a moderate (M) environmental significance impact; and
- Less than 30 significance value indicates a low (L) environmental significance impact.

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

In order to assess the degree to which the potential impact can be reversed and be mitigated, each identified potential impact will need to be assessed twice.

- Firstly, the potential impact will be assessed and rated **prior** to implementing any mitigation and management measures; and
- Secondly, the potential impact will be assessed and rated **after** the proposed mitigation and management measures have been implemented.

The purpose of this dual rating of the impact before and after mitigation is to indicate that the significance rating of the initial impact is and should be higher in relation to the significance of the impact after mitigation measures have been implemented.

In order to assess the degree to which the potential impact can cause irreplaceable loss of resources, the following classes (%) will be used and will need to be selected based on the specialist informed decision and discretion:

- 5 100% - Permanent loss
- 4 75% - 99% - significant loss
- 3 50% - 74% - moderate loss
- 2 25% - 49% - minor loss
- 1 0% - 24% - limited loss

Please note that the Loss of Resources aspect will not affect the overall significance rating of the impact.

In terms of assessing the cumulative impacts, specialists are required to address this in a sentence/ paragraph fashion as the spatial extent of the cumulative impacts will vary from project to project. Cumulative impact, in relation to an activity, means the impact of an activity that in itself may not be significant, but may become significant when added to the existing or potential impacts eventuating from similar or diverse activities or undertakings in the area.

5 CURRENT STATUS QUO

The study area is located in a landscape that comprises both open valleys as well as ridges and mountains. The proposed development footprints are primarily located within these valleys. This said the topography of the study area can still be described as reasonably undulating.

The study area can be described as disturbed as a result of mining-related infrastructure. However, sections of the study area and surroundings can still be described as reasonably undisturbed.

For the most part, the study area is located within the Sekhukhune Plains Bushveld vegetation type. This vegetation type is characterized by “...predominantly short, open to closed thornveld with an abundance of Aloe species and other succulents. Heavily degraded in places and overexploited by man for cultivation, mining and urbanisation. Both man-made and natural erosion dongas occur in areas containing clays rich in heavy metals. Encroachment by indigenous microphyllous trees and invasion by alien species is common throughout the area...” (www.sanbi.org).

In terms of geology, the Sekhukhune Plains Bushveld vegetation type is associated with “...rocks mainly mafic and ultramafic intrusive rocks of the main to lower zones of the Rustenberg Layered Suite on the eastern lobe of the Bushveld Igneous Complex (Vaalian). The zones (subsuites) are dominated by concentric belts of norite, gabbro, anorthosite and pyroxenite, with localised protrusions of magnetite, chromitite, serpentinitised harzburgite, olivine diorite, shale, dolomite and quartzite. Most of the area consists of red apedal soils. Deep, loamy Valsrivier soils are characteristic of the plains and shallow Glenrosa soils are found on the low-lying, rocky hills. Patches of erodable black, melanic structured horizons are common around small mountains. Some Steendal soils are underlain by gypsum...” (www.sanbi.org).

A number of photographs below provide general views of the study area and the landscape within which it is located.



Figure 5 – General view across one of the valleys characterising the study area.



Figure 6 – Another view of the study area, showing a section of the existing road.



Figure 7 - View of the study area with the Modikwa Concentrator visible in the background.



Figure 8 – View of existing mining infrastructure located within the study area.



Figure 9 - View of a mine adit located in the northern end of the study area. This adit is not believed to represent one of the historical mine adits found in the surroundings of the study area, and appears to be associated with mining development that occurred between 2005 and 2012.



Figure 10 - View of another mine adit from within the study area. This adit is reinforced with concrete and appears to be still in use today.



Figure 11 - View of the northern access road area



Figure 12 - View of the southern access road area

6 DESKTOP STUDY FINDINGS

6.1 Archaeological Overview of the Study Area and Surroundings

DATE	DESCRIPTION
The Study Area and Surroundings during the Stone Age	
The South African Stone Age is the longest archaeologically-identified phase identified in human history and lasted for millions of years.	
2.5 million - 250 000 years ago	<p>The Early Stone Age is the first and oldest phase identified in South Africa's archaeological history and comprises two technological phases. The earliest of these technological phases is known as Oldowan, which is associated with crude flakes and hammerstones and dates to some 2 million years ago.</p> <p>The second technological phase in the earlier stone age of Southern Africa is known as the Acheulian and comprises more refined and better-made stone artefacts such as the cleaver and bifacial hand axe. The Acheulian dates back to approximately 1.5 million years ago.</p> <p>Stone artefacts dating to the Early Stone Age have been identified by previous archaeological surveys on some of the farms included in the study area and immediate surroundings, including Onverwacht 292KT, Hendrikplaats 281KT and Winterveld 293KT (Pistorius 2005; 2006)</p>
250 000 to 40 000 years ago	<p>The Middle Stone Age is the second oldest phase identified in South Africa's archaeological history. This phase is associated with flakes, points and blades manufactured by means of the so-called 'prepared core' technique.</p> <p>During previous archaeological surveys, scatters of Middle Stone Age lithics have been identified on some of the farms included in the study area and immediate surroundings, including Onverwacht 292KT, Hendrikplaats 281KT and Winterveld 293KT (Pistorius 2005; 2006)</p>
40 000 years ago to the historic past	<p>The Later Stone Age is the third archaeological phase identified and is associated with an abundance of very small artefacts known as microliths. A well-known feature of the Later Stone Age is rock art in the form of rock paintings and engravings.</p> <p>Stone artefacts dating to the Early Stone Age have been identified by previous archaeological surveys on some of the farms included in the study area and immediate surroundings, including Onverwacht 292KT, Hendrikplaats 281KT and Winterveld 293KT (Pistorius 2005; 2006)</p>
The Study Area and Surroundings during the Iron Age	
The arrival of early farming communities during the first millenium, heralded in the start of the Iron Age for South Africa. The Iron Age is that period in South Africa's archaeological history associated with pre-colonial farming communities who practiced cultivation and pastoralist farming activities, metal working, cultural customs such as lobola and whose settlement layouts show the tangible representation of the significance of cattle (known as the Central Cattle Pattern) (Huffman, 2007).	
AD 450 – AD 750	The Mzonjani facies of the Kwale Branch of the Urewe Ceramic Tradition is the earliest Iron Age presence for which archaeological evidence had been found in the surroundings of the study area. The key features on the decoration of the ceramics from this facies comprise punctuates on the rim and spaced motifs on the shoulder of the vessel (Huffman, 2007).

DATE	DESCRIPTION
	No sites associated with the Mzonjani facies are known to be located within the study area or its immediate surroundings.
AD 750 – AD 1000	<p>The Doornkop facies of the Happy Rest Sub-branch of the Kalundu Ceramic Tradition is the second Iron Age presence in the study area and surroundings. The key features on the decoration of the ceramics from this facies comprise multiple herringbone bands in neck (Huffman, 2007).</p> <p>No significant sites associated with the Doornkop facies are known to be located within the study area. This said, one site with Doornkop pottery and burnt floors was identified by a previous survey on the farm Maandagshoek 254 KT, which is located a short distance north of the study area (Roodt 2006).</p>
AD 1000 – AD 1300	<p>The Eiland facies of the Happy Rest Sub-branch of the Kalundu Ceramic Tradition is the third Iron Age presence for which archaeological evidence had been found in the surroundings of the study area. The key features on the decoration of the ceramics from this facies comprise fine herringbone with ladder stamping (Huffman, 2007).</p> <p>No significant sites associated with the Eiland facies are known to be located within the study area. This said, one site with Eiland pottery was identified by a previous survey on the farm Maandagshoek, which is located a short distance north of the study area.</p>
AD 1300 – AD 1500	<p>The Kgopolwe facies of the Happy Rest sub-branch of the Kalundu Ceramic tradition is the fifth Iron Age presence for which archaeological evidence had been found in the surroundings of the study area. The key features on the decoration of the ceramics from this facies comprise multiple incised bands separated by colour and lip decoration on bowls (Huffman, 2007).</p> <p>Sites with Kgopolwe facies ceramics have been identified in the surroundings of the study area. In fact, one of the sites identified during relatively recent fieldwork by PGS contains Kgopolwe pottery (Birkholtz & Kitto, 2019).</p>
AD 1650 - AD 1840	<p>The Marateng facies of the Moloko Branch of the Urewe Ceramic Ceramic Tradition is the sixth Iron Age facies to be identified within the surroundings of the study area. The key features of the decoration used on the ceramics from this facies include incised arcades on upper shoulder separating black and red (Huffman, 2007). The Marateng facies can be associated with modern Pedi.</p> <p>One of the sites identified during relatively recent fieldwork by PGS contains Marateng pottery (Birkholtz, 2019).</p>

7 ASPECTS OF THE HISTORY OF THE STUDY AREA AND SURROUNDINGS

7.1 Late Iron Age and Historic Black Settlement

7.1.1 *The situation during the early nineteenth century*

According to Bergh (1999), the Pedi, Roka, Koni and Tau were settled in the wider region during the start of the nineteenth century. As confirmation of this, Schoeman (1997) indicates that when the Bapedi settled in the Sekhukhuneland region during the second half of the seventeenth century (Schoeman, 1997), a number of groups such as the Kwena, Roka, Koni and Tau had preceded them there.

The Kwena of Mongatane was the first of these groups to settle in this wider area. Upon reaching the Olifants River, they split up into two groups. The first of these was under the leadership of Masabela, who established the first permanent Sotho settlement in Sekhukhuneland. The second group under Kope, decided to proceed upstream along the Olifants River and subsequently established themselves near present-day Groblersdal. It was this second group under Kope that later became known as the BaKopa.

With time the Phasa, related to the group of Masabela, also moved into the Sekhukhuneland region. Although both these groups referred to themselves as the Roka, other groups of a similar name were also found here. After the settlement of the Roka, and by approximately 1700, various Koni and Tau groups also moved into the area.

7.1.2 Khumalo Ndebele

The Khumalo Ndebele of Mzilikazi was a Northern-Nguni group that moved out of KwaZulu-Natal during 1821. They first settled at the confluence of the Vaal and Olifants Rivers from where they moved further north and fought with the Ndzundza-Ndebele of Magodongo who resided near present-day Stoffberg. The Ndzundza-Ndebele were defeated, and Mzilikazi and his followers settled temporarily in these parts (Bergh, 1999). During their short residence in the area, the Khumalo-Ndebele attacked the Koni of Makopole in the vicinity of present-day Lydenburg, before attacking the Bapedi of Maroteng in 1822.

Mzilikazi then turned his attention to the area between the Olifants and Steelpoort Rivers, which was the heartland of the Bapedi. In the ensuing military activities, the Pedi paramount leader Phetedi, as well as most of his brothers, were killed. However, one of the brothers managed to escape northwards and survived. He was Sekwati.

Sekwati returned to the area in 1828 and settled at Phiring, from where he started to rebuild the Maroteng kingdom.

According to Smith (1967), the Khumalo-Ndebele stayed in the wider surroundings of the present study area for approximately a year, and during this time raided or destroyed much of the grain and livestock of the surrounding communities.

7.1.3 Bapedi

As mentioned before, the Bapedi settled in the Sekhukhuneland region during the second half of the seventeenth century (Schoeman, 1997).

During the later stages of the 1700s and early period of the 1800s, the Morateng group of the Bapedi

became the most dominant force in the area, subjecting many of the other communities and groups. They reached their zenith during the rule of Thulare (ca. 1790 – ca. 1820).

Although the heartland of the BaPedi kingdom was the area between the Olifants and Steelpoort Rivers, their influence stretched much further than that. For example, the winter pasture of Sekwati was located in the areas directly to the east of the Steelpoort River.

7.1.4 Voortrekkers and the establishment of Ohrigstad and Lydenburg

In an effort to get further away from British influence, and at the same time closer to the market at Delagoa Bay, the Voortrekker leader Andries Hendrik Potgieter together with a large following, moved from areas only recently established after the Great Trek such as Potchefstroom, Pretoria and the Magaliesberg to the vicinity of Ohrigstad. It is estimated that by August 1845, there were already a thousand Voortrekkers resident in the surroundings of Ohrigstad (Botha, 1958).



Figure 13 - Andries Hendrik Potgieter (Pienaar, 1990:136).

Attention now focused on the establishment of a town, and as early as 30 July 1845 a meeting was held at the new town named Ohrigstad. The meeting was aimed at reorganising the Voortrekker government and also establishing a new *Volksraad* (Botha, 1958).

The wider areas surrounding the town also became increasingly settled by the new arrivals. During the period between August 1845 and December 1847, a total of 406 individual farms were proclaimed.

Due to a number of reasons, including the prevalence of malaria, the settlement of Ohrigstad began to decline. As a result, the *Volksraad* came together on 19 September 1849 in the higher-lying town of Krugerspos and decided that a new town was to be established in a healthier area. On 20 September 1849, the decision was made to name the new town "Leidenburg", and on 23 January 1850, the *Volksraad* in Potchefstroom decided that the new town was to be established on the farm Rietspruit (Botha, 1958:91).

The Lydenburg district was proclaimed as an independent state, namely the Republic of Lydenburg, on 17 December 1856 (Duvenage, 1966).

7.1.5 Relations between the Voortrekkers and Bapedi during Sekwati's reign

In July 1845 the Voortrekker leader A.H. Potgieter negotiated a settlement with Sekwati. This settlement was aimed at allowing Potgieter's followers to settle and establish farms in present-day Mpumalanga. However, relations turned sour when the *Volksraad* negotiated and made a separate agreement with the Swazi kingdom to allow white farmers to settle in the areas falling under Sekwati's rule. Sekwati was very unhappy about this agreement in that he felt that as the Swazi never managed to subject him, he still had the only say in terms of the land in question.

Nonetheless, farmers started establishing farms over large parts near Ohrigstad and Lydenburg, as well as quite close to Sekwati's residence and capital.

Although the initial stages (1845 to 1846) of contact between the Bapedi of Sekwati and the Boers was characterised by peace, this issue regarding the land negotiations started to have a negative impact on the relationship.

By August 1852, relations had so deteriorated that Potgieter led a commando against Sekwati. The commando, assisted by black forces, was not able to defeat the Pedi at their Phiring stronghold and lay a siege around the town in an attempt to subjugate them. The siege also proved unsuccessful and the commando left. Although the military activities did not curtail the power and influence of Sekwati, he decided to relocate his capital to the more defensive Thaba Mosego in the Leolo Mountains.

Due to the failure of the military actions taken against Sekwati, as well as the secession of the Lydenburg Republic in 1856, the Boers from these parts started making a strong motion in favour of a peaceful settlement with Sekwati. In October 1857, a commission was appointed to investigate the possible resolution of peace with the Pedi leader. Issues regarding land and boundaries were also to be discussed. On 17 November 1857, the Boers and Sekwati concluded a peace agreement. According to the terms of the agreement, the Steelpoort River was established as the boundary between the Bapedi and the Boer Republic. However, the agreement did not solve all the problems as it did not stipulate or rule on the issue of Boer farms already existing to the west of the Steelpoort River, nor did it indicate how far south the boundary of the Pedi land reached.

After the signing of the agreement, during the late 1850s, relative peace settled over the area. However, the 1860s and 1870s were characterised by friction between the Bapedi and the white farmers. These unfriendly relations worsened and culminated in open warfare during the latter part of the 1870s.

7.1.6 Relations between the Whites and Bapedi during Sekhukhune's reign

When Sekhukhune succeeded Sekwati as ruler of the Bapedi in 1861, his first priority was to strengthen his power base by eliminating or fighting any threats to his throne. Apart from the direct threats to his throne, Sekhukhune also felt threatened by a number of groups that used to be under Pedi influence. For example, both the Ndzundza-Ndebele and Bakopa started functioning independently from the Pedi during this time.

As a means of strengthening his position, Sekhukhune remained at peace with the Boers, and subsequently made an agreement with the Lydenburg Republic, which in effect upheld the same provisions contained in the 1857 agreement, with the exception that no ruling was made in terms of the Steelpoort River as the boundary.

During October 1863, Sekhukhune also sent Pedi forces to assist a Boer attack on the Ndzundza. However, the attack was a failure (Bergh, 1999).

Nevertheless, a number of factors again soured the relationship between the Bapedi and the whites (Bergh, 1999). During this time Sekhukhune sent some of his people to settle on the farms south and east of the Steelpoort River (Van Rooyen, 1950).

When a farmer named Jancowitz, who had bought a farm in the vicinity of Mafolofolo, was prohibited from marking the beacons on his property (or from collecting wood there) by followers of Sekhukhune's younger brother Johannes Dinkwanyane, Sekhukhune decided to send his warriors to assist his brother.

The Boers from the surrounding areas identified the incident as a threat and grouped themselves into lagers. They subsequently asked the government for assistance. On 16 May 1876, the *Volksraad* declared war on the Bapedi. After a number of successes, the forces of the Zuid-Afrikaansche Republiek

attacked Tshate, the new capital of Sekhukhune. As the first attacks proved unsuccessful, the decision was made to place the town under siege. Although a peace agreement was signed on 16 February 1877, Sekhukhune was not in agreement with all of the provisions. The subsequent British annexation of Transvaal allowed Sekhukhune a measure of strategic space. Although negotiations were undertaken with the new British authorities, the relations between the British and the Bapedi eventually resulted in the outbreak of war. The war ended in the attack on Sekhukhune's capital Tshate on 28 November 1879. Although Sekhukhune managed to escape, he was captured on 2 December 1879, and imprisoned at Pretoria (Bergh, 1999).

Most of the significant battles of the wars between the Bapedi of Sekhukhune and the Z.A.R. as well as the British authorities, such as the decisive Tshate battle of 28 November 1879, took place far away from the study area. For example, Tshate, the scene of this battle and also capital of Sekhukhune, was located approximately 18.3 km north-west of the present study area.

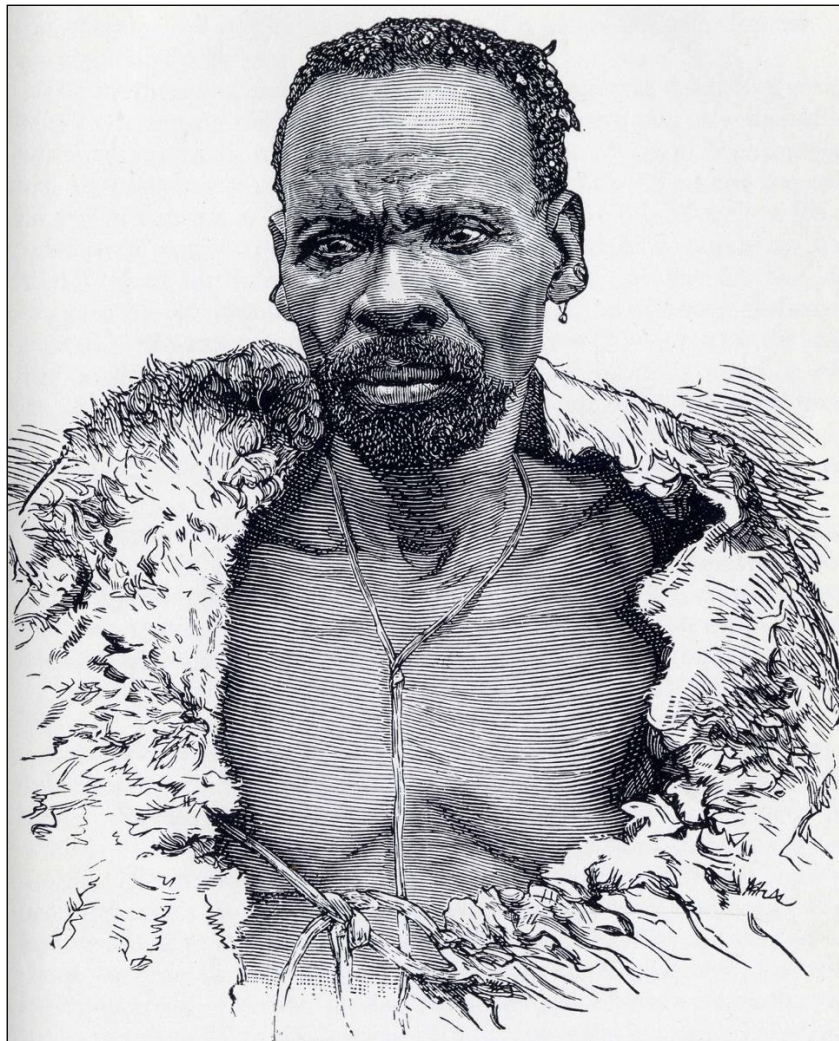


Figure 14 – Sekhukhune, ruler of the Bapedi (Grosskopf, 1957).
7.1.7 General Observations on the Farm Onverwacht 292KT

According to a farm diagram located on the Chief Surveyor General website, the farm Onverwacht 292 KT was registered in 1887 as the farm Onverwacht 330, situated in the Crocodile River Ward of the Lydenburg District of the Zuid-Afrikaansche Republiek.

7.2 Historic Overview of Mining within the Study Area

Platinum was first discovered in the Lydenburg District by J.A. Lombaard on his farm Maandagshoek 254KT (old number 148). This farm is located a short distance north of Onverwacht 292KT and at its closest point is located approximately 3km north of the present development footprints. However, it was Hans Merensky who identified the first platinum reef in South Africa and brought it to the attention of the world (Machens, 2009). With the assistance provided by Lombaard's cousins Schalk and Willem Schoeman, Merensky also discovered platinum south of the Steelpoort River. All these discoveries and investigations were made during August and September 1924 (National Archives, MNW, MM525/25).



Figure 15 – Hans Merensky (16 March 1871 – 21 October 1952) (Machens, 2009).

The discovery of a platinum reef by Hans Merensky led to a mad rush by fortune seekers, prospectors and businessmen from across the country to obtain options on farms where platinum was believed to be found.

In an article published in “*Die Huisgenoot*” of 5 June 1925, G.P. Canitz describes a visit made by him to the Lydenburg platinum fields, including the workings on Dwarsrivier. The prospecting operations undertaken on Dwarsrivier are described in some detail by Canitz (1925), and are discussed here to provide an example of these early prospecting activities.



Figure 16 – This historic photograph taken in 1925 shows five unnamed platinum prospectors at their camp on the farm Dwarsrivier (National Archives, Photographs, TAB, 17509). While this camp is not believed to have been located anywhere near the present study area, this photograph does provide one with an idea as to the early platinum prospecting activities in this general vicinity.

Canitz (1925) indicates that the platinum reef ran halfway up along a big mountain range on the farm, and all along the reef tunnels and shafts were excavated and bored into the mountain. The ore was then taken to the Dwarsrivier camp where it was stamped and bagged. The final phase in the process was the panning of the fine ore in the Dwars River to evaluate the quality of the platinum. It can be expected that early prospecting operations on the farm Onverwacht would have been conducted in the same way as was the case on the farm Dwarsrivier.

After the discovery of the platinum-bearing rock formations on the nearby farm Maandagshoek by Hans Merensky in 1924, prospecting was also undertaken on the farm Onverwacht, which at this stage was owned by the Transvaal Consolidated Land Company. These prospecting activities led to the discovery of platinum on an igneous koppie by FW Blane. The koppie had been formed by a dunite pipe which contained a remarkably high grade of platinum minerals (Davenport 2013). The values of the Onverwacht dunite pipe assayed from ore samples collected in the early half of 1925 proved to be so rich that the Transvaal Consolidated Land Company immediately established a trial crushing plant which

could handle 500 tons per month (in 1926). This enabled the Transvaal Consolidated Land Company to be one of only two companies able to develop platinum mining beyond the stage of speculation by 1926 (Davenport 2013). The first platinoid sponge was produced in February 1926 at the Onverwacht pilot plant. Unfortunately, the Onverwacht operation was of limited duration as the platinum values reduced considerably when the dunite pipe reached a depth of 270 metres. The Onverwacht Platinum Mine was shut down in 1929 (Davenport 2013). The closure of the Onverwacht Mine by the Transvaal Consolidated Land Company coincided with a platinum crash in 1929 which led to the closure of a number of the newly established platinum mines.

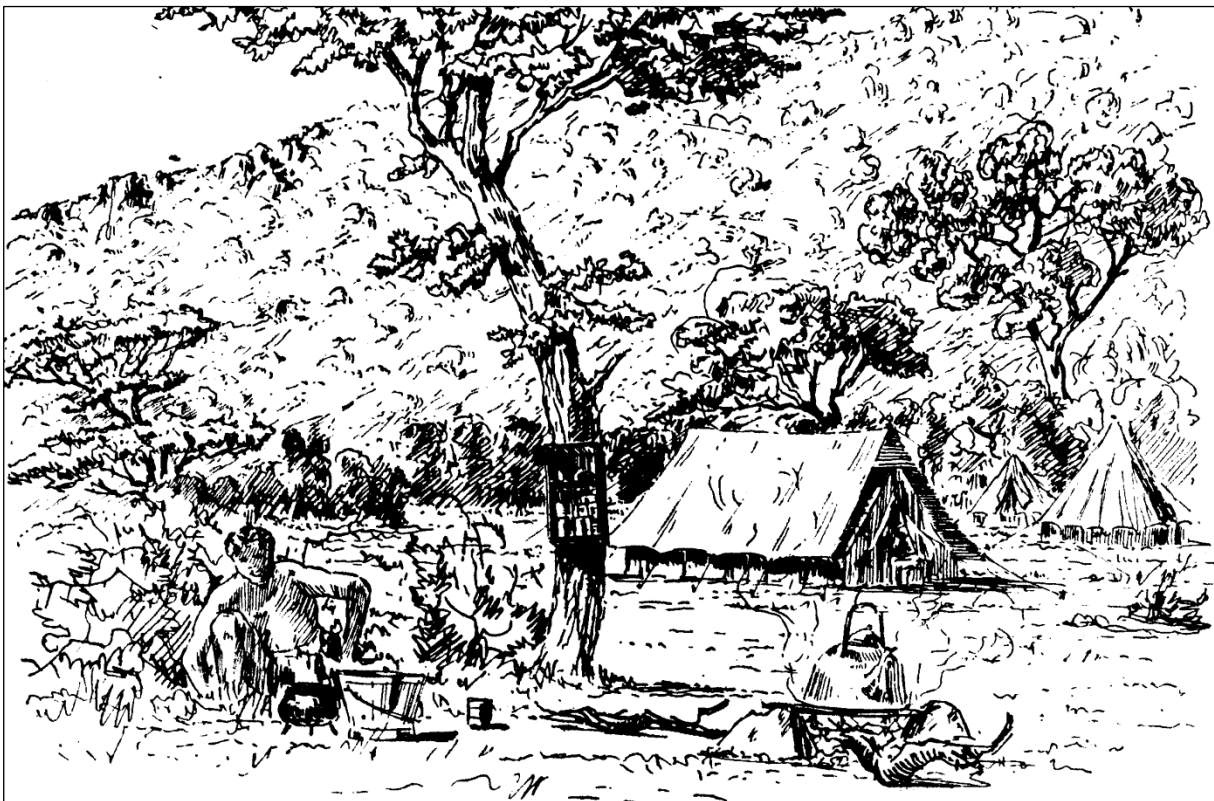


Figure 17 – Sketch of the kitchen area at the Dwars River camp c. 1925 (Canitz, 1925:23).

The old pipe of the Onverwacht Platinum Mine is located approximately 5km south-east of the present study area. The immediate surroundings of this pipe would all have formed part of the historic Onverwacht Platinum Mine.

After the closure of the Onverwacht Platinum Mine, a Mr. Hersov started the Onverwacht Chrome Mine in 1931. His controlling company was the African Mining & Trust Company (Pty) Ltd. The Onverwacht Chrome Mine was operated intermittently up to the end of 1979 when the mine was finally left to be flooded by groundwater. Mining operation was hampered, especially on the southern side, by adverse structural conditions associated with the platinum pipe.

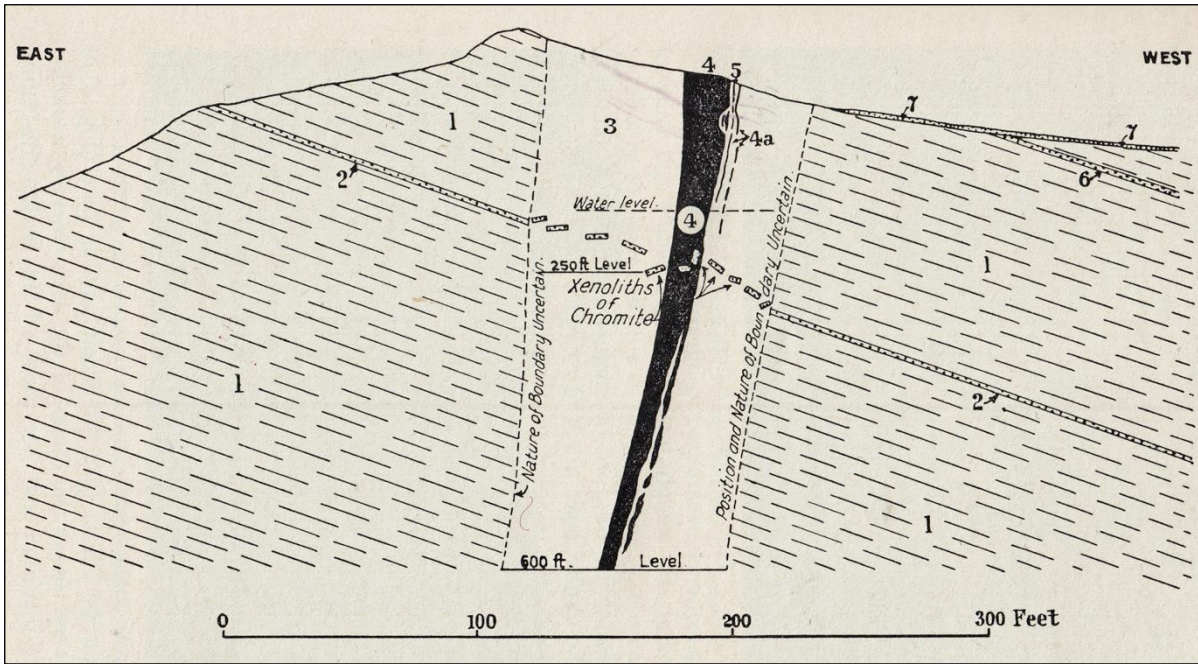


Figure 18 – Cross-section view of the pipe at the Onverwacht Platinum Mine. This diagram appears to date from the late 1920s (Wagner, 1929:65).

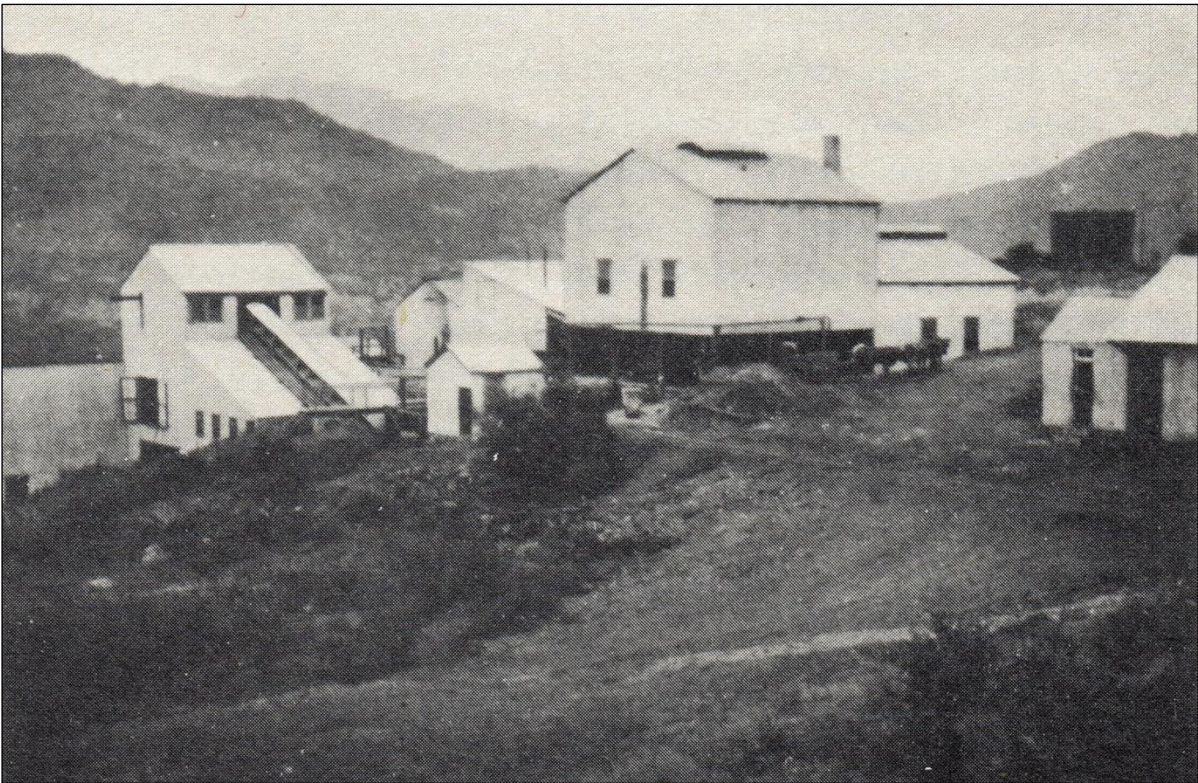


Figure 19 – The treatment plant at the Onverwacht Platinum Mine. This photograph was taken during the late 1920s (Wagner, 1929:68).

7.3 Previous Archaeological and Heritage Studies from the Study Area and Surroundings

A search of the South African Heritage Resources Information System (SAHRIS) database revealed that a number of previous archaeological and heritage impact assessments had been undertaken within the surroundings of the study area. However, only four of these previous studies appear to have had study areas located in the surroundings of the present study area. These studies are as follows:

- ARCHAEO-INFO, 1999. Preliminary Archaeological Impact Assessment: Maandagshoek and Onverwacht Proposed Survey and Access Routes. **This study assessed the footprints associated with a number of roads proposed on the farms Maandagshoek and Onverwacht. A high number of sites were identified during the fieldwork, including graves, historic black homesteads and Iron Age sites. The closest of any of these sites to the development footprints currently proposed is site MOR 005, which at the time was identified as a historic black homestead associated with a burial ground. This site was identified approximately 1.9km east of the study area and will not be affected by the proposed development.**
- ARCHAEO-INFO, 2000. Preliminary Archaeological Impact Assessment: Maandagshoek Amplats Platinum Project. **This study assessed the footprints associated with the proposed Maandagshoek Amplats Platinum Project. A high number of sites were identified during the fieldwork. The closest of any of these sites to the development footprints currently proposed, is site MCP 004, which comprises a surface scatter of lithics. This site is located approximately 1.2km east by south-east of the study area and will not be affected by the proposed development.**
- PISTORIUS, JCC. 2005. Results of a Phase II Heritage Impact Assessment Study: An Investigation of Late Iron Age (including initiation cairns) and Mining Heritage Remains on the farm Onverwacht 292KT in the Limpopo and Mpumalanga Provinces of South Africa. **This report followed on from a Phase 1 study undertaken in 2004 for the proposed expansion of mining activities by Modikwa Platinum on the farm Onverwacht 292KT. The Phase 1 HIA, which is not available on SAHRIS, had identified a small informal graveyard (3 graves), several mine adits along the foot of the Leolo Mountains and a Late Iron Site with possible smelting furnaces and initiation cairns. This Phase II report therefore recorded the results of the investigation into the mine adits and the LIA site and initiation cairns. Although the coordinates for the adits, cairns site and Iron Age settlement are not presently available, an overlay of the site locality and distribution map included in this Phase II HIA report over the current study area footprints was made using the overlay function Google Earth. While such a manual overlay is not absolutely accurate, it does indicate that the Iron Age site is located approximately 217m north of the study area footprints, whereas the nearest mine adit is roughly 110m north-west of the study**

area footprints. The site containing the initiation cairns is located approximately 994m north by north-west of the study area footprints.

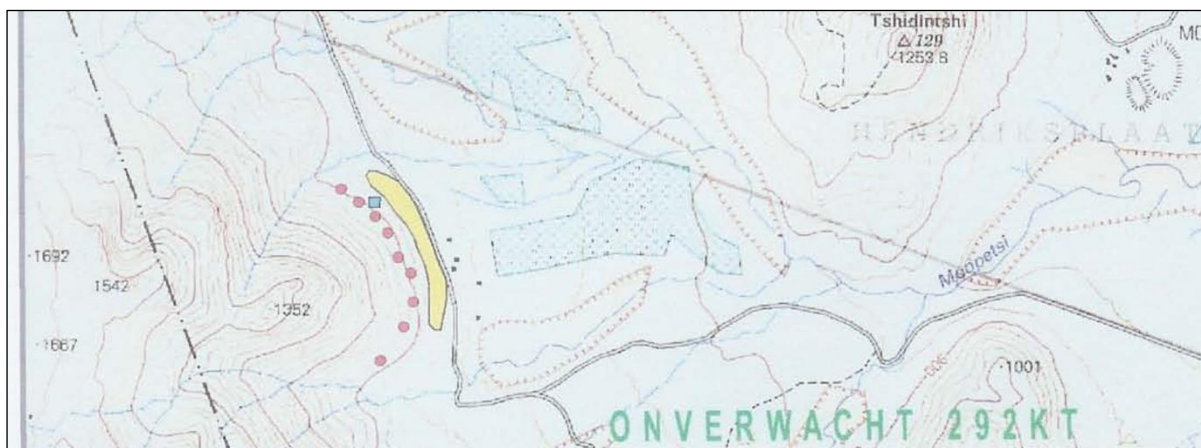
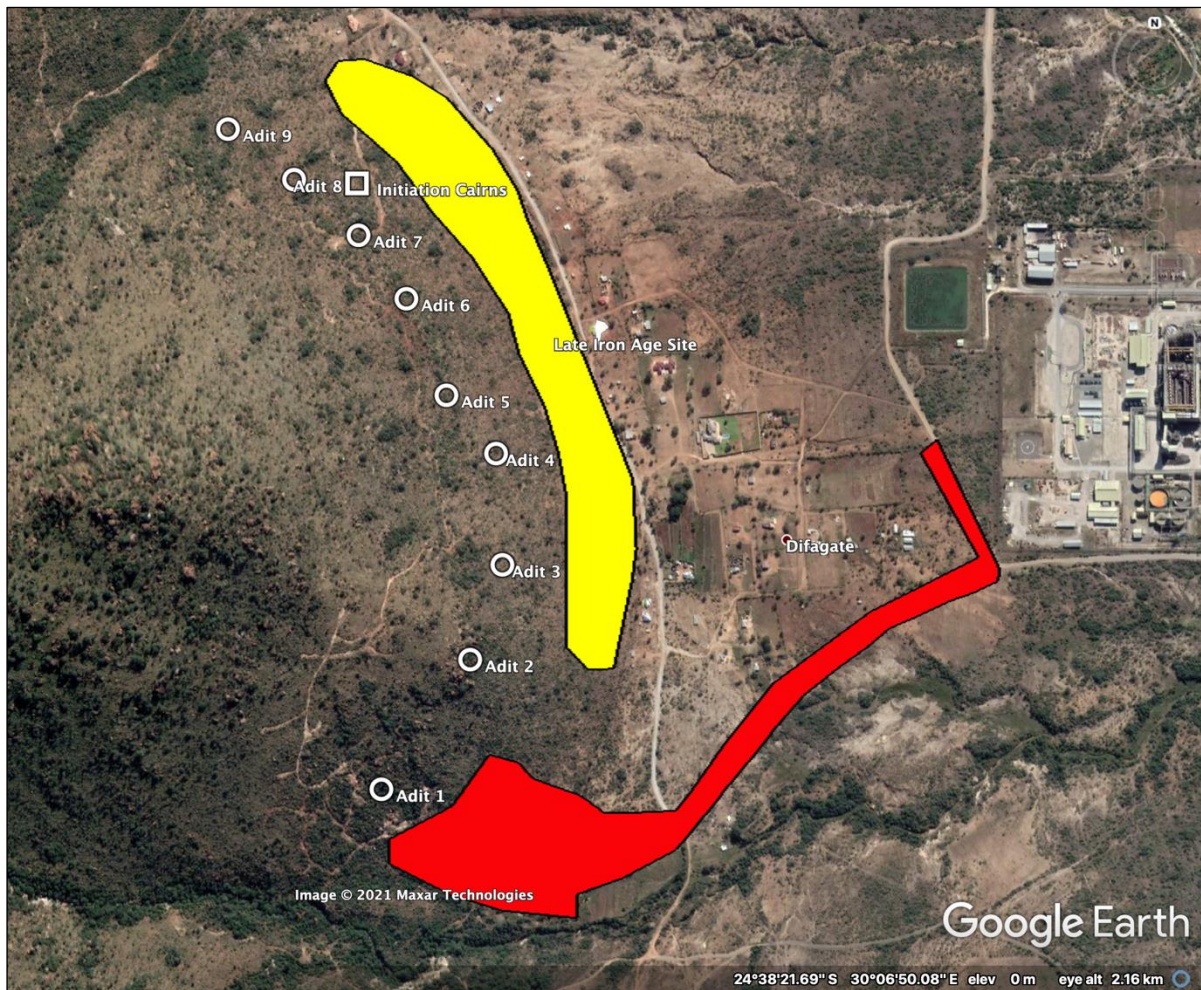


Figure 20 – The top image depicts a Google Earth image showing the overlay of the sites included in a site distribution map from the Phase II HIA report. The present study area is indicated in red. A section of the site distribution map used for this overlay is depicted below (Pistorius, 2005:60).

- VAN VOLLENHOVEN, AC, DE BRUYN, C AND COLLINS, Z. 2014. A Report on a Cultural Heritage Impact Assessment done for the Anglo American Platinum and African Rainbow

Minerals Modikwa Platinum Mine South Shaft 2 Project, close to Burgersfort, Limpopo Province. **This study assessed the footprints associated with various development components associated with the South Shaft 2 project. Although the study could not identify any heritage sites located within the project area, it did revisit some of the previously identified sites located in proximity to the project area. The study also identified five new sites consisting of graves and clay walls located outside of the project area. The closest of any of these sites to the present study area is Site 4, which comprises three graves. This site was identified approximately 2.9km south-east of the study area and will not be affected by the proposed development.**

- BIRKHOLTZ, P. & KITTO, J. 2019. Heritage Impact Assessment for the Proposed Widening of the South 2 Shaft Access Road and Construction of a New Road to the Samancor Operations, Steelpoort, Limpopo Province. **The fieldwork resulted in the identification of eight archaeological and heritage sites. These identified sites comprise four historic black homesteads, three Iron Age metal-working sites and one site associated with mining activities. The closest of any of these sites to the present study area is site MDK 1, which comprises a historic black homestead. This site was identified approximately 3km east of the study area and will not be affected by the proposed development.**

A number of archaeological and heritage impact assessments are known from the surroundings of the study area. Examples of these previous reports include the following:

- VAN SCHALKWYK, J. 2000. Preliminary Archaeological Assessment for the Maandagshoek Amplats Platinum Project. **This study identified a large number of sites in different areas proposed for new mining infrastructure development. The farms forming the study area included Onverwacht and Hendriksplaats. Among the sites identified were scatters of Stone Age artefacts, concentrations of slag and ash associated with Iron Age metal-working and historic black homestead remains. Several graves and burial grounds were also identified.**
- PISTORIUS, JCC. 2006. A Phase I Heritage Impact Assessment (HIA) Study for Modikwa Platinum's South Shaft 3 Project Area in the Limpopo and Mpumalanga Provinces of South Africa. **This HIA study was undertaken for the proposed new South Shaft 3 Project for Modikwa Platinum on the farm Winterveld 293KT, located south of the current study area. Sites identified included scatters of Stone Age artefacts, historic black homesteads and villages and several graves and burial grounds.**
- ROODT, F. 2006. Heritage Resources Assessment Report: Mining development on the farm Maandagshoek 254KT, Tubatse Municipal Area, Sekhukhune District. **A large concentration of MSA stone tools was identified in a donga, and two Iron Age sites (Doornkop and**

Eiland) were identified, as well as several historic black homestead sites with associated graves and one informal graveyard.

- VAN DER RYST, M AND KRUGER, N. 2007. Specialist Archaeological Report: Mining Development on the farm Maandagshoek 254 Kt, Tubatse Municipal Area, Sekhukhune District. **This report focusses on the Stone Age artefacts found in Roodt's 2006 study.**
- MAGOMA, M. 2017. Phase I Archaeological and Cultural Heritage Impact Assessment Specialist Report for the Proposed Construction of approximately 170km 1 X 400kv Powerline from Maphutha Substation to Witkop Substation within the Sekhukhune and Capricon District Municipalities of Limpopo Province. **This study encompasses a very large area of which only the southern section includes the current study area. Since it was undertaken at a scoping level, no specific sites are recorded in the vicinity of the current study area.**

7.4 Historical Topographic maps

An assessment of available archival and historical maps was undertaken as a way to establish a historic layering for the study area. These historic maps are also valuable resources in identifying possible heritage sites and features located within the study area. The only maps used for the present study are the First and Second Editions of the 2430CA Topographic Sheet.

7.4.1 First Edition of the 2430CA Topographic Sheet

A section of the First Edition of the 2430CA Topographic Sheet can be seen in **Figure 21** below. This map sheet was based on aerial photography undertaken in 1956, was surveyed in 1963 and drawn in 1964 by the Trigonometrical Survey Office.

The following observations can be made from this depiction of the study area:

- No heritage sites or features are depicted within the study area.
- At the time, the study area and immediate surroundings comprised small pockets of cultivated land. Two historic black homesteads are depicted north of the study area.

Modikwa Mine access roads project
First Edition Map 1963

PGS Heritage (Pty) Ltd
Heritage Management Unit

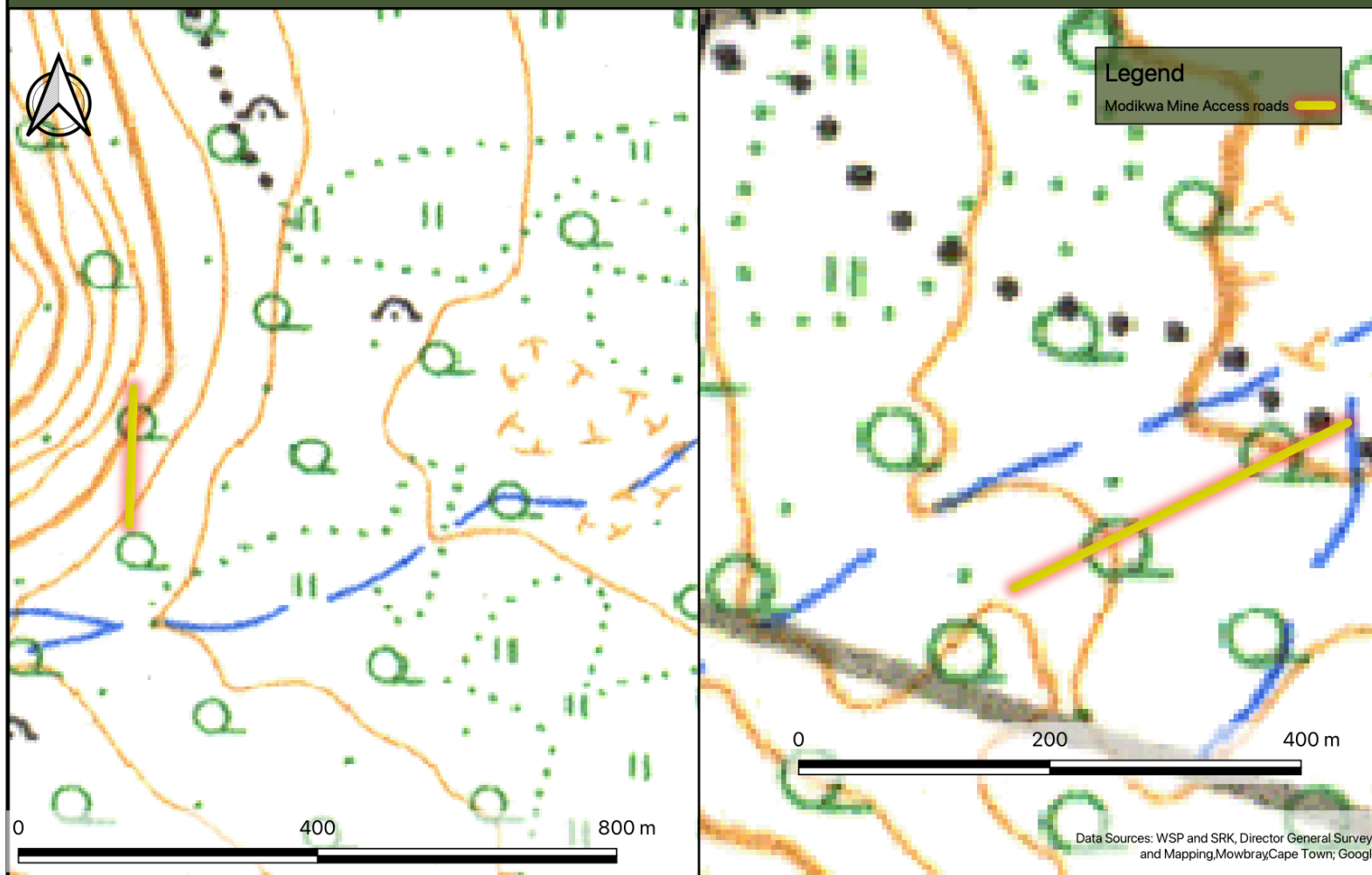


Figure 21 - Section of the First Edition of the 2430CA Topographic Map surveyed in 1963 and drawn in 1964. The study area boundaries are depicted in blue.

7.4.2 *Second Edition of the 2430CA Topographic Sheet*

A section of the Second Edition of the 2430CA Topographic Sheet can be seen in **Figure 20** below. This map was remapped by the Director-General of Surveys in 1975 and published by the Government Printer.

The following general observations can be made from this depiction of the study area and surroundings:

- The north roads show a mix of cultivation and eroded area with a single structure on its western end point.
- Two structures are visible on just east of the southern access road.

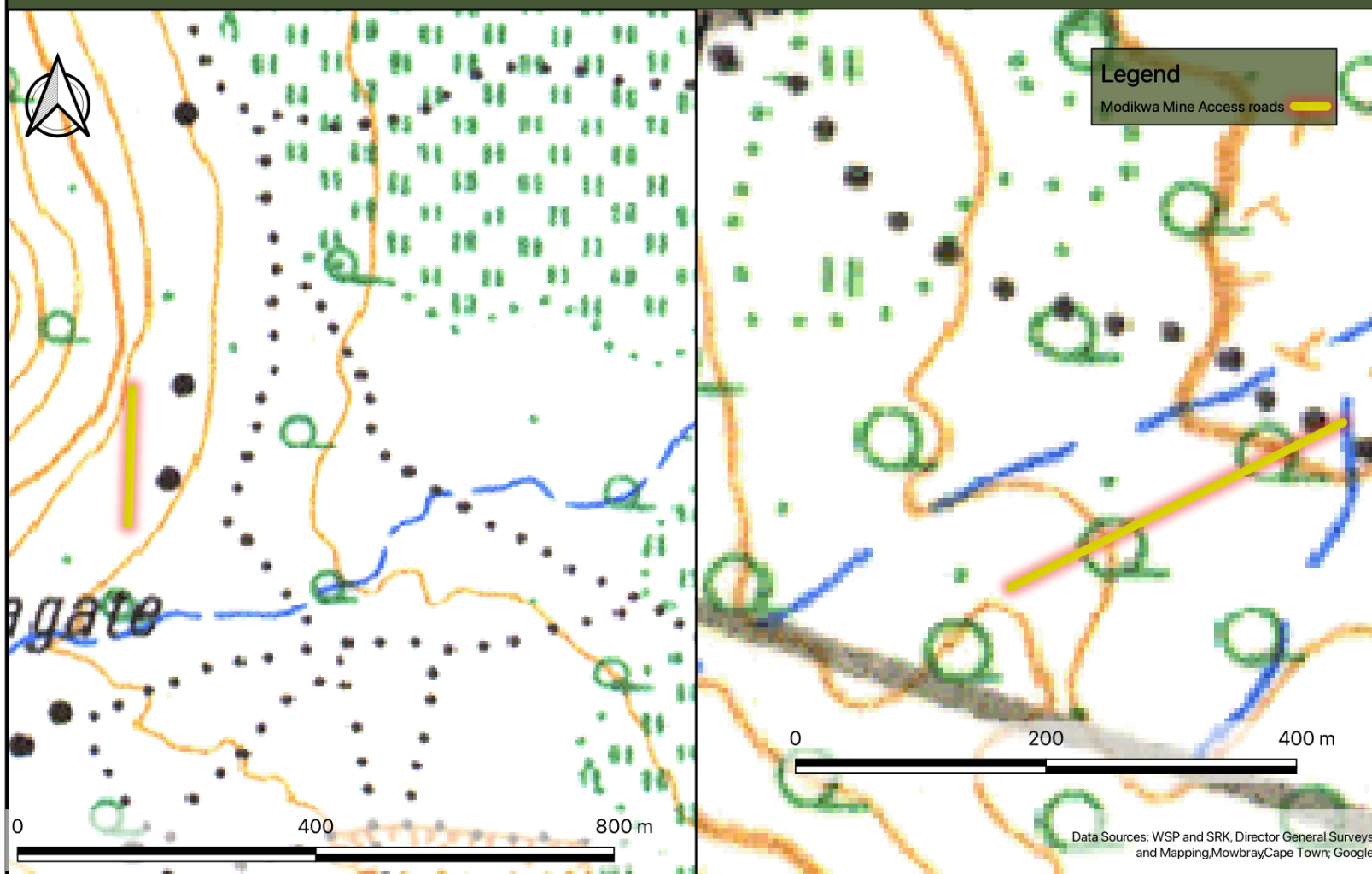


Figure 22 - Section of the Second Edition of the 2430CA Topographic Map that was published in 1975.

8 FIELDWORK FINDINGS

8.1 Introduction

Intensive field surveys of the study area were undertaken on foot and by vehicle on 12 May 2022. The work was undertaken by an experienced fieldwork team comprising two archaeologist/heritage specialists (Michelle Sachse and Wynand van Zyl).

This intensive field assessment resulted in the identification of one heritage site. This identified site was numbered **MPM05** to ensure continuity with the numbering of other heritage sites previously identified in the greater Modikwa Mine area. Although other heritage and archaeological features were identified during previous studies, only those closer than 50 meters from the current two access roads will be discussed.

During the fieldwork, a hand-held GPS device as well as a Smartphone Mapping Application (MAPinr and Survey 123), were used to record tracklogs. These recorded track logs show the routes followed by the individual members of the fieldwork team on site. The recorded tracklogs are also shown on the map depicted on the succeeding page.

Modikwa Mine access roads project
Fieldwork Tracks

PGS Heritage (Pty) Ltd
Heritage Management Unit

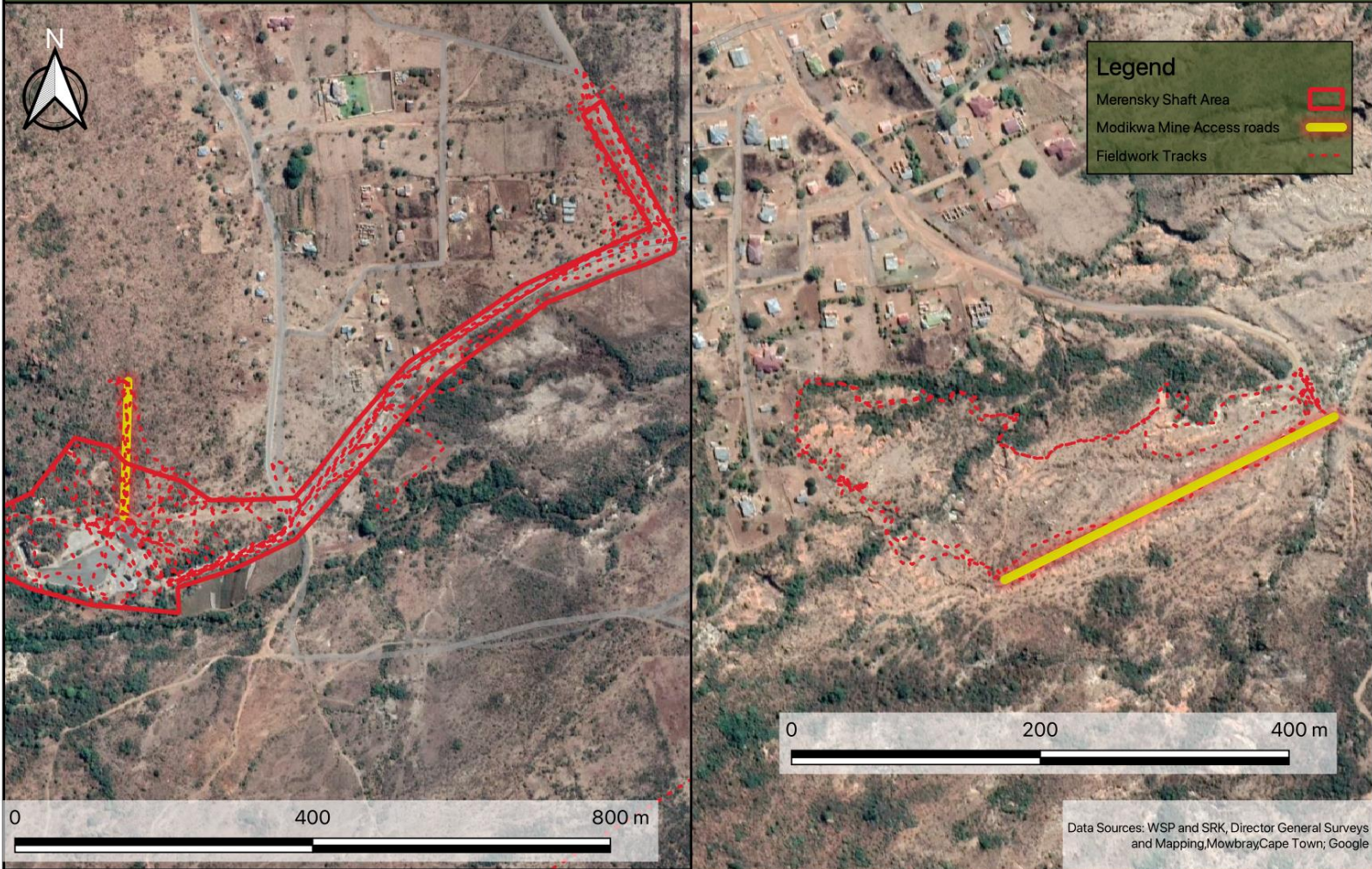


Figure 23 – Google Earth image depicting the study area boundary in and the recorded fieldwork tracks.

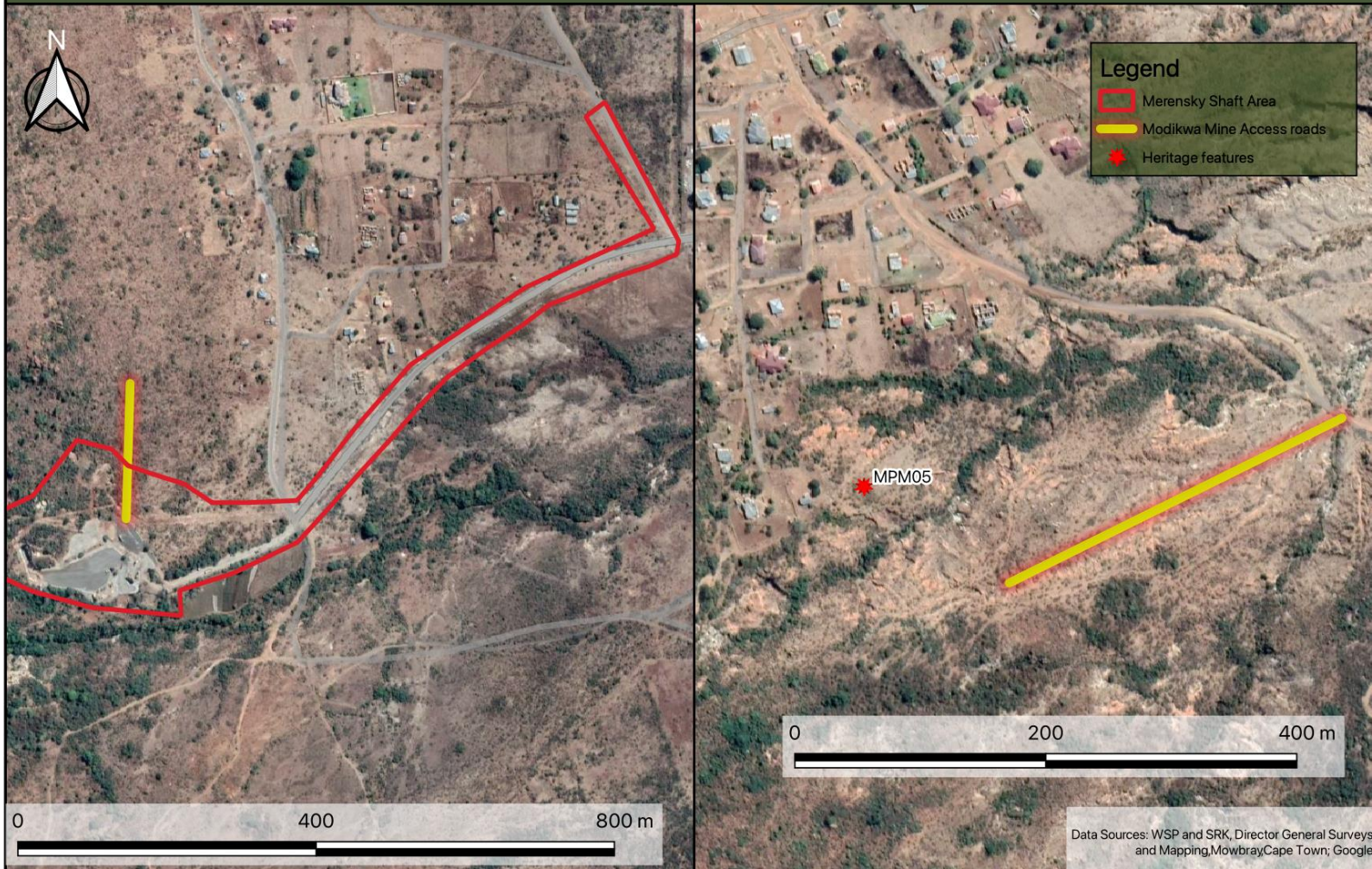


Figure 24 – Google Earth image depicting the study area boundary and identified heritage features.

8.2 MPM05

Site Coordinates:

S24.62244

E30.09673

Site Description:

The site is a burial ground with approximately 10 visible graves. The grave dressings vary between stone lined and stone packed. No headstones or inscriptions were present. Various cultural items associated with ceremonial activities were found on some of the dressings.

Site Extent:

The site is 10m x 10m in extent.

Site Significance:

The site has a high cultural significance, and it is deemed to be of **Generally Protected A (GP. A)**.

Impact Assessment and Mitigation:

See **Chapter 8** for impact assessment calculations and **Chapter 9** for required mitigation measures.



Figure 25 - General view of the burial ground with grave dressings and ceremonial goods visible



Figure 26 – View of burial ground with some grave dressings visible

9 PALAEOLOGY

According to the PalaeoMap on the SAHRIS database, the Palaeontological Sensitivity of the proposed project footprint is of Low (Blue) to Insignificant (Grey) sensitivity (**Figure 27**), As a result, no palaeontological studies are required however a protocol for finds is required.

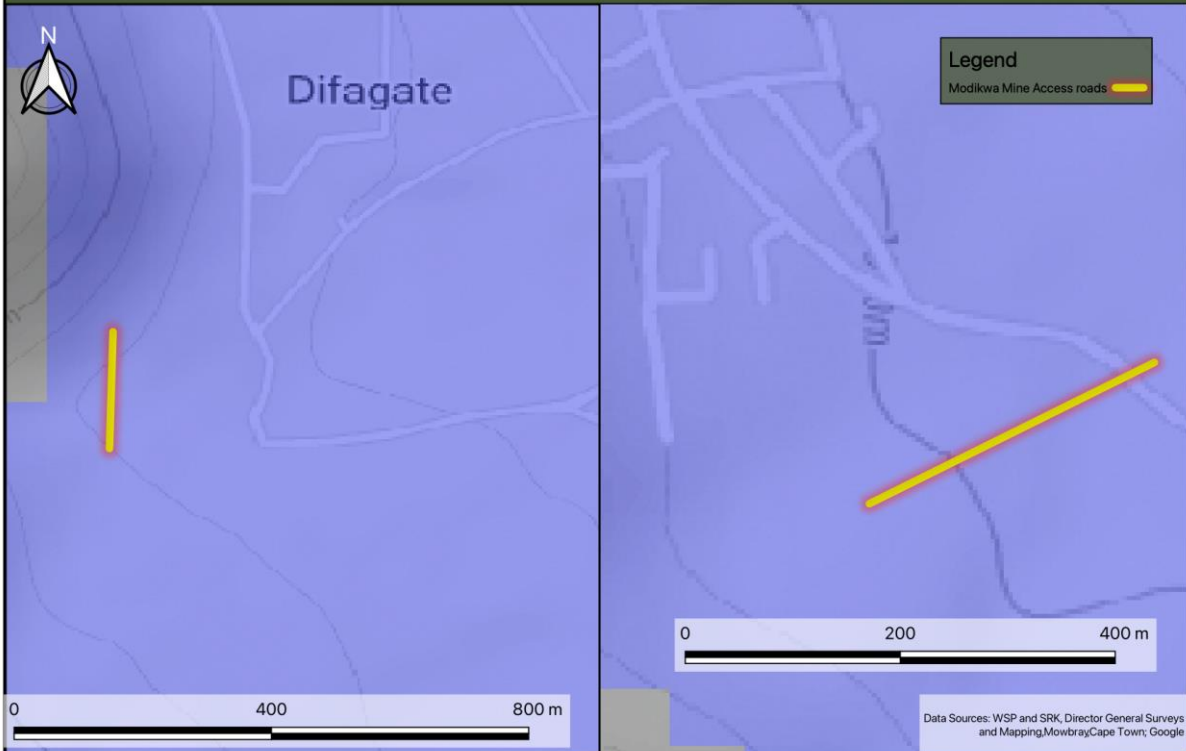


Figure 27 - Extract of the 1 in 250 000 SAHRIS PalaeoMap map (Council of Geosciences). The underlying geology is shown as Low (Blue) to Insignificant (Grey) palaeontological sensitivity.

Table 5 - SAHRIS Palaeosensitivity ratings table.

Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	Desktop study is required
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	No palaeontological studies are required
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

10 IMPACT OF PROPOSED MINING DEVELOPMENT ON HERITAGE

10.1 Introduction

In this section, an assessment of the impact of the proposed development on the identified heritage sites will be made. The following general observations will apply for the impact assessment undertaken in this report:

- The impact assessment methodology used in this report was provided by the client for the initial HIA development in 2021, namely SRK Consulting.

10.2 Assessment of Pre-Mitigation Impact on the Identified Heritage Sites

10.2.1 Assessment of the Pre-Mitigated Impact on site MPM 05

In this section, the unmitigated impact of the proposed development on site **MPM 05** will be assessed. **MPM 05** is a burial ground consisting of at least 10 identifiable graves.

MPM 05 is expected to be disturbed during the Construction Phase only. During preceding and subsequent phases, such as the Pre-Construction, Operational and Decommissioning Phases, no significant impacts are expected on site **MPM 05** if the suggested mitigation measures are adhered to.

The probability as to whether a specific development alternative will be chosen or not, was not included in these calculations.

Table 6 – Impact Assessment of the potential destruction of site MPM 05

Nature of the impact	Significance of potential impact BEFORE mitigation							
	Probability	Duration	Extent	Magnitude	Loss of Resources (%)	Significance		
Pre-Construction Phase								
No significant impacts are expected during this phase	-	-	-	-	-	-	-	-
Construction Phase								
Some level of disturbance is expected to occur to site MPM 05 during this phase	-	4	5	2	8	5	60	Moderate
Nature of the impact	Significance of potential impact AFTER mitigation							
	Probability	Duration	Extent	Magnitude	Loss of Resources (%)	Significance		
Pre-Construction Phase								
No significant impacts are expected during this phase	-	-	-	-	-	-	-	-
Construction Phase								
Some level of disturbance is expected to occur to site MPM 03 during this phase	-	2	3	3	4	2	20	Low

The calculation of the assessment of the unmitigated impact of the proposed development on site **MPM05** has revealed that the impact significance on this site is expected to be of **MODERATE Significance** during the Construction Phase. This means that mitigation measures would be required

well before the Construction Phase commences.

By implementing the recommended mitigation measures as listed in section 11 of this report, the impact significance will be reduced to **LOW**.

11 REQUIRED MITIGATION MEASURES

In this chapter, required mitigation measures for each of the sites affected by the proposed development will be outlined. Site-specific mitigation measures are provided below.

11.1 Required Mitigation Measures for the Identified Sites

The impact significance calculations undertaken in **Chapter 10** have shown that the significance of the unmitigated impact of the proposed development on this site is estimated to be of **MODERATE Significance**. As a result, mitigation measures are required for these sites.

11.1.1 MPM 05

The following initial mitigation measure is required for **MPM 05**:

- A 50-meter no-development buffer, as per SAHRA guidelines, must be in place for the burial ground at **MPM 05**.
- If this is not possible the cemetery must be relocated following a full grave relocation process that must include at a minimum the following:
 - A grave relocation process must be undertaken that is in accordance with the National Health Act (61 of 2003 and its regulations) as well as the NHRA (section 36).
 - A detailed social consultation process, at least 60 days in length, comprising the attempted identification of the next-of-kin in order to obtain their consent for the relocation.
 - Bilingual site and newspaper notices indicating the intent of the relocation.
 - Permits from all the relevant and legally required authorities.
 - An exhumation process that keeps the dignity of the remains and family intact.
 - An exhumation process that safeguards the legal rights of the families as well as that of the mining company.
 - The process must be done by a reputable company well versed in the mitigation of graves.

12 CONCLUSIONS AND RECOMMENDATIONS

12.1 Introduction

PGS Heritage (Pty) Ltd (PGS) was appointed by WSP Golder (Pty) Ltd to undertake an HIA for the proposed access roads at the Modikwa Platinum Mine, near Steelpoort, Greater Tubatse Local Municipality, Greater Sekhukhune District Municipality, Limpopo Province. The study area is located on the farm Onverwacht 292 KT.

12.2 Associated Reports and Processes

This heritage study is undertaken with other heritage studies for the Modikwa Platinum Mine. During 2019 PGS completed a Heritage Impact Assessment for the proposed widening of the South 2 Shaft access road and the proposed construction of a new road to the Samancor Operations. While in 2021 and 2022 fieldwork was undertaken for the Merensky shaft and vent shaft access roads as contained in this report.

12.3 General Desktop Study

An archaeological and historical desktop study was undertaken to provide a historical framework for the project area and surrounding landscape (refer to **Chapter 5**). This was augmented by an assessment of previous archaeological and heritage studies completed for the study area and surrounding landscape. Furthermore, an assessment was made of the early editions of the relevant topographic maps.

12.4 Fieldwork

Intensive field surveys of the study area were undertaken on 12 May 2022. This work was undertaken on foot and by vehicle by an experienced fieldwork team comprising two archaeologist/heritage specialists (Michelle Sachse and Wynand van Zyl).

The fieldwork resulted in the identification of one heritage site consisting of a burial ground with 10 identifiable graves close to the northern access road (**MPM05**).

12.5 Palaeontology

No specialist palaeontological studies formed part of the current scope of work. According to the SAHRIS palaeontological sensitivity map the proposed project area falls within an insignificant to low sensitivity zone.

12.6 Impact Assessment and Mitigation

An overlay of the identified archaeological and heritage sites over the proposed development footprint areas was made, which was used to assess the impact of the proposed development on these identified archaeological and heritage sites. Both pre-mitigation and post-mitigation impact assessments were undertaken. Please refer **Chapter 10** for the impact assessment calculations. A series of site-specific mitigation measures are outlined in **Chapter 11** of this report.

12.7 General Recommendations

The following general recommendations are made:

- **MPM 05** has a high heritage significance due to the cultural significance associated with graves and burial grounds.
- A series of site-specific mitigation measures are outlined in **Chapter 11** of this report.

12.8 Conclusions

While the unmitigated impact of the proposed development is expected to result in a moderate negative impact in terms of the identified archaeological and heritage sites located here, these impacts can be suitably mitigated to acceptable levels by way of a range of mitigation measures outlined in this report. As a result, on the condition that the recommendations made in this report are adhered to, no heritage reasons can be given for the development not to continue.

13 PREPARERS

This Heritage Impact Assessment was written by the following preparers:

- Wouter Fourie - Heritage Specialist / Author

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Historic Topographic Maps

All the historic topographic maps used in this report were obtained from the Directorate: National Geospatial Information of the Department of Rural Development and Land Reform in Cape Town.

Internet

www.sanbi.org

Google Earth

All the aerial depictions and overlays used in this report are from Google Earth.

Appendix A
HERITAGE MANAGEMENT GUIDELINES

General Management Guidelines

1. The National Heritage Resources Act (Act 25 of 1999) states that, any person who intends to undertake a development categorised as-
 - (a) the construction of a road, wall, transmission line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
 - (b) the construction of a bridge or similar structure exceeding 50m in length;
 - (c) any development or other activity which will change the character of a site-
 - (i) exceeding 5 000 m² in extent; or
 - (ii) involving three or more existing erven or subdivisions thereof; or
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
 - (d) the re-zoning of a site exceeding 10 000 m² in extent; or
 - (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

In the event that an area previously not included in an archaeological or cultural resources survey is to be disturbed, the SAHRA needs to be contacted. An enquiry must be lodged with them into the necessity for a Heritage Impact Assessment.

2. In the event that an additional heritage assessment is required, it is advisable to utilise a qualified heritage practitioner, preferably registered with the Cultural Resources Management Section (CRM) of the Association of Southern African Professional Archaeologists (ASAPA). This survey and evaluation must include:
 - (a) The identification and mapping of all heritage resources in the area affected;
 - (b) An assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6 (2) or prescribed under section 7 of the National Heritage Resources Act;
 - (c) An assessment of the impact of the development on such heritage resources;
 - (d) An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;

- (e) The results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
 - (f) If heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
 - (g) Plans for mitigation of any adverse effects during and after the completion of the proposed development.
3. In the event that a possible find is discovered during construction, the following steps must be taken:
- (a) All activities must be halted in the area of the discovery and a qualified archaeologist contacted;
 - (b) The archaeologist needs to evaluate the finds on site and make recommendations towards possible mitigation measures;
 - (c) If mitigation is necessary, an application for a rescue permit must be lodged with SAHRA; and
 - (d) After mitigation, an application must be lodged with SAHRA for a destruction permit. This application must be supported by the mitigation report generated during the rescue excavation. Only after the permit is issued may such a site be destroyed.
4. In the case where a grave is identified during construction, the following measures must be taken:
- (a) Upon the accidental discovery of graves, a buffer of at least 20 meters should be implemented;
 - (b) If graves are accidentally discovered during construction, activities must cease in the area and a qualified archaeologist be contacted to evaluate the find;
 - (c) To remove the remains, a permit must be applied for from SAHRA and other relevant authorities. The local South African Police Services must immediately be notified of the find; and
 - (d) Where it is recommended that the graves be relocated, a full grave relocation process that includes a comprehensive social consultation must be followed. Such a grave relocation process must include the following:
 - (i) A detailed social consultation process that aims to trace the next-of-kin and obtain their consent for the relocation of the graves, that will be at least 60 days in length;
 - (ii) Site notices indicating the intent of the relocation;
 - (iii) Newspaper notices indicating the intent of the relocation;

- (iv) Permits from the relevant permitting authorities, including the local authority; the Provincial Department of Health; the South African Heritage Resources Agency (SAHRA) (if the graves are older than 60 years or unidentified and thus presumed older than 60 years) etc.
- (vii) An exhumation process that keeps the dignity of the remains intact;
- (viii) The whole process must be done by a reputable company that is well versed in relocations; and
- (ix) The exhumation process must be conducted in such a manner as to safeguard the legal rights of the families as well as that of the mining company.

PGS Heritage can be contacted on the way forward in this regard.

Table 7: Roles and responsibilities of archaeological and heritage management

ROLE	RESPONSIBILITY	IMPLEMENTATION
A responsible specialist needs to be allocated and should attend all relevant meetings, especially when changes in design are discussed, and liaise with SAHRA.	The client	Archaeologist and a competent archaeological support team
If chance finds and/or graves or burial grounds are identified during construction or operational phases, a specialist must be contacted for evaluation.	The client	Archaeologist and a competent archaeological support team
Comply with defined national and local cultural heritage regulations on management plans for identified sites.	The client	Environmental Consultancy and the Archaeologist
Consult the managers, local communities and other key stakeholders on mitigation of archaeological sites.	The client	Environmental Consultancy and the Archaeologist
Implement additional programs, as appropriate, to promote the safeguarding of our cultural heritage.	The client	Environmental Consultancy and the Archaeologist
If required, conservation or relocation of burial grounds and/or graves according to the applicable regulations and legislation.	The client	Archaeologist, and/or competent authority for relocation services
Ensure that recommendations made in the Heritage Report are adhered to.	The client	The client
Provision of services and activities related to the management and monitoring of significant archaeological sites.	The client	Environmental Consultancy and the Archaeologist
After the specialist/archaeologist has been appointed, comprehensive feedback reports should be submitted to relevant authorities during each phase of development.	Client and Archaeologist	Archaeologist

Appendix B
Project team CV's

WOUTER FOURIE

Professional Heritage Specialist and Professional Archaeologist and Director PGS Heritage

Summary of Experience

Specialised expertise in Archaeological Mitigation and excavations, Cultural Resource Management and Heritage Impact Assessment Management, Archaeology, Anthropology, Applicable survey methods, Fieldwork and project management, Geographic Information Systems, including *inter alia* -

Involvement in various grave relocation projects (some of which relocated up to 1000 graves) and grave “rescue” excavations in the various provinces of South Africa

Involvement with various Heritage Impact Assessments, within South Africa, including -

- Archaeological Walkdowns for various projects
- Phase 2 Heritage Impact Assessments and EMPs for various projects
- Heritage Impact Assessments for various projects
 - Iron Age Mitigation Work for various projects, including archaeological excavations and monitoring
 - Involvement with various Heritage Impact Assessments, outside South Africa, including -
- Archaeological Studies in Democratic Republic of Congo
- Heritage Impact Assessments in Mozambique, Botswana and DRC
- Grave Relocation project in DRC

Key Qualifications

BA [Hons] (Cum laude) - Archaeology and Geography - 1997

BA - Archaeology, Geography and Anthropology - 1996

Professional Archaeologist - Association of Southern African Professional Archaeologists (ASAPA)

- Professional Member

Accredited Professional Heritage Specialist – Association of Professional Heritage Practitioners (APHP)

CRM Accreditation (ASAPA) -

- Principal Investigator - Grave Relocations
- Field Director – Iron Age
- Field Supervisor – Colonial Period and Stone Age
- Accredited with Amafa KZN

Key Work Experience

2003- current - Director – Professional Grave Solutions (Pty) Ltd

2007 – 2008 - Project Manager – Matakoma-ARM, Heritage Contracts Unit, University of the Witwatersrand

2005-2007 - Director – Matakoma Heritage Consultants (Pty) Ltd

2000-2004 - CEO– Matakoma Consultants

1998-2000 - Environmental Coordinator – Randfontein Estates Limited. Randfontein, Gauteng

1997-1998 - Environmental Officer – Department of Minerals and Energy. Johannesburg, Gauteng

Worked on various heritage projects in the SADC region including, Botswana, Mauritius, Malawi, Zambia, Mozambique, and the Democratic Republic of the Congo

PROFESSIONAL CURRICULUM FOR MICHELLE SACHSE

Archaeologist for PGS Heritage

Summary of Experience

Involvement in various grave relocation projects in the various provinces of South Africa.

Expertise in Heritage Impact Assessment Surveys, Historical and Archival Research,

Archaeology, Fieldwork including *inter alia* -

Involvement with various Heritage Impact Assessments,

- Heritage Impact Assessments within Gauteng, Limpopo, Mpumalanga, Free State, North West and the Northern Cape and Western Cape Province.
- Archaeological Walkdowns for various projects.
- Desktop, archival and heritage screening for projects.
- Instrument Survey and recording for various projects.

Heritage Impact Assessments:

- Proposed New Pit for Msobo Coal (Spitzkop Colliery), in Ermelo, within the Mpumalanga Province. **Position:** Heritage Specialist.
- The Proposed Harmony FSS6 Reclamation Pipeline, Welkom, Free State Province. **Position:** Heritage Specialist.
- Heritage Impact Assessment Report, for the Proposed Kalgold Expansion Project between Mafikeng and Vryburg, the North West Province. **Position:** Heritage Specialist.
- Heritage Impact Assessment Report, for the Proposed Chartwell Data Centre Project in Chartwell, Johannesburg, Gauteng Province. **Position:** Heritage Specialist.
- Proposed Development on Portions of the Farm Rondebult 303 JS, Near Kwa-Guqa, Emalahleni Local Municipality, Nkangala District Municipality, Mpumalanga Province. **Position:** Heritage Specialist.

Grave Relocation Projects:

- Report on the Relocation of Graves: Relocation of 22 Graves at Nkomati Anthracite Mine on the Farm Fig Tree 503 JU, near Madadeni Mpumalanga Province.
- Report on the Relocation of Graves: Relocation of 27 Graves Located on the Farm Welstand 55 IS, near Kriel, Mpumalanga Province.
- Report on the Relocation of Graves: Relocation of 6 Graves Located on the Farm Klipfontein 241 IS, near Breyten, Mpumalanga province.
- Report on the Relocation of Graves. Relocation of 68 Graves Located at Erf 4460, 4461 and 4463, Kudube Unit 4, in Hammanskraal, Gauteng Province.

Key Qualifications

- 2016 - 2019 MA in Archaeology
University of Pretoria, Pretoria
- 2015 BA Honours in Archaeology
University of Pretoria, South Africa
- 2012 - 2014 BA (General)
University of Pretoria, South Africa
Major subjects: Archaeology and History

Professional Qualifications

Professional Archaeologist - Association of Southern African Professional Archaeologists -
Professional Member – No 526

Key Work Experience

- 2020 – to date: Archaeologist - PGS Heritage
- 2018 – 2019: Assistant Manager at the Archaeology Laboratory on South Campus at the University of Pretoria