



Integrated Specialist Services (Pty) Ltd

**HERITAGE IMPACT ASSESSMENT FOR COAL MINING
PERMIT ON THE REMAINING EXTENT OF THE FARM
KLIPSPRUIT 138 HT, UNDER THE MAGISTERIAL
DISTRICT OF PIET RETIEF, MPUMALANGA PROVINCE**

VERNEX HOLDINGS (PTY) LTD



DOCUMENT SYNOPSIS (EXECUTIVE SUMMARY)

Item	Description
Proposed development and location/affected farm	Proposed Mining Permit on the remaining extent of the farm Klipspruit 138 HT, Piet Retief Magisterial District, Mpumalanga Province
Purpose of the study	The Phase 1 Archaeological Impact Assessment for Mining Permit Application in Mpumalanga Province
Coordinates	See Figure 1
Municipalities	Mkhondo Local Municipality, Gert Sibande District Municipality
Predominant land use of surrounding area	Agriculture, timber plantations, dams, residential and mining
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DMRE Reference	MP 30/5/1/3/2/13020 MP
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Authors	Trust Milo
Date of Report	10 January 2023

This report serves to inform and guide the applicant and contractors about the possible impacts that the proposed mining may have on heritage resources (if any) located in the study area. In the same light, the document must also inform the South African heritage authorities (SAHRA) about the presence, absence and significance of heritage resources located within the proposed Mining Right Application site earmarked for mining. This report is submitted in terms of Section 38 (8) of the National Heritage Resources Act 25 of 1999 as part of the Mining Permit Application. The purpose of this study is to identify, record and if necessary, salvage the irreplaceable heritage resources that may be impacted upon by the proposed coal mining. In compliance with these laws, Singo Consulting (Pty) Ltd tasked Integrated Specialist Services (Pty) Ltd to conduct a Phase 1 Archaeological and Heritage Impact Assessment (AIA/HIA) for the proposed Mining Permit Application on the remaining extent of the Farm Klipspruit 138 HT, Piet Retief Magisterial District, Mpumalanga Province. Desktop studies, drive-throughs and fieldwalking were conducted in order to identify heritage landmarks within the Mining Permit Application site. The study site is not on pristine ground, having seen significant transformations owing to previous and current land use activities such as agriculture and mining. The general mining area is known for occurrence of archaeological and historical sites. In terms of graves, the study noted that labour tenants in the farms buried their deceased relatives within the farms and most of these graves occur near farm dwellings. The study did not note burial sites within the study site. It should be noted that archaeological material and unmarked graves may exist beneath the surface and when encountered during mining, work must be stopped forth-with, and the finds must be reported to the South African Heritage Resource Agency (SAHRA) or the heritage practitioner. This report must be submitted to the SAHRA for review in terms of Section 38 (4) of the NHRA.

The report makes the following observations:

- The findings of this report have been informed by desktop data review, field survey and impact assessment reporting which include recommendations to guide heritage authorities in making decisions with regards to the proposed mining.

- The immediate project area is surrounded by agriculture and mining.
- Some sections of the proposed Mining Permit site are severely degraded from previous and current mining activities.

The report sets out the potential impacts of the proposed mining on heritage matters and recommends appropriate safeguard and mitigation measures that are designed to reduce the impacts where appropriate.

The Report makes the following recommendations:

1. It is recommended that SAHRA endorse the report as having satisfied the requirements of Section 38 (8) of the NHRA requirements
2. The planners of the mine layout plans must provide for 100m buffer zones from the recorded burial sites.
3. From a heritage perspective supported by the findings of this study, the Mining Permit Application is supported. However, the Mining Permit Application should be approved under observation that mining does not extend beyond the area considered in this report/affect the identified heritage sites.
4. Should chance archaeological materials or human remains be exposed during mining on any section of the site, work should cease on the affected area and the discovery must be reported to the heritage authorities immediately so that an investigation and evaluation of the finds can be made. The overriding objective, where remedial action is warranted, is to minimize disruption in mining scheduling while recovering archaeological and any affected cultural heritage data as stipulated by the NHRA regulations.
5. Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project EMP, there are no significant cultural heritage resources barriers to the proposed Mining Permit Application. The Heritage authority may approve the Mining Permit Application as planned with special commendations to implement the recommendations here in made.

This report concludes that the impacts of the proposed mining on the cultural environmental values are not likely to be significant on the entire site if the EMP includes recommended safeguard and mitigation measures identified in this report.

NATIONAL LEGISLATION AND REGULATIONS GOVERNING THIS REPORT

This is a specialist report' and is compiled in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014.

DECLARATION OF INDEPENDENCE

In terms of Chapter 5 of the National Environmental Management Act of 1998 specialists involved in Impact Assessment processes must declare their independence.

I, **Trust Mlilo**, do hereby declare that I am financially and otherwise independent of the client and their consultants, and that all opinions expressed in this document are substantially my own, notwithstanding the fact that I have received fair remuneration from the client for preparation of this report.

Expertise:

Trust Mlilo, PhD *cand* (Wits), MA. (Archaeology), BA Hons, PDGE and BA & (Univ. of Pretoria) ASAPA (Professional affiliation member) and more than 15 years of experience in archaeological and heritage impact assessment and management. Mlilo is an accredited member of the Association for Southern African Professional Archaeologists (ASAPA), Amafa akwaZulu Natali and Eastern Cape Heritage Resources Agency (ECPHRA). He has conducted more than hundred AIA/HIA Studies, heritage mitigation work and heritage development projects over the past 15 years of service. The completed projects vary from Phase 1 and Phase 2 as well as heritage management work for government, parastatals (Eskom) and several private companies such as BHP Billiton/South32/Seriti Power and Rhino Minerals.

Independence

The views expressed in this document are the objective, independent views of Mr Trust Mlilo and the survey was carried out under Integrated Specialist Services (Pty) Ltd. The company has no business, personal, financial or other interest in the Mining Right Application apart from fair remuneration for the work performed.

Conditions relating to this report

The content of this report is based on the author's best scientific and professional knowledge as well as available information. Integrated Specialist Services (Pty) Ltd reserves the right to modify the report in any way deemed fit should new, relevant or previously unavailable or undisclosed information become known to the author from on-going research or further work in this field or pertaining to this investigation.

This report must not be altered or added to without the prior written consent of the author and Integrated Specialist Services (Pty) Ltd. This also refers to electronic copies of the report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

Authorship: This AIA/HIA Report has been prepared by Mr Trust Mlilo (Professional Archaeologist). The report is for the review of the Heritage Resources Agency (PHRA).

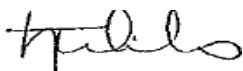
Geographic Co-ordinate Information: Geographic co-ordinates in this report were obtained using a hand-held Garmin Global Positioning System device. The manufacturer states that these devices are accurate to within +/- 5 m.

Maps: Maps included in this report use data extracted from the NTS Map and Google Earth Pro.

Disclaimer: The Authors are not responsible for omissions and inconsistencies that may result from information not available at the time this report was prepared.

The Archaeological and Heritage Impact Assessment Study was carried out within the context of tangible and intangible cultural heritage resources as defined by the SAHRA Regulations and Guidelines as to the approval of the Mining Permit Application being submitted by Vernex Holdings (Pty) Ltd

Signed by



10/ 01/ 2023

ACKNOWLEDGEMENTS

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ABBREVIATIONS

AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
EIA	Environmental Impact Assessment
EIA	Early Iron Age (<i>EIA refers to both Environmental Impact Assessment and the Early Iron Age but in both cases the acronym is internationally accepted.</i>)
EIAR	Environmental Impact Assessment Report
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
ICOMOS	International Council of Monuments and Sites
LIA	Late Iron Age
LFC	Late Farming Community
LSA	Late Stone Age
MIA	Middle Iron Age
MSA	Middle Stone Age
NEMA	National Environmental Management Act 107 of 1998
NHRA	National Heritage Resources Act 25 of 1999
PHRA	Provincial Heritage Resource Agency
SAHRA	South African Heritage Resources Agency
ToR	Terms of Reference

KEY CONCEPTS AND TERMS

Periodization

Periodization Archaeologists divide the different cultural epochs according to the dominant material finds for the different time periods. This periodization is usually region-specific, such that the same label can have different dates for different areas. This makes it important to clarify and declare the periodization of the area one is studying. These periods are nothing a little more than convenient time brackets because their terminal and commencement are not absolute and there are several instances of overlap. In the present study, relevant archaeological periods are given below.

Early Stone Age (~ 2.6 million to 250 000 years ago)

Middle Stone Age (~ 250 000 to 40-25 000 years ago)

Later Stone Age (~ 40-25 000, to recently, 100 years ago)

Early Iron Age (~ AD 200 to 1000)

Late Iron Age (~ AD1100-1840)

Historic (~ AD 1840 to 1950, but a Historic building is classified as over 60 years old)

Definitions

Definitions Just like periodization, it is also critical to define key terms employed in this study. Most of these terms derive from South African heritage legislation and its ancillary laws, as well as international regulations and norms of best practice. The following aspects have a direct bearing on the investigation and the resulting report:

Cultural (heritage) resources are all non-physical and physical human-made occurrences, and natural features that are associated with human activity. These can be singular or in groups and include significant sites, structures, features, ecofacts and artefacts of importance associated with the history, architecture, or archaeology of human development.

Cultural significance is determined by means of aesthetic, historic, scientific, social, or spiritual values for past, present, or future generations.

Value is related to concepts such as worth, merit, attraction or appeal, concepts that are associated with the (current) usefulness and condition of a place or an object. Although significance and value are not mutually

exclusive, in some cases the place may have a high level of significance but a lower level of value. Often, the evaluation of any feature is based on a combination or balance between the two.

Isolated finds are occurrences of artefacts or other remains that are not in-situ or are located apart from archaeological sites. Although these are noted and recorded, but do not usually constitute the core of an impact assessment, unless if they have intrinsic cultural significance and value.

In-situ refers to material culture and surrounding deposits in their original location and context, for example an archaeological site that has not been disturbed by farming.

Archaeological site/materials are remains or traces of human activity that 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. According to the National Heritage Resources Act (NHRA) (Act No. 25 of 1999), no archaeological artefact, assemblage or settlement (site) and no historical building or structure older than 60 years may be altered, moved or destroyed without the necessary authorisation from the South African Heritage Resources Agency (SAHRA) or a provincial heritage resources authority.

Historic material are remains resulting from human activities, which are younger than 100 years, but no longer in use, including artefacts, human remains and artificial features and structures.

Chance finds means archaeological artefacts, features, structures or historical remains accidentally found during development.

A grave is a place of interment (variably referred to as burial) and includes the contents, headstone or other marker of such a place, and any other structure on or associated with such place. A grave may occur in isolation or in association with others where upon it is referred to as being situated in a cemetery (contemporary) or burial ground (historic).

A site is a distinct spatial cluster of artefacts, structures, organic and environmental remains, as residues of past human activity.

Heritage Impact Assessment (HIA) refers to the process of identifying, predicting and assessing the potential positive and negative cultural, social, economic and biophysical impacts of any proposed project which requires authorisation of permission by law, and which may significantly affect the cultural and natural heritage resources. Accordingly, an HIA must include recommendations for appropriate mitigation measures for minimising or circumventing negative impacts, measures enhancing the positive aspects of the proposal and heritage management and monitoring measures.

Impact is the positive or negative effects on human well-being and / or on the environment.

Mitigation is the implementation of practical measures to reduce and circumvent adverse impacts or enhance beneficial impacts of an action.

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

Study area or '**project area**' refers to the area where the developer wants to focus its development activities (refer to plan).

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

Assumptions and disclaimer

The investigation has been influenced by the unpredictability of buried archaeological remains (absence of evidence does not mean evidence of absence) and the difficulty in establishing intangible heritage values. It should be remembered that archaeological deposits (including graves and traces of mining heritage) usually occur below the ground level. Should artefacts or skeletal material be exposed during mining activities, such activities should be halted immediately, and a competent heritage practitioner and SAHRA must be notified in order for an investigation and evaluation of the find (s) to take place (see NHRA (Act No. 25 of 1999), Section 36 (6)). Recommendations contained in this document do not exempt the applicant from complying with any national, provincial, and municipal legislation or other regulatory requirements, including any protection or management or general provision in terms of the NHRA. Integrated Specialist Services (Pty) Ltd assumes no responsibility for compliance with conditions that may be required by SAHRA in terms of this report.

1 INTRODUCTION

Integrated Specialist Services (Pty) Ltd was retained by Singo Consulting (Pty) Ltd on behalf of Vernex Holdings (Pty) Ltd to carry out a Phase 1 AIA/ HIA for the Mining Permit application on the remaining extent of the farm Klipspruit 138 HT earmarked for mining. This study was conducted to fulfil the requirements of Section 38 (8) of the NHRA. The purpose of this heritage study is to identify, assess any heritage resources that may be located within the proposed mining site in order to make recommendations for their appropriate management. To achieve this, we conducted background research of published literature, maps, and databases (desktop studies) which was then followed by ground-truthing by means of drive-through surveys and field walking. Desktop studies revealed that the general project area is rich in Late Iron Age (LIA) and historical sites. It should be noted that while heritage resources may have been located in the entire study area, subsequent developments such as agriculture, settlements, road and boundary fence lines have either obliterated these materials or reduced them to isolated finds that can only be identifiable as chance finds during mining. The Mining Permit Application may be approved subject to adopting recommendations and mitigation measures proposed in this report. Based on the findings there is no archaeological reasons why the Mining Permit Application cannot be approved, taking full cognizance of clear procedures to follow in the event of chance findings. There are no identified burial sites on site.

1.1 Terms of Reference (ToR)

The Integrated Specialist Services (Pty) Ltd was requested by Singo Consulting (Pty) Ltd to conduct an AIA/HIA study addressing the following issues:

- Archaeological and heritage potential of the proposed mining site
- Provide details on methods of study; potential and recommendations to guide the SAHRA to make an informed decision in respect of authorisation of the Mining Permit Application
- Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located within the project site;
- Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value;

- Describe the possible impact of the proposed mining on these cultural remains, according to a standard set of conventions;
- Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources; and
- Review applicable legislative requirements.

1.2 Project Location

The proposed Mining Permit site is located on the remaining extent of the farm Klipspruit 136 HT, Mkhondo Local Municipality, Piet Retief Magisterial District, Mpumalanga Province. The project area covers 5 hectares (ha) in extent. The project site is located approximately 24km South-Western side of Piet Retief.

Table 1: Description of Properties affected by the proposed mining project.

Farm Name:	The remaining extent of the farm Klipspruit 138 HT, Piet Retief Magisterial District, Mpumalanga Province
Coordinates	See Figure 1
Application area (Ha)	5 (ha)
Magisterial District:	Piet Retief
Distance and direction from nearest town	Approximately 24km South-Western side of Piet Retief.
21-digit Surveyor General Code for each farm portion	

1.3 Project Location

Mineral Applied For: Coal resources

Mining Methods: Open Cast Mining

Life of Mine: 2 years lifespan and it may be renewed for three years

Potential Market: Eskom, other domestic (i.e. coal stove & power generation) and international markets (i.e. for steel production, liquid fuel and for cement manufacturing).

The main components of the database included spreadsheets describing each of the following data formats, collar, lithological, raw quality and the wash product quality database.

The portion of Klipsruit area was identified in February 2012. 23 boreholes were drilled and some of them intersected coal seams. The coal seams intersected in this area were Gus and Dundas. The only regional geological data that was depicted in this area was that the coal seams present in this area were as follows:

- Eland
- Alfred
- Gus
- Dundas
- D1, D2, D3 and coking seam.

Gus and Dundas were the only seams that were intersected, and they both have an economic potential. Dundas Seam. The lowermost of the potential economic horizons was intersected in a few of the deeper boreholes. This seam occurs 50 m below the Gus seam and it shows good quality, although it appears to be thin and still need further exploration. This seam was intersected by three boreholes and two of them were sampled and analyzed for quality. This coal is characterized by mixed mainly bright coal, ranging in thickness from 0.66m to 1.18m. Gus Seam. This seam is considered to be the one of economically significant at this stage based on its thickness. It occurs stratigraphically about 40 m above the Dundas coal seam. The seam ranges in thickness from 0.8 in weathered areas to 3.22 m.

Infrastructures that will be used:

- Access & Haul roads (with necessary security)
- Contractor's Yard with septic/chemical ablution facilities;
- Offices;
- Weighbridge, workshop and stores (with septic/chemical ablution facilities);
- Diesel facilities and a hardstand;
- Power and Water;
- Boxcut;
- Stockpiles (topsoil, overburden, subsoil/softs, ROM);
- Surface water management measures (storm water diversion berms and trenches, pollution control dams, tailings dam etc.);

- Crushing, screening

Service Requirements:

- General waste will be collected for disposal at the Municipal dump.
- Industrial waste will be collected for disposal at a suitably licensed facility.
- Sewage will be collected within conservancy tanks to be emptied by honey sucker for treatment at a suitably licensed facility. Alternatively, a small, package sewage plant will be installed on site.

Employment:

The project will create employment for approximately 40 people.

HERITAGE IMPACT ASSESSMENT FOR COAL MINING PERMIT APPLICATION ON THE REMAINING EXTENT OF THE FARM KLIPSPRUIT 138 HT LOCATED IN THE MAGISTERIAL DISTRICT OF PIET RETIEF, MPUMALANGA.

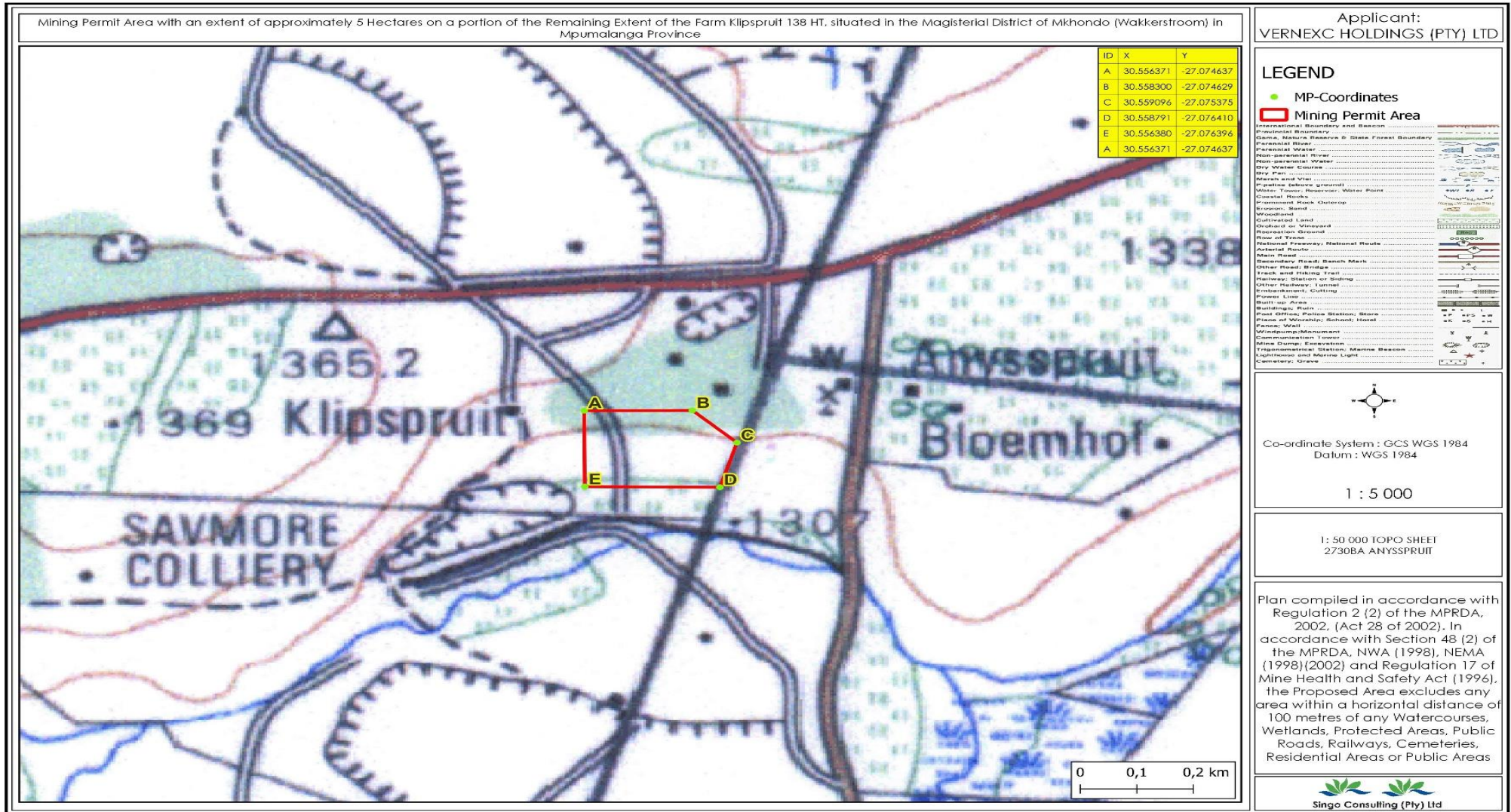


Figure 1: Location of the proposed project site (Singo Consulting, 2022)



Figure 2: Location of proposed mining sites (Singo Consulting (Pty) Ltd 2022)

2 LEGISLATIVE CONTEXT

Three main pieces of legislations are relevant to the present study. The Mining Right Application is submitted in terms of the National Environmental Management Act, 1998 (NEMA) and the 2017 EIA Regulations for activities that trigger the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) (As amended). Therefore, this is in fulfilment of the assessment of the impact to heritage resources as required by section 24(4)(b)(iii) of NEMA and section 38(8) of the National Heritage Resources Act, Act 25 of 1999 (NHRA). An AIA or HIA is required as a specialist sub-section of the Basic Assessment (BA) process. This study was conducted in terms of Section 38(8) as part of environmental authorisation. The provisions of this section do not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989), or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act No. 50 of 1991), or any other legislation: Provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage resources authority with regards to such development have been taken into account prior to the granting of the consent.

Thus, any person undertaking any development in the above categories, 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. Section 38 (2) (a) of the same act also requires the submission of a heritage impact assessment report for authorization purposes to the responsible heritage resources agencies (SAHRA/PHRAs).

Related to Section 38 of the NHRA are Sections 34, 35, 36 and 37. Section 34 stipulates that no person may **alter damage, destroy and relocate any building or structure older than 60 years, without a permit issued by SAHRA or a provincial heritage resources authority**. This section may not apply to present study since none were identified. Section 35 (4) of the NHRA stipulates that no person may, without a permit issued by SAHRA, destroy, damage, excavate, alter, or remove from its original position, or collect, any archaeological material or object. This section may apply to any significant archaeological sites that may be discovered before or during construction. This means that any chance find must be reported to the heritage practitioner or SAHRA/PHRA, who will assist in investigating the extent and significance of the finds and inform the applicant about further actions. Such actions may entail the removal of material after documenting the find site or mapping of larger sections before destruction. Section 36 (3) of the NHRA also stipulates that no person may, without a permit issued by the South African Heritage Resources Agency (SAHRA), destroy, damage, alter, exhume or remove from its original position

or otherwise disturb any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority. This section may apply in case of the discovery of chance burials, which is unlikely. The procedure for reporting chance finds also applies to the unlikely discovery of burials or graves by the applicant or his contractors. Section 37 of the NHRA deals with public monuments and memorials but this may not apply to this study because no protected monument will be physically affected by the proposed coal mining.

In addition, the EIA Regulations of 2014 (as amended in 2017) promulgated in terms of NEMA (Act 107 of 1998) stated that environmental assessment reports will include cultural (heritage) issues. The new regulations in terms of Chapter 5 of the NEMA provide for an assessment of development impacts on the cultural (heritage) and social environment and for Specialist Studies in this regard. The end purpose of such a report is to alert the applicant (Vernex Holdings Pty Ltd), SAHRA/ PHRA and interested and affected parties about existing heritage resources that may be affected by the proposed mining, and to recommend mitigatory measures aimed at reducing the risks of any adverse impacts on these heritage resources.

Table 2: Evaluation of the proposed development as guided by the criteria in NHRA and NEMA

ACT	Stipulation for developments	Requirement details
NHRA Section 38(8)	The provisions of this section do not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989), or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act No. 50 of 1991), or any other legislation: Provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent	yes
NHRA Section 34	Impacts on buildings and structures older than 60 years	Subject to identification during Phase 1
NHRA Section 35	Impacts on archaeological and palaeontological heritage resources	Subject to identification during Phase 1
NHRA Section 36	Impacts on graves	Subject to identification during Phase 1
NHRA Section 37	Impacts on public monuments	Subject to identification during Phase 1
Chapter 5 (21/04/2006) NEMA	HIA is required as part of an EIA	Yes
Section 39(3)(b) (iii) of the MPRDA	AIA/HIA is required as part of an EIA	Yes, because it is a mining project

3 METHODOLOGY

This document aims at providing an informed heritage-related opinion about the Mining Permit Application in Mpumalanga Province. This is usually achieved through a combination of a review of any existing literature and a site inspection. As part of the desktop study, published literature and cartographic data, as well as archival data on heritage legislation, the history and archaeology of the area were studied. The desktop study was followed by field surveys. The field assessment was conducted according to generally accepted AIA/HIA practices and aimed at locating all possible objects, sites, and features of cultural significance on the mining footprint. Initially a walk-through was undertaken around the proposed mining site as a way of acquiring the archaeological impression of the general area. This was then followed by a walk down survey in the study area, with a handheld Global Positioning System (GPS) for recording the location/position of each possible site. Detailed photographic recording was also undertaken where relevant. The findings were then analysed in view of the Mining Permit Application in order to make recommendations to the competent authority. The result of this investigation is a report indicating the presence/absence of heritage resources and how to manage them in the context of the proposed Mining Permit Application.

3.1 The Fieldwork survey

The fieldwork survey was undertaken on the 7th, 8th & 9th of December 2022. The focus of the survey involved a pedestrian survey which was conducted within the proposed mine site. The pedestrian survey focused on parts of the project area where it seemed as if disturbances may have occurred in the past.

The literature survey suggests that prior to the 20th century modern agriculture development; the general area would have been a rewarding region to locate heritage resources related to Iron Age and historical sites (Bergh 1999: 4). However, the situation today is completely different. The study area now lies on a clearly modified landscape that is dominated by agricultural activities and timber plantations.

3.2 Visibility and Constraints

The mining Permit site is 5 ha, all sections of the study site were accessible. Some fenced sections of the mining right site were not easily accessible. Visibility was compromised in some sections due to dense vegetation cover.

3.3 Consultations

The Basic Assessment (BA) Public Participation process is conducted by the EAP. The BA Public Participation Process will also invite and address comments from the public and any registered heritage bodies on any matter related to the Mining Permit Application including heritage concerns that may arise relating to the mining activities. The heritage issues and concerns raised by the public will also be included in the Mining Permit Application to be submitted to DMRE.

The following photographs illuminate the nature and character of the Project Area.



Plate 1: showing the proposed Mining Permit Application Site



Plate 2: showing proposed coal mining site.

4 ARCHAEOLOGICAL CONTEXT

Stone Age sites are marked by stone artefacts that are found scattered on the surface of the earth or as parts of deposits in caves and rock shelters. The Stone Age is divided into the Early Stone Age (covers the period from 2.5 million years ago to 250 000 years ago), the Middle Stone Age (refers to the period from 250 000 years ago to 22 000 years ago) and the Late Stone Age (the period from 22 000 years ago to 200 years ago). The Later Stone Age is also associated with rock paintings and engravings which were done by the San, Khoi Khoi and in more recent times by Iron Age farmers. Heritage surveys up to now have recorded few outstanding Stone Age sites, rock paintings and engravings in the Eastern Highveld - primarily as a result of limited extensive archaeological surveys. Stone tools have been recorded around some of the pans which occur on the Eastern Highveld.

In the larger geographical area, there is material manifestation of Stone Age people but generally, Highveld area did not attract much of habitation in these early times due to lack of rock-shelters and domination of exposed environments. Thus, it is mostly in the vicinity of large watercourses and lower parts of mountains that some ESA (~ 2.6 million to 250 000 years ago) materials (crude chopper and other unifacial tools of the Oldowan industry and the characteristic Acheulian hand axes and cleavers) and MSA (~ 250 000 to 40-25 000 years ago) materials are generally found. The MSA is a flake-technological stage characterized by faceted platforms, produced from prepared cores, as distinct from the core tool-based ESA technology. More technological and behavioural changes than those witnessed in the MSA, occurred during the LSA (~ 40-25 000, to recently, 100 years ago), which is also associated with *Homo Sapiens* (Barham and Mitchell 2008). For the first time we get evidence of people's activities derived from material other than stone tools (ostrich eggshell beads, ground bone arrowheads, small, bored stones and wood fragments) (Deacon and Deacon 1999). The LSA people are also credited with the production of rock art (engravings and paintings), which is an expression of their complex social and spiritual beliefs (Parkington *et al.* 2008). However, it is important to note that no Stone Age materials were recorded during the field walking, perhaps due to the presence of tall grass. Nonetheless, it is possible to encounter isolated finds of these objects in the study area, even though these would most likely be out of context due to the modern disturbances.

Iron Age Archaeology

The Iron Age of the Mpumalanga region dates back to the 5th Century AD when the Early Iron Age (EIA) proto-Bantu-speaking farming communities began arriving in this region which was then occupied by hunter-gatherers. These EIA communities are archaeologically referred to as the Mzonjani Facies of the Urewe EIA Tradition (Huffman, 2007: 127-9). They occupied the foot-hills and valley lands along the general Indian Ocean coastland introducing settled life, domesticated livestock, crop production and the use of iron (also see Maggs 1984a; 1984b; Huffman 2007). Alongside the Urewe Tradition was the Kalundu Tradition whose EIA archaeological sites have been recorded along the Mpumalanga areas. From AD 650 to 750 the EIA sites in the region were classified as the

Msuluzi facies which was replaced by the Ndongondwane and Ntsekane facies from AD 750 to 950 and AD 950 to 1050 respectively (Huffman, 2007).

By 1050 AD proto-Nguni Bantu-speaking groups associated with the Late Iron Age (LIA) called the Blackburn sub-branch of the Urewe Tradition had arrived in the eastern regions of South Africa, including modern day Mpumalanga, migrating from the central African region of the Lakes Tanganyika and Victoria (Huffman 2007: 154-5). According to archaeological data available, the Blackburn facies ranged from AD 1050 to 1500 (ibid. p.155). The Mpumalanga and the Natal inland regions saw the development of the LIA Moor Park facies between AD 1350 and 1750. These archaeological facies are interpreted as representing inland migration by LIA Nguni speaking groups (Huffman 2007). Moor Park is associated with settlements marked by stonewalling. The period from AD 1300 to 1750 saw multiple Nguni dispersal from the coastland into the hinterland and eventually across the Drakensberg Escapement into central and eastern South Africa (ibid).

No Iron Age sites are indicated in a historical atlas around the town of Witbank, but this may only indicate a lack of research. The closest known Iron Age occurrences to the surveyed area are Late Iron Age sites that have been identified to the west of Bronkhorstspuit and in the vicinity of Bethal (Bergh 1999: 7-8). The good grazing and access water in the area would have provided a good environment for Iron Age people although building material seem to be reasonably scarce. One would therefore expect that Iron Age people may have utilized the area. This is the same reason why white settlers moved into this environment later on.

Historical Background

According to Bergh (1999) Piet Retief was founded in 1882 on land bough from a local Swazi chief, although physical layout of erven only started in 1884 (1999: 21; www.satowns.co.za). Another source indicates that the town was established in 1885, and the Urban Board founded in 1903 (Praagh 1906: 453).

The town of Piet Retief was laid out by the surveyor Anton von Wielligh in 1883 on the Farm Osloop and Geluk and was named such after the Voortrekker leader by the same name. In 1932 Piet Retief became a municipality. The town, conveniently located in the mist belt of South Africa, originated as a centre for timber, paper and wattle bark production, but mica, kaolin and iron played a role as well. During the early years an area of 100 square kilometres was known as the 'Little Free State', had its own president between 1886 and 1891 and a population of 72 residents. The republic, however, was incorporated into the Piet Retief district as Ward 1 on 2 May 1891. The Assegaai River that flows to the south of Piet Retief was erroneously translated by Europeans from 'Mkhondo', actually meaning zigzag (Bulpin 1986: 639-640).

Missionaries also came to this part of the country during the 19th century. The Dutch Reformed Church and the Hermannsburg Missionaries established mission stations at Volksrust and Wakkerstroom during this time (Bergh

1999). The first missionaries from Sweden erected a missionary in Piet Retief in 1905, today known as the Mission House. Piet Retief used to be known as a kind of "wild east" during the 1800's, being a buffer area between different land grabbing people. There were constant infringements and hostilities between Zulu and Swazi Impies. Then to the north were the Boers looking to extend their farming interests and to the south the British were looking to extend their Empire. Not many people today know that there used to be a little independent Republic called the "Klein Vrystaat Republic". Seen as a little chunk cut out of the rounded border of Swaziland, this land was bought from Swazi king Mbandini in 1876 for the price of blankets, picks, beads etc. to the value of 180 Pounds Sterling as well as 14 horses. The land was ruled by a three-man committee acting as executive and judicial officers. It became part of the Transvaal Republic due to popular demand by its citizens in 1892.

During the Anglo-Zulu War of 1879 a number of historic events also took place in the area. The area known as the 'disputed territory' was the site of several skirmishes during the war. The most important incident was the Battle of Entombe Drift which took place at dawn on 12 March 1879. A convoy of 18 wagons, carrying ammunition and supplies from Derby, camped along the swollen Entombe River, was attacked by a large number of Zulu irregulars. One British officer and 60 men, a civil surgeon, 2 white wagon conductors and 15 black drivers were killed. Colour-sergeant Booth was awarded the Victoria Cross for his heroic action. The battle site, a monument and war graves can be visited near the Entombe Mission Station. The men took part in action further south. (The above information was taken from www.satowns.co.za). Another source indicates that the town of Piet Retief was nearly completely destroyed by British forces during the war (www.mpumalangahappenings.co.za).

The south-eastern part of Mpumalanga was the focus point of battles between the British and the Boers. Boers trekked into this area in the 1880s. And throughout this time settled communities of Tswana people also attacked each other. As a result of this troubled period, Sotho-Tswana people concentrated into large towns for defensive purposes. Their settlements were built of stone because of the lack of trees in the project area. These stone-walled villages were almost always located near cultivatable soil and a source of water. Such sites are known to occur near Kriel (e.g., Pelser, *et al* 2006) and to the south (Taylor 179). The British on the other hand had a camp in Wakkerstroom and were beleaguered by the Boers. Three important battles were fought during this time. These were at Laingsnek on 25 January 1881, Schuinshoogte on 8 February 1881 and Amajuba on 27 February 1881. The Boers were victorious in all of these which led to peace being declared (Bergh 1999). Although these sites are all situated close to the town of Volksrust, it does indicate that commandos may have moved through the entire area. In the Wakkerstroom cemetery there is a commemorative stone for 18 British soldiers who died during this War (Smit n.d.: 1).

None of the early trade routes in the interior of South Africa went through the area of study (Bergh 1999). However, it is possible that due to the little research in the area, this still has to be discovered. It also is possible that secondary

routes did pass through the south-east of Mpumalanga where the present day Dirkieisdorp is located. At the beginning of the 19th century a Sotho group called the Phuthing, inhabited the western section of southern Mpumalanga. To the south-east the Swazi were present (Delius 2006; Bergh 1999). It was therefore mainly the Swazi who inhabited the south-eastern parts of Mpumalanga during this time (Makhura 2006; Mitchell 2006).

In 1800 Dingiswayo fled to Hlubi close to Wakkerstroom. He died in 1818 and his empire was taken over and strengthened by Shaka (Hofmeyr & Smith 2009: ix). During the Difaquane (1820-1837) the Ndebele of Mzilikazi moved through this landscape and some even settled here. As a result, the Phuthing fled to the south. The Swazi now moved to the north and west, therefore inhabiting the area (Bergh 1999; Bergh & Bergh 1984).

It was during this period when, the region also witnessed the massive movements associated with the Mfecane. The causes and consequences of the Mfecane are well documented elsewhere (e.g. Hamilton 1995; Cobbing 1988). In this context, new African kingdoms emerged such as the Zulu Kingdom under Shaka in the second quarter of the 1800s AD. Military pressure from Zululand spilled onto the Highveld by at least 1821. Various marauding groups of displaced Sotho-Tswana moved across the plateau in the 1820s. Mzilikazi raided the plateau extensively between 1825 and 1837. For example, at the beginning of the 19th century, the Phuthing, a South Sotho group, stayed to the east of eMalaheni. During the Difaquane they fled to the south from the Ndebele of Mzilikazi who established several settlement complexes in Eastern Bankveld (Bergh 1999: 10-11; 109).

Early white travellers did not travel to this area (Bergh 1999). White farmers only moved into the south-eastern Mpumalanga after 1853 when the government of the South African Republic (ZAR or Transvaal) traded the land from the Swazi. Wakkerstroom 17 became a town and district in 1859 (Bergh 1999). The town was originally known as Marthinus Wesselstroom. Dirk Cornelius Uys was the founder of the town. He and his wife are buried in the municipal cemetery in the town (Smit n.d.: 1). The town mainly served as market for local farmers (Hofmeyr & Smith 2009).

The broader geographical area also experienced some action during the Anglo-Boer War (1899-1902). During the British offensive, Lt-general R Buller moved through the area and occupied Volksrust on 12 June 1900. He then moved further to the north and reached Amersfoort on 7 August 1900. At this time Boer commandos were placed at Laingsnek and Amajuba, but Buller had them on the retreat. They moved through Volksrust and Amersfoort. The only battle in this area was on 22 July 1900 when a skirmish broke out to the north of Volksrust, between the Boer commando of General D Joubert and the British troops under command of Genl Coke (Bergh 1999). There was however also a skirmish, namely at Kastrolsnek, close to Wakkerstroom (Hofmeyr & Smith 2009: 96). The British later established a concentration camp for the Boer women and children in Volksrust (Bergh 1999: 54). A memorial for British soldiers who died during the War is found in the Wakkerstroom municipal cemetery (Smit n.d.: 1).

The British also occupied Wakkerstroom and established a large camp here. This included blockhouses at Kastrolsnek (Hofmeyr & Smith 2009: 99). They also erected some blockhouses (small fortifications) in the broader geographical area during this War. Between Volksrust and Wakkerstroom they build 19 of these and the line of blockhouses was completed on 6 February 1902. Unfortunately, it is not known how many of these survived even partially. Between Wakkerstroom and Piet Retief the remains of 11 blockhouses were identified. Some of these are no more than a few stones left on some farms (Van Vollenhoven & Van den Bos, 1997). Again, this indicates that both Boer and British commandos moved through the area and remains of their fortifications may be found along these routes. A further indication of the lack of research and heritage work in the south-east of Mpumalanga comes from the SAHRA list of declared heritage sites. The only declared provincial sites in the area are buildings and streetscapes in some of the towns. Although not formally declared, many historical buildings are found in south-eastern Mpumalanga. This would be mostly sandstone buildings typical of the years approximately 1870-1920 as well as Victorian architecture from the 1890's to early in the twentieth century. Many of the latter were probably built during the Anglo- Boer War and are usually made of corrugated iron. However, these are mostly to be found in the towns with only a few located-on farms.

The Late Iron Age Nguni communities engaged in the Indian Ocean Trade exporting ivory and importing consumables such as cloth and glass beads. The exporting point was Delagoa. This brought the Nguni speaking community in touch with the Indo-Asian and first Europeans (Portuguese). It was the arrival of the Dutch and the English traders that opened up Delagoa Bay to more trade did the Nguni engaged in extensive trade with the international traders (Huffman 2007). From the late 1700s, trade in supply of meat to passing ship had increased substantially to an extent that by 1800 meat trade is estimated to have surpassed ivory trade. At the same time population was booming following the increased food production that came with the introduction of maize that became the staple food. Naturally, there were signs that population groups had to compete for resources especially along the east coastal regions. The KwaZulu Natal coastal region has a special place in the history of the region and country at large. This relates to the most referenced Mfecane (wandering hordes) period of tremendous insecurity and military stress which eventually affected the entire Southern Africa including the modern-day Mpumalanga area.

Mining History

Historically coal is known to have been used from around 300 to 1880 in South Africa during Iron Age when charcoal was used to melt iron and copper (<https://www.miningforschools.co.za/lets-explore/coal/brief-history-of-coal-mining-in-south-africa>). Officially, coal was discovered in KwaZulu-Natal, Mpumalanga and the Eastern Province, and first documented between 1838 and 1859 (McGill *et al* 2015). The recorded old coal mining site may fall within this period since it was confirmed to probably more than 100 years old. The first commercial mining took place near Molteno, in the Eastern Cape Province in 1871(McGill *et al* 2015). The demand for coal was increased by the

discovery of diamonds at Kimberley in 1870 and gold on the Witwatersrand in 1886, with new mines opening in Vereeniging in 1879 and Witbank in 1895. Further developments occurred in KwaZulu-Natal, Gauteng and Mpumalanga (currently home to about 84% of local coal production), followed by the Free State and Limpopo (McGill *et al* 2015). Coal mining has undergone major development over the years. In the early days of coal mining men used to physically create tunnels to get to the coal deposits by digging as is the case with the identified old coal mining site (<https://miningafrika.net/natural-resources-africa/coal-mining-in-africa>). They then extracted the coal and transported the coal on mine carts. These days coal mines are technologically advanced and use sophisticated equipment including; trucks, jacks, conveyors, draglines and shearers to extract the coal.

Intangible Heritage

As defined in terms of the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (2003) intangible heritage includes oral traditions, knowledge and practices concerning nature, traditional craftsmanship and rituals and festive events, as well as the instruments, objects, artefacts and cultural spaces associated with group(s) of people. Thus, intangible heritage is better defined and understood by the particular group of people that uphold it. In the present study area, very little intangible heritage is anticipated on the development footprint because most historical knowledge does not suggest a relationship with the study area per se, even though several other places in the general area.

SAHRIS Database and Impact assessment reports in the proposed project area

Several archaeological and heritage studies were conducted in the project area since 2002 and these presents the nature and heritage character of the area. The HIA conducted in the area also provide some predictive evidence regarding the types and ranges of heritage resources to be expected in the proposed project area: (see reference list for HIA reports). The studies include mining, water pipeline and powerline projects completed by van Vollenhoven (2010, 2011, 2016, 2020, 2021), Coetzee (2021), Pistorius (2012). No sites were recorded, but the reports mention that structures older than 60 years occur in the area, Pelsler and Van Vollenhoven (2010, 2011, 2014, 2015) for mining and infrastructure development survey also recorded no sites. Van Schalkwyk did extensive work in the project area mostly for mining and infrastructure developments for example Van Schalkwyk, (2002, 2004, 2006, 2006, and 2010). Other than burial sites and buildings older than 60 years the studies did not record any significant archaeological sites in the area.

5 RESULTS OF THE FIELD STUDY

5.1 Archaeology

The site was scanned for archaeological remains, but given the previous and current land use activities, no archaeological remains were identified during the survey. Based on the field study results and field observations, the receiving environment for the proposed mining site is low to medium potential to yield previously unidentified archaeological sites during mining. Literature review also revealed that no Stone Age and LIA sites are not shown on a map contained in a historical atlas of this area. This, however, should rather be seen as a lack of research in the area and not as an indication that such features do not occur.

5.2 Burial grounds and Graves

Human remains and burials are commonly found close to archaeological sites and abandoned settlements; they may be found in abandoned and neglected burial sites or occur sporadically anywhere because of prehistoric activity, victims of conflict or crime. It is often difficult to detect the presence of archaeological human burials on the landscape as these burials, in most cases, are not marked at the surface and concealed by dense vegetation cover. Human remains are usually identified when they are exposed through erosion, earth moving activities and construction. In some instances, packed stones or bricks may indicate the presence of informal burials. If any human bones are found during the course of mining work, then they should be reported to an archaeologist and work in the immediate vicinity should cease until the appropriate actions have been carried out by the archaeologist. Where human remains are part of a burial, they would need to be exhumed under a permit from either SAHRA (for pre-colonial burials as well as burials later than about AD 1500) or Department of Health for graves younger than 60 years.

The field survey did not identify burial sites within the proposed mining permit site. The possibility of encountering previously unidentified burial sites is medium to high within the proposed mining site, however, should such sites be identified during mining, they are still protected by applicable legislations, and they should be safeguarded.

5.3 Public Monuments and Memorials

The study did not record any public memorials and monuments within the proposed mining site that require protection during mining. As such the Mining Permit Application may be approved without any further investigation and mitigation in terms of Section 27 & 9 of the NHRA.

5.4 Buildings and Structures

The study did not record any buildings confirmed to be older than 60 years within the proposed mining site. In terms of Section 34 of the NHRA the proposed Mining Permit Application may be approved without any further investigation and mitigation.

5.5 Impact Statement

The main cause of impacts to archaeological sites is direct, physical disturbance of the archaeological remains themselves and their contexts. It is important to note that the heritage and scientific potential of an archaeological site is highly dependent on its geological and spatial context. This means that even though, for example a deep excavation may expose buried archaeological sites and artefacts, the artefacts are relatively meaningless once removed from their original position. The primary impacts are likely to occur during clearance and mining, indirect impacts may occur during movement of heavy mining and haulage vehicles. Any additional excavation for foundations of buildings and structures as well as fence line posts will result in the relocation or destruction of all existing surface heritage material (if any are present).

Similarly, the clearing of access roads will impact material that lies buried in the topsoil. Since heritage sites, including archaeological sites, are non-renewable, it is important that they are identified, and their significance assessed prior to mining. It is important to note that due to the localised nature of archaeological resources, that individual archaeological sites could be missed during the survey, although the probability of this is very low within the proposed mining site. Further, archaeological sites and unmarked graves may be buried beneath the surface

and may only be exposed during surface clearance. The purpose of the AIA is to assess the sensitivity of the area in terms of archaeology and to avoid or reduce the potential impacts of mining by means of mitigation measures (see appended Chance Find Procedure). There is still a possibility of finding archaeological remains buried beneath the ground. It is considered an opinion of the author that the chances of recovering significant archaeological materials is present within the mining site.

Table 3: Summary of Findings

Heritage resource	Status/Findings
Buildings, structures, places and equipment of cultural significance	None exists
Areas to which oral traditions are attached or which are associated with intangible heritage	None exists
Historical settlements and townscapes	None survives in the proposed area
Landscapes and natural features of cultural significance	None
Archaeological and palaeontological sites	None recorded during the survey
Graves and burial grounds	None recorded
Battlefields	None recorded within the site.
Movable objects	None
Overall comment	The mining Permit application may be approved subject to the recommendations provided in this report

5.6 Assessment of development impacts

An impact can be defined as any change in the physical-chemical, biological, cultural, and/or socio-economic environmental system that can be attributed to human activities related to the project site under study for meeting a project need. The significance of the impacts of the process will be rated by using a matrix derived from Plomp (2004) and adapted to some extent to fit this process. These matrixes use the consequence and the likelihood of the different aspects and associated impacts to determine the significance of the impacts.

The significance of the impacts will be assessed considering the following descriptors:

Table 4: Criteria Used for Rating of Impacts

Nature of the impact (N)		
Positive	+	Impact will be beneficial to the environment (a benefit).
Negative	-	Impact will not be beneficial to the environment (a cost).

Neutral	0	Where a negative impact is offset by a positive impact, or mitigation measures, to have no overall effect.
Magnitude (M)		
Minor	2	Negligible effects on biophysical or social functions / processes. Includes areas / environmental aspects which have already been altered significantly and have little to no conservation importance (negligible sensitivity*).
Low	4	Minimal effects on biophysical or social functions / processes. Includes areas / environmental aspects which have been largely modified, and / or have a low conservation importance (low sensitivity*).
Moderate	6	Notable effects on biophysical or social functions / processes. Includes areas / environmental aspects which have already been moderately modified and have a medium conservation importance (medium sensitivity*).
High	8	Considerable effects on biophysical or social functions / processes. Includes areas / environmental aspects which have been slightly modified and have a high conservation importance (high sensitivity*).
Very high	10	Severe effects on biophysical or social functions / processes. Includes areas / environmental aspects which have not previously been impacted upon and are pristine, thus of very high conservation importance (very high sensitivity*).
Extent (E)		
Site only	1	Effect limited to the site and its immediate surroundings.
Local	2	Effect limited to within 3-5 km of the site.
Regional	3	Activity will have an impact on a regional scale.
National	4	Activity will have an impact on a national scale.
International	5	Activity will have an impact on an international scale.
Duration (D)		
Immediate	1	Effect occurs periodically throughout the life of the activity.
Short term	2	Effect lasts for a period 0 to 5 years.
Medium term	3	Effect continues for a period between 5 and 15 years.
Long term	4	Effect will cease after the operational life of the activity either because of natural process or by human intervention.
Permanent	5	Where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.
Probability of occurrence (P)		
Improbable	1	Less than 30% chance of occurrence.
Low	2	Between 30 and 50% chance of occurrence.
Medium	3	Between 50 and 70% chance of occurrence.
High	4	Greater than 70% chance of occurrence.
Definite	5	Will occur, or where applicable has occurred, regardless or in spite of any mitigation measures.

Once the impact criteria have been ranked for each impact, the significance of the impacts will be calculated using the following formula:

$$\text{Significance Points (SP)} = (\text{Magnitude} + \text{Duration} + \text{Extent}) \times \text{Probability}$$

The significance of the ecological impact is therefore calculated by multiplying the severity rating with the probability rating. The maximum value that can be reached through this impact evaluation process is 100 SP (points). The significance for each impact is rated as High (SP≥60), Medium (SP = 31-60) and Low (SP<30) significance as shown in the below.

Table 5: Criteria for Rating of Classified Impacts

Significance of predicted NEGATIVE impacts		
Low	0-30	Where the impact will have a relatively small effect on the environment and will require minimum or no mitigation and as such have a limited influence on the decision
Medium	31-60	Where the impact can have an influence on the environment and should be mitigated and as such could have an influence on the decision unless it is mitigated.
High	61-100	Where the impact will definitely have an influence on the environment and must be mitigated, where possible. This impact will influence the decision regardless of any possible mitigation.
Significance of predicted POSITIVE impacts		
Low	0-30	Where the impact will have a relatively small positive effect on the environment.
Medium	31-60	Where the positive impact will counteract an existing negative impact and result in an overall neutral effect on the environment.
High	61-100	Where the positive impact will improve the environment relative to baseline conditions.

Table 6: Operational Phase

Impacts and Mitigation measures relating to the proposed project during Mining Phase														
Activity/Aspect	Impact /	Aspect	Nature	Magnitude	Extent	Duration	Probability	Impact before mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Impact after mitigation
Clearing and mining	Destruction of archaeological remains	Cultural heritage	-	2	1	1	2	8	<ul style="list-style-type: none"> Use chance find procedure to cater for accidental finds 	2	1	1	2	8
	Disturbance of graves	Cultural heritage	-	6	2	3	3	33	<ul style="list-style-type: none"> Provide for 100m buffer zone from each site Barricade burial sites during mining Request residents to declare family graves located in the area during public participation meetings Use appended Chance find procedure to cater for accidental finds. 	2	1	1	1	4
	Disturbance of buildings and structures older than 60 years old	Operational	-	2	1	1	1	4	<ul style="list-style-type: none"> Construction management and workers must be educated about the value of historical buildings and structures. 	2	1	1	1	4
Haulage	Destruction public monuments and plaques	Operational	-	2	1	1	1	4	<ul style="list-style-type: none"> Mitigation is not required because there are no public monuments within the project site 	2	1	1	1	4

5.7 Cumulative Impacts

Cumulative impacts are defined as impacts that result from incremental changes caused by other past, present, or reasonably foreseeable actions together with the project. Therefore, the assessment of cumulative impacts for the proposed mining is considered the total impact associated with the proposed mining project when combined with other past, present, and reasonably foreseeable future developments projects. The impacts of the proposed mining development were assessed by comparing the post-project situation to a pre-existing baseline. This section considers the cumulative impacts that would result from the combination of the proposed mining development.

This proposed mine combined with other proposed mining activities will effectively transform a natural agriculture area into a mining area. The mining and other proposed infrastructure developments will have a combined visual impact on the landscape. The cumulative impact will negatively affect the landscape quality of the area which are ordinarily considered to be source. The frequency of mining and other proposals in the area has a potential of collectively changing the character of the landscape (see Kathu and eMalahleni area as an example). The once isolated landscape will see volumes of people establishing new settlement or enlarging the existing ones to provide accommodation for workers and office facilities. In the long run the accumulative impact will be of high significance in terms of its potential to change the characteristics and quality of the landscape in the long run. The field survey focused on potential LIA sites, historical buildings and structures as well as burial grounds and graves.

5.8 Mitigation

Mitigation for the Mining site is required to protect burial sites identified during mining

6 ASSESSING SIGNIFICANCE

The Guidelines to the SAHRA Guidelines and the Burra Charter define the following criterion for the assessment of cultural significance:

6.1 Aesthetic Value

Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria may include consideration of the form, scale, colour, texture, and material of the fabric; sense of place, the smells and sounds associated with the place and its use.

6.2 Historic Value

Historic value encompasses the history of aesthetics, science, and society, and therefore to a large extent underlies all the terms set out in this section. A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase, or activity. It may also have historic value as the site of an important event. For any given place, the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment.

6.3 Scientific value

The scientific or research value of a place will depend upon the importance of the data involved, on its rarity, quality, or representativeness, and on the degree to which the place may contribute further substantial information. Scientific value is also enshrined in natural resources that have significant social value. For example, pockets of forests and bushvelds have high ethnobotany value.

6.4 Social Value

Social value embraces the qualities for which a place has become a focus of spiritual, religious, political, local, national, or other cultural sentiment to a majority or minority group. Social value also extends to natural resources such as bushes, trees and herbs that are collected and harvested from nature for herbal and medicinal purposes.

7 DISCUSSION

Several specialist studies were conducted in the project area since 2006. These studies provided an insight about the heritage character of the affected landscape.

In terms of archaeology, the lack of confirmable archaeological sites recorded on the mining Permit application site is thought to be a result of limited ground surface visibility due dense grass cover, it should be borne in mind that the absence of confirmable and significant archaeological cultural heritage site is not evidence in itself that such sites did not exist within the proposed project site.

Based on the significance assessment criterion employed for this report, the proposed mining development site was rated low from an archaeological perspective. It should be noted that significance of the sites of Interest is not limited to presence or absence of physical archaeological sites. Significant archaeological remains may be unearthed during mining.

8 CONCLUSION

Integrated Specialist Services (Pty) Ltd was tasked by Singo Consulting (Pty) Ltd to carry out a HIA for the Mining Permit application on the remaining extent of the Farm Klipspruit 138 HT, Piet Retief Magisterial District, Mpumalanga Province. Desktop research revealed that the project area is rich in LIA archaeological sites and historical sites, however, the field study did not identify any archaeological sites within the Mining Site. In terms of the archaeology, there are no obvious 'Fatal Flaws' or 'No-Go' areas. In terms of Section 36 of the NHRA. A copy of the chance find procedure must be kept at the site camp, the procedure for reporting chance finds has clearly been laid out and if this report is adopted by SAHRA, then there are no archaeological reasons why the Mining Permit Application cannot be approved.

9 RECOMENDATIONS

Report makes the following recommendations:

1. It is recommended that SAHRA endorse the report as having satisfied the requirements of Section 38 (8) of the NHRA requirements
2. From a heritage perspective supported by the findings of this study, the Mining Permit Application is supported. However, the Mining Application should be approved under observation that there are no identified heritage sites.
3. Should chance archaeological materials or human remains be exposed during mining on any section of the site, work should cease on the affected area and the discovery must be reported to the heritage authorities immediately so that an investigation and evaluation of the finds can be made. The overriding objective, where remedial action is warranted, is to minimize disruption in mining scheduling while recovering archaeological and any affected cultural heritage data as stipulated by the NHRA regulations.
4. Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project EMP, there are no significant cultural heritage resources barriers to the proposed Mining Permit Application. The Heritage authority may approve the Mining Permit Application as planned with special commendations to implement the recommendations here in made.

This report concludes that the impacts of the proposed mining on the cultural environmental values are not likely to be significant on the entire site if the EMP includes recommended safeguard and mitigation measures identified in this report.

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11 APPENDIX 1: CHANCE FIND PROCEDURE FOR PROPOSED MINING RIGHT ON PORTIONS RE 1,2,3,6,10,11,13,14,15,16,18,26,27,29,30,33 OF THE FARM MOOIHOEK 168 HT, PORTIONS RE 1,2,3,4 OF FARM KLIPSRUIT 136 HT AND PORTIONS RE 1,2,3,4 OF KLIPSRUIT 138 HT, UNDER THE MAGISTERIAL DISTRICT OF PIET RETIEF, MPUMALANGA PROVINCE

10 NOVEMBER 2022

ACRONYMS

BGG	Burial Grounds and Graves
CFPs	Chance Find Procedures
ECO	Environmental Control Officer
HIA	Heritage Impact Assessment
ICOMOS	International Council on Monuments and Sites
NHRA	National Heritage Resources Act (Act No. 25 of 1999)
SAHRA	South African Heritage Resources Authority
SAPS	South African Police Service
UNESCO	United Nations Educational, Scientific and Cultural Organisation

11.1 CHANCE FIND PROCEDURE

11.1.1 Introduction

An Archaeological Chance Find Procedure (CFP) is a tool for the protection of previously unidentified cultural heritage resources during mining. The main purpose of a CFP is to raise awareness of all construction, mine workers and management on site regarding the potential for accidental discovery of cultural heritage resources and establish a procedure for the protection of these resources. Chance Finds are defined as potential cultural heritage (or paleontological) objects, features, or sites that are identified outside of or after Heritage Impact studies, normally as a result of mining monitoring. Chance Finds may be made by any member of the project team who may not necessarily be an archaeologist or even visitors. Appropriate application of a CFP on development projects has led to discovery of cultural heritage resources that were not identified during archaeological and heritage impact assessments. As such, it is considered to be a valuable instrument when properly implemented. For the CFP to be effective, the site manager must ensure that all personnel on the proposed mining site understand the CFP and the importance of adhering to it if cultural heritage resources are encountered. In addition, training or induction on cultural heritage resources that might potentially be found on site should be provided. In short, the Chance find procedure details the necessary steps to be taken if any culturally significant artefacts are found during mining.

11.1.2 Definitions

In short, the term 'heritage resource' includes structures, archaeology, meteors, and public monuments as defined in the South African National Heritage Resources Act (Act No. 25 of 1999) (NHRA) Sections 34, 35, and 37. Procedures specific to burial grounds and graves (BGG) as defined under NHRA Section 36 will be discussed separately as this require the implementation of separate criteria for CFPs.

11.1.3 Background

The proposed Mining Permit Application is located on the remaining extent of the farm Klipspruit 138 HT, Piet Retief Magisterial District, Mpumalanga Province. The proposed mining development is subject to heritage survey and assessment at planning stage and Mining Permit Application in accordance with Section 38(8) of NHRA. These surveys are based on surface indications alone and it is therefore possible that sites or significant archaeological remains can be missed during surveys because they occur beneath the surface. These are often accidentally exposed in the course of construction or any

associated construction work and hence the need for a Chance Find Procedure to deal with accidental finds. In this case an extensive Archaeological Impact Assessment was completed by Mlilo (2022) on the proposed coal mining site. The AIA/HIA conducted was very comprehensive covering the entire site. The current study (Mlilo 2022) did not record any significant heritage site within the proposed mining site.

11.1.4 Purpose

The purpose of this Chance Find Procedure is to ensure the protection of previously unrecorded heritage resources within the Mining Permit site. This Chance Find Procedure intends to provide the applicant and contractors with appropriate response in accordance with the NHRA and international best practice. The aim of this CFP is to avoid or reduce project risks that may occur as a result of accidental finds whilst considering international best practice. In addition, this document seeks to address the probability of archaeological remains finds and features becoming accidentally exposed during mining and movement of mining equipment. The current mining activities have the potential to cause severe impacts on significant tangible and intangible cultural heritage resources buried beneath the surface or concealed by tall grass cover. Integrated Specialist Services (Pty) Ltd developed this Chance Find Procedure to define the process which governs the management of Chance Finds during mining. This ensures that appropriate treatment of chance finds while also minimizing disruption of the mining schedule. It also enables compliance with the NHRA and all relevant regulations. Archaeological Chance Find Procedures are to promote preservation of archaeological remains while minimizing disruption of mining scheduling. It is recommended that due to the moderate archaeological potential of the project area, all site personnel and contractors be informed of the Archaeological Chance Find procedure and have access to a copy while on site. This document has been prepared to define the avoidance, minimization and mitigation measures necessary to ensure that negative impacts to known and unknown archaeological remains as a result of project activities and are prevented or where this is not possible, reduced to as low as reasonably practical during mining.

Thus, this Chance Finds Procedure covers the actions to be taken from the discovering of a heritage site or item to its investigation and assessment by a professional archaeologist or other appropriately qualified person to its rescue or salvage.

11.2 GENERAL CHANCE FIND PROCEDURE

11.2.1 General

The following procedure is to be executed in the event that archaeological material is discovered:

- All construction/clearance activities in the vicinity of the accidental find/feature/site must cease immediately to avoid further damage to the find site.
- Briefly note the type of archaeological materials you think you have encountered, and their location, including, if possible, the depth below surface of the find
- Report your discovery to your supervisor or if they are unavailable, report to the project ECO who will provide further instructions.
- If the supervisor is not available, notify the Environmental Control Officer immediately. The Environmental Control Officer will then report the find to the Site Manager who will promptly notify the project archaeologist and SAHRA.
- Delineate the discovered find/ feature/ site and provide 100m buffer zone from all sides of the find.
- Record the find GPS location, if able.
- All remains are to be stabilised *in situ*.
- Secure the area to prevent any damage or loss of removable objects.
- Photograph the exposed materials, preferably with a scale (a yellow plastic field binder will suffice).
- The project archaeologist will undertake the inspection process in accordance with all project health and safety protocols under direction of the Health and Safety Officer.
- **Finds rescue strategy:** All investigation of archaeological soils will be undertaken by hand, all finds, remains and samples will be kept and submitted to a museum as required by the heritage legislation. In the event that any artefacts need to be conserved, the relevant permit will be sought from the SAHRA.
- An on-site office and finds storage area will be provided, allowing storage of any artefacts or other archaeological material recovered during the monitoring process.
- In the case of human remains, in addition, to the above, the SAHRA Burial Ground Unit will be contacted and the guidelines for the treatment of human remains will be adhered to. If skeletal remains are identified, an archaeologist will be available to examine the remains.

- The project archaeologist will complete a report on the findings as part of the Mining Right application process.
- Once authorisation has been given by SAHRA, the Applicant will be informed when activities can resume.

11.2.2 Management of chance finds

Should the Heritage specialist conclude that the find is a heritage resource protected in terms of the NRHA (1999) Sections 34, 36, 37 and NHRA (1999) Regulations (Regulation 38, 39, 40), Integrated Specialist Services (Pty) Ltd will notify SAHRA and/or PHRA on behalf of the applicant. SAHRA/PHRA may require that a search and rescue exercise be conducted in terms of NHRA Section 38, this may include rescue excavations, for which ISS will submit a rescue permit application having fulfilled all requirements of the permit application process.

In the event that human remains are accidentally exposed, SAHRA Burial Ground Unit or ISS Heritage Specialist must immediately be notified of the discovery in order to take the required further steps:

- a. Heritage Specialist to inspect, evaluate and document the exposed burial or skeletal remains and determine further action in consultation with the SAPS and Traditional authorities:
- b. Heritage specialist will investigate the age of the accidental exposure in order to determine whether the find is a burial older than 60 years under the jurisdiction of SAHRA or that the exposed burial is younger than 60 years under the jurisdiction of the Department of Health in terms of the Human Tissue Act.
- c. The local SAPS will be notified to inspect the accidental exposure in order to determine where the site is a scene of crime or not.
- d. Having inspected and evaluated the accidental exposure of human remains, the project Archaeologist will then track and consult the potential descendants or custodians of the affected burial.

- e. The project archaeologist will consult with the traditional authorities, local municipality, and SAPS to seek endorsement for the rescue of the remains. Consultation must be done in terms of NHRA (1999) Regulations 39, 40, 42.
- f. Having obtained consent from affected families and stakeholders, the project archaeologist will then compile a Rescue Permit application and submit to SAHRA Burial Ground and Graves Unit.
- g. As soon as the project archaeologist receives the rescue permit from SAHRA he will, in collaboration with the company/contractor, arrange for the relocation in terms of logistics and appointing of an experienced undertaker to conduct the relocation process.
- h. The rescue process will be done under the supervision of the archaeologist, the site representative and affected family members. Retrieval of the remains shall be undertaken in such a manner as to reveal the stratigraphic and spatial relationship of the human skeletal remains with other archaeological features in the excavation (e.g., grave goods, hearths, burial pits, etc.). A catalogue and bagging system shall be utilised that will allow ready reassembly and relational analysis of all elements in a laboratory. The remains will not be touched with the naked hand; all Contractor personnel working on the excavation must wear clean cotton or non-powdered latex gloves when handling remains in order to minimise contamination of the remains with modern human DNA. The project archaeologist will document the process from exhumation to reburial.
- i. Having fulfilled the requirements of the rescue/burial permit, the project archaeologist will compile a mitigation report which details the whole process from discovery to relocation. The report will be submitted to SAHRA and to the client.

Note that the relocation process will be informed by SAHRA Regulations and the wishes of the descendants of the affected burial.

12 APPENDIX 2: HERITAGE MANAGEMENT PLAN INPUT INTO THE PROPOSED COAL MINING PERMIT APPLICATION

Objective								
<ul style="list-style-type: none"> • Protection of archaeological sites and land considered to be of cultural value. • Protection of known physical cultural property sites against vandalism, destruction and theft; and • The preservation and appropriate management of new archaeological finds should these be discovered during construction. 								
No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Mining Phase								
1	Planning	Ensure sites of cultural, archaeological, and historical significance that can be identified are demarcated on the site layout plan and marked as no-go areas.	Throughout Project	Weekly Inspection	Contractor [C] CECO	SM	ECO	EA EM PM
Mining Phase								
1	Emergency Response	Should any archaeological or physical cultural property heritage resources be exposed during excavation for the purpose of construction, construction in the vicinity of the finding must be stopped until heritage authority has cleared the development to continue.	N/A	Throughout	C CECO	SM	ECO	EA EM PM
		Should any archaeological, cultural property heritage resources be exposed during excavation or be found on development site, a registered heritage specialist or PHRA official must be called to site for inspection.		Throughout	C CECO	SM	ECO	EA EM PM
		Under no circumstances may any archaeological, historical or any physical cultural property heritage material be destroyed or removed from site;		Throughout	C CECO	SM	ECO	EA EM PM
		Should remains and/or artefacts be discovered on the development site during earthworks, all work will cease in the area affected and the Contractor will immediately inform the Construction Manager who in turn will inform Mpumalanga PHRA		When necessary	C CECO	SM	ECO	EA EM PM
		Should any remains be found on site that is potentially human remains, the Mpumalanga PHRA and South African Police Service should be contacted.		When necessary	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
		Same as mining phase.						
Operational Phase								
		Same as mining phase.						

13 APPENDIX 4: LEGAL PRINCIPLES OF HERITAGE RESOURCES MANAGEMENT IN SOUTH AFRICA

Extracts relevant to this report from the National Heritage Resources Act No. 25 of 1999, (Sections 5, 36 and 47):

General principles for heritage resources management

5. (1) All authorities, bodies and persons performing functions and exercising powers in terms of this Act for the management of heritage resources must recognise the following principles:

(a) Heritage resources have lasting value in their own right and provide evidence of the origins of South African society and as they are valuable, finite, non-renewable and irreplaceable they must be carefully managed to ensure their survival;

(b) every generation has a moral responsibility to act as trustee of the national heritage for succeeding generations and the State has an obligation to manage heritage resources in the interests of all South Africans.

(c) heritage resources have the capacity to promote reconciliation, understanding and respect, and contribute to the development of a unifying South African identity; and

(d) heritage resources management must guard against the use of heritage for sectarian purposes or political gain.

(2) To ensure that heritage resources are effectively managed

(a) the skills and capacities of persons and communities involved in heritage resources management must be developed; and

(b) provision must be made for the ongoing education and training of existing and new heritage resources management workers.

(3) Laws, procedures and administrative practices must

(a) be clear and generally available to those affected thereby;

(b) in addition to serving as regulatory measures, also provide guidance and information to those affected thereby; and

(c) give further content to the fundamental rights set out in the Constitution.

(4) Heritage resources form an important part of the history and beliefs of communities and must be managed

in a way that acknowledges the right of affected communities to be consulted and to participate in their management.

(5) Heritage resources contribute significantly to research, education and tourism and they must be developed and presented for these purposes in a way that ensures dignity and respect for cultural values.

(6) Policy, administrative practice and legislation must promote the integration of heritage resources conservation in urban and rural planning and social and economic development.

(7) The identification, assessment and management of the heritage resources of South Africa must—

(a) take account of all relevant cultural values and indigenous knowledge systems;

(b) take account of material or cultural heritage value and involve the least possible alteration or loss of it;

(c) promote the use and enjoyment of and access to heritage resources, in a way consistent with their cultural significance and conservation needs;

(d) contribute to social and economic development;

(e) safeguard the options of present and future generations; and

(f) be fully researched, documented and recorded.

13.1 Burial grounds and graves

36. (1) Where it is not the responsibility of any other authority, SAHRA 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.

(2) SAHRA must 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 the grave referred to in subsection (1), and must maintain such memorials.

(3) (a) No person may, without a permit issued by SAHRA or a provincial heritage resources authority

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume, 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.

(4) 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 and in accordance with any regulations made by the responsible heritage resources authority.

(5) SAHRA or a provincial heritage resources authority may not issue a permit for any activity under subsection (3)(b) unless it is satisfied that the applicant has, in accordance with regulations made by the responsible heritage resources authority

(a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and

(b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.

(6) Subject to the provision of any other law, any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in co-operation with the South African Police Service and in accordance with regulations of the responsible heritage resources authority

(a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and

(b) if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-interment of the contents of such grave or, in the absence of such person or community, make any such arrangements as it deems fit.

(7) (a) SAHRA must, over a period of five years from the commencement of this Act, submit to the Minister for his or her approval lists of graves and burial grounds of persons connected with the liberation struggle and who died in exile or as a result of the action of State security forces or agents provocateur and which, after a process of public consultation, it believes should be included among those protected under this section.

(b) The Minister must publish such lists as he or she approves in the Gazette.

(8) Subject to section 56(2), SAHRA has the power, with respect to the graves of victims of conflict outside the Republic, to perform any function of a provincial heritage resources authority in terms of this section.

(9) SAHRA must assist other State Departments in identifying graves in a foreign country of victims of conflict connected with the liberation struggle and, following negotiations with the next of kin, or relevant authorities,

it may re-inter the remains of that person in a prominent place in the capital of the Republic.

13.2 General policy

47. (1) SAHRA and a provincial heritage resources authority—

(a) must, within three years after the commencement of this Act, adopt statements of general policy for the management of all heritage resources owned or controlled by it or vested in it; and

(b) may from time to time amend such statements so that they are adapted to changing circumstances or in accordance with increased knowledge; and

(c) must review any such statement within 10 years after its adoption.

(2) Each heritage resources authority must adopt for any place which is protected in terms of this Act and is owned or controlled by it or vested in it, a plan for the management of such place in accordance with the best environmental, heritage conservation, scientific and educational principles that can reasonably be applied taking into account the location, size and nature of the place and the resources of the authority concerned, and may from time to time review any such plan.

(3) A conservation management plan may at the discretion of the heritage resources authority concerned and for a period not exceeding 10 years, be operated either solely by the heritage resources authority or in conjunction with an environmental or tourism authority or under contractual arrangements, on such terms and conditions as the heritage resources authority may determine.

(4) Regulations by the heritage resources authority concerned must provide for a process whereby, prior to the adoption or amendment of any statement of general policy or any conservation management plan, the public and interested organisations are notified of the availability of a draft statement or plan for inspection, and comment is invited and considered by the heritage resources authority concerned.

(5) A heritage resources authority may not act in any manner inconsistent with any statement of general policy or conservation management plan.

(6) All current statements of general policy and conservation management plans adopted by a heritage resources authority must be available for public inspection on request.