PHASE 1 HERITAGE IMPACT ASSESSMENT FOR PROSPECTING RIGHT APPLICATION WITHIN THE FARM NIEUWE MOED 534 IN THE MATJHABENG LOCAL MUNICIPALITY AND LEJWELEPUTSWA DISTRICT MUNICIPALITY, FREE STATE PROVINCE.

AUGUST 2020

DOCUMENT SYNOPSIS (EXECUTIVE SUMMARY)

Item	Description
Proposed development and location	Proposed prospecting on the Farm Nieuwe Moed 534 in the Matjhabeng Local Municipality, Lejweleputswa District Municipality in Free State Province
Purpose of the study	The Phase 1 Archaeological Impact Assessment is to determine the presence of cultural heritage sites and the impact of the proposed project on these resources within the area demarcated for housing development.
1:50 000 Topographic Map	2528 CA
Coordinates	28° 7'24.01"S 26°56'54.19"E
Municipalities	Matjhabeng Local Municipality, Lejweleputswa District Municipality
Predominant land use of surrounding area	Agriculture
Applicant	Thadi Trading (Pty) Ltd
DMR Ref:	FS30/5/1/1/2/10572 PR
EAP	Mpho Morotoba Kimopax (Pty) Ltd 546 16th Road, Constantia Park, Midrand, 1685 Tel: +27 11 312 9765 Fax: +27 11 312 9768/ +27 86 219 8717 Cell: +27 73 654 5464 mpho@kimopax.com
Heritage Practitioner	Integrated Specialist Services (Pty) Ltd (ISS) Head Office: Constantia Park, Building 16-2, 546, 16th Road, Midrand, 1685 Cell: 0716859247 Fax: 086 652 9774 E-mail: trust@issolutions.co.za
Contact Person	Trust Mlilo
Date of Report	01 September 2020

This report serves to inform and guide the applicant and contractors about the possible impacts that the proposed prospecting on the farm Farm Nieuwe Moed 534 may have on heritage resources (if any) located in the study area. In the same light, the document must also inform South African Heritage Resources Agency (SAHRA) about the presence, absence and significance of heritage resources located in the study area. As required by South African heritage and mining legislation, prospecting right application require pre-development archaeology and Heritage assessment by a competent heritage practitioner in order to identify, record and if necessary, salvage the irreplaceable heritage resources that may be impacted upon by the proposed prospecting. In compliance with these laws Kimopax requested Integrated Specialist Services (Pty) Ltd (ISS) to conduct a Phase 1 Archaeological and Heritage Impact Assessment (AIA/HIA) for the prospecting right application. Desktop studies, drive-throughs and fieldwalking were conducted in order to identity heritage landmarks on and around the proposed prospecting site. The study site is not on pristine ground, having seen significant transformations owing to farming infrastructure, agriculture, powerlines, and road networks (see Figure 1). The general project area is known for historical and Late Iron Age occurrences and historical heritage remains. In terms of the built environment of the project area, none of the buildings and structures are older than 60 years. As such the proposed prospecting does not trigger Section 34 of the NHRA. In addition, sub-surface archaeological material and unmarked graves may still exist and when encountered during prospecting, 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 also be submitted to the SAHRA for review.

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 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 Kimopax (Pty) Ltd. Integrated Specialist Services (Pty) Ltd (ISS) has no business, personal, financial or other interest in the prospecting 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 (ISS) 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 Kimopax (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 (SAHRA).

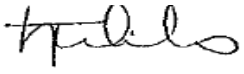
Geographic Co-ordinate Information: Geographic co-ordinates in this report were obtained using a hand-held Garmin Global Positioning System device. The manufacturer states that these devices are accurate to within +/- 5 m.

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 authorisation of proposed prospecting being proposed by Thadi Trading (Pty) Ltd

Signed by



01/ 09/ 2020

ACKNOWLEDGEMENTS

The authors acknowledge Kimopax for their assistance with project information, and the associated project BID as well as responding to technical queries related to the project.

TABLE OF CONTENTS

TABLE OF PLATES [PHOTOGRAPHS]

TABLE OF FIGURES

LIST OF TABLES

ABBREVIATIONS

AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
EIA	Environmental Impact Assessment
EIA	Early Iron Age *(EIA refers to both Environmental Impact Assessment and the Early Iron Age but in both cases the acronym is internationally accepted. This means that it must be read and interpreted within the context in which it is used.)*
EIAR	Environmental Impact Assessment Report
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
ICOMOS	International Council of Monuments and Sites
ISS	Integrated Specialist Services (Pty) Ltd
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
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 revealed within the proposed project site during construction, such activities should be halted immediately, and a competent heritage practitioner, 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. ISS 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 (ISS) was retained by Kimopax (Pty) Ltd to carry out a Phase 1 AIA/ HIA of the prospecting right application undertaken by Thadi Trading (Pty) Ltd The proposed prospecting is gazetted in terms of section 38 (1) of the NHRA (see Figure 1). As prescribed by SAHRA and stipulated by legislation, an AIA/HIA is a pre-requisite for prospecting right application. The overall purpose of this heritage report is to identify, assess any heritage resources that may be located in the study area and evaluate the positive and negative impacts of the proposed prospecting on these resources 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 and infrastructure development work have either obliterated these materials or reduced them to isolated finds that can only be identifiable as chance finds during prospecting. The proposed prospecting may be permitted subject to adopting recommendations and mitigation measures proposed in this report. There is no archaeological and heritage reason why the development cannot proceed, taking full cognizance of clear procedures to follow in the event of chance findings.

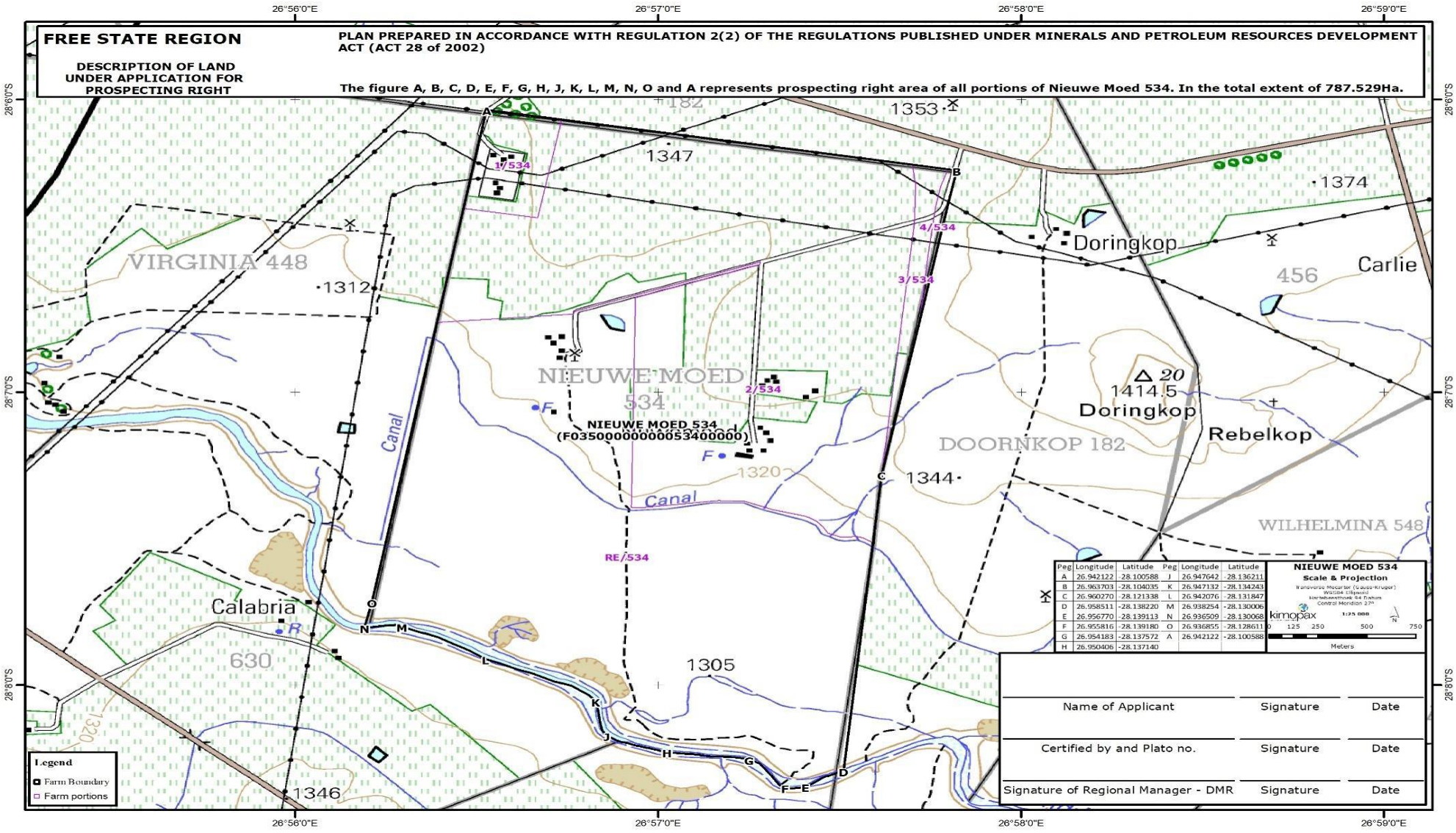
1.1. Terms of Reference (ToR)

The author was requested by Kimopax (Pty) Ltd to conduct an AIA/HIA study addressing the following issues:

- Archaeological and heritage potential of the proposed site including any known data on affected areas;
- Provide details on methods of study; potential and recommendations to guide the SAHRA to make an informed decision in respect of authorisation of the prospecting right application
- Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located along within the proposed prospecting right application site.
- Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value;
- Describe the possible impacts of the proposed prospecting 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 prospecting right area is located on farm Nieuwe Moed 534 in the jurisdiction of Matjhabeng Local Municipality of Lejweleputswa District Municipality in the Free State Province of South Africa. The site covers an extent of 787.529 hectares and is situated 9 km east of Virginia, and approximately 18 km West of Ventersburg. The site is accessible via R73.



Peg	Longitude	Latitude	Peg	Longitude	Latitude
A	26.942122	-28.100588	J	26.947642	-28.136211
B	26.963703	-28.104035	K	26.947132	-28.134243
C	26.960270	-28.121338	L	26.942076	-28.131847
D	26.958511	-28.138220	M	26.938254	-28.130006
E	26.956770	-28.139113	N	26.936509	-28.130068
F	26.955816	-28.139180	O	26.936855	-28.128611
G	26.954183	-28.137572	A	26.942122	-28.100588
H	26.950406	-28.137140			

Figure 1: Location of the proposed project site (ISS 2020)

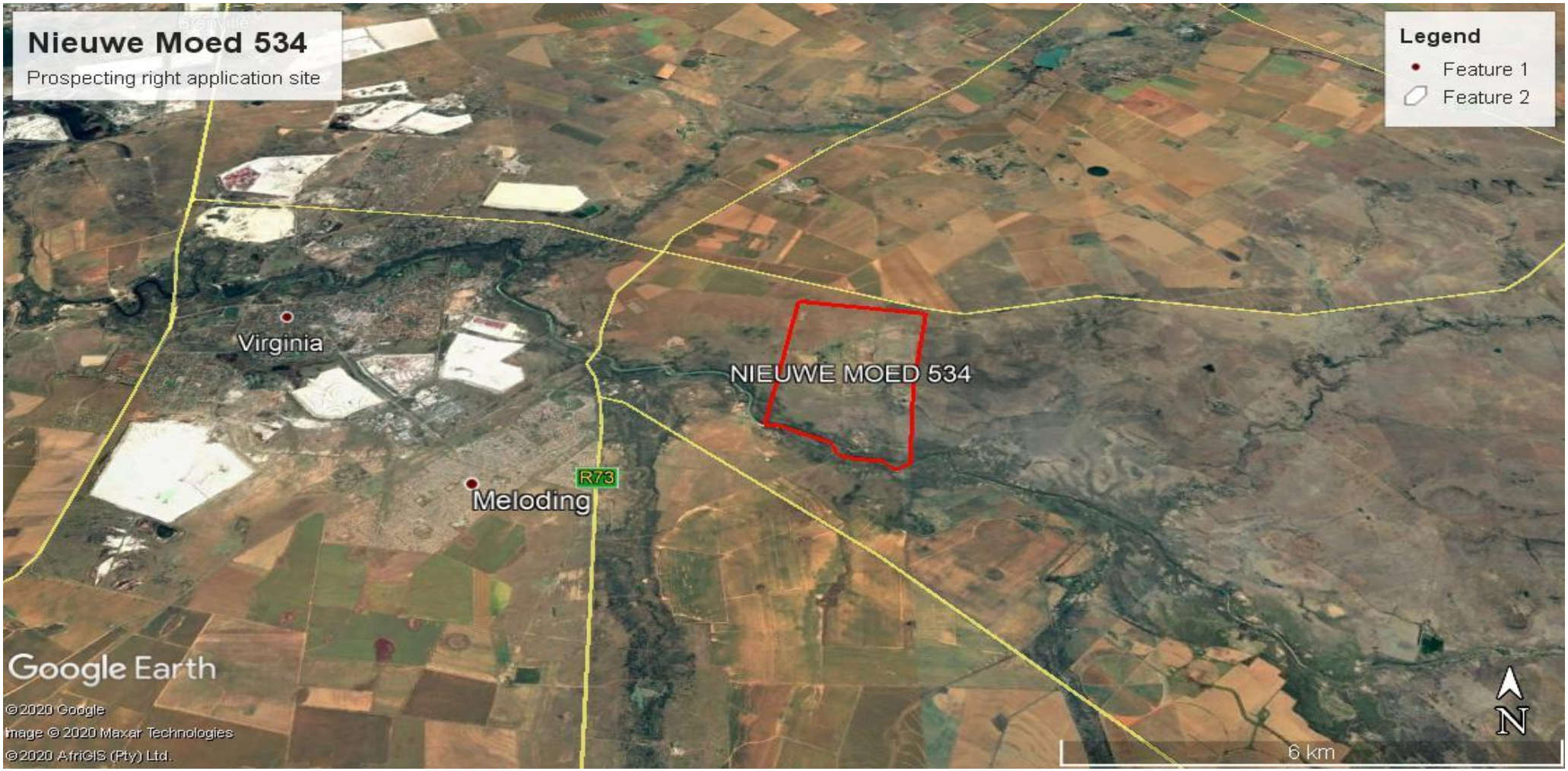


Figure 2: Location of the proposed project site (Kimopax (Pty) Ltd 2020)

1.3. Project Background and description

Thadi Trading intends to survey the project area through non-invasive and invasive methods to determine if viable mineral deposit exists. Prospecting activities will be undertaken over a period of approximately 5 years. The non-invasive methods are methods that do not cause disturbances to the land e.g. aerial photography, desktop studies, aeromagnetic surveys. Invasive methods are activities that result in land disturbances and comprise of diamond core drilling, sampling, and sampling storage. The prospecting programme will survey for Diamond (Alluvial and Kimberlite) minerals.

The potential environmental impacts associated with the prospecting activities will be identified through the draft BAR and managed through a detailed Environmental Management Programme (EMPr). It is anticipated that the prospecting operations would be small scale and disturbance from drilling will produce little to no overburden due to outcropping. All drill sites will be rehabilitated to pre prospecting state.

Non- Invasive Activities

Desktop study and Remote sensing

This phase comprises of gathering known geological information and data about the site selected. Reviewing of historic boreholes, reports and geophysical surveys conducted on the area will be done on this phase. This will be a preliminary study that will be carried out before any physical investigation can be conducted. Remote sensing is a method of collecting information of the physical characterization of the earth. This method is done by measuring reflected and emitted radiations by a satellite from distances away from the target area. Mapping out alteration areas and weathering products of kimberlite rocks through remote sensing will be beneficial in targeting areas for further investigations. Reviewing of historic and recent alluvial mines will be done in this phase in order to assist further exploration targets.

Field mapping

This phase consists of a comprehensive field mapping. A geologist will complete properly selected transverse line while recording geological observations. Through this phase exposed geological information will be identified, also with the help of aerial photo interpretation and satellite images.

Geophysical Survey

Post-field mapping, areas of interest might be selected for geophysical surveys. If the area lacks outcrops, geophysical surveys of the whole prospecting area will be conducted. The geophysical surveys will help with

identifying subsurface geological information, information will be used to identify geological structures such as faults, shear zones, veins and magmatic bodies.

- **Magnetic Surveys**

This method will be used to map anomalies in the earth's magnetic field caused by sources bodies within the sub-surface. Different geological units have different magnetic fields. Magnetics are commonly used to understand the structure of the subsurface during the beginning phases of exploration. Magnetics can also be used to detect faults and igneous intrusions.

- **Resistivity Survey**

Surface electrical resistivity surveying is based on the principle that the distribution of electrical potential in the ground around a current-carrying electrode depends on the electrical resistivities and distribution of the surrounding soils and rocks. Mineral grains comprised of soils and rocks are essentially nonconductive, except in some exotic materials such as metallic ores, so the resistivity of soils and rocks is governed primarily by the amount of pore water, its resistivity, and the arrangement of the pores. To the extent that differences of lithology are accompanied by differences of resistivity, resistivity surveys can be useful in detecting bodies of anomalous materials or in estimating the depths of bedrock surfaces. Also, resistivity surveys may be used as a reconnaissance method, to detect anomalies that can be further investigated by complementary geophysical methods and/or drill holes.

Geological modelling

Post drilling, depending on the identification of the orebody, geological modelling will be conducted in order to declare the resource and reserve of the prospecting area.

Invasive Activities

Preliminary drilling

It consists of reconnaissance drilling. The proposed drilling program consists of 6 holes, up to 80 meters deep.

Detailing drilling

It will consist of detailed diamond core drilling within the determined target areas, to delineate the ore body accurately, and to determine depth to bedrock and internal stratigraphic composition of the ore body.

A proposed drilling programme of boreholes will be used to further define the ore body. The drilling program will determine the exact outline, shape, and size of the ore body. The core drilling is generally done in this target. The different rock sample intersecting the deposit will be sent for assay at one of the accredited laboratories.

Sampling analyses

During drilling and mapping, samples will be collected for further analyses. Sieving method will be used to separate indicator minerals (e.g. Garnet) from other minerals. Garnets will be tested for their mineral chemistry in order to determine if the source kimberlite is diamondiferous.

Soil samples to be collected will be sieved to separate rock fractures and possible identify macro/microdiamonds. These sieve tests will determine the diamond count vs size to estimate the frequency distribution of the diamonds in that area.

Description of pre-/feasibility Studies

The pre-feasibility stage involves the use of all available geological data, including grade and value estimates, to determine whether the deposit is likely to become economical to mine or not. If so, the scope of full mining feasibility studies must be defined, this is thus a purely desktop phase of the work involving a multi-disciplinary team.

The feasibility stage involves the development of detailed plans and scenarios for the development of a mine. The aim is to determine accurately how ore deposits can best be economically mined.

2. LEGISLATIVE CONTEXT

In terms of the National Environmental Management Act (Act 107 of 1998) (NEMA) and its promulgated EIA Regulations of 2017 (GNR 327, 325, and 324) the prospecting activities require an Environmental Authorisation. Activity 20 under Government Notice 327 (Listing Notice 1) is triggered by the Prospecting Right Application. Accordingly, GNR 327 activities are subject to a Basic Assessment Process. An application for Environmental Authorisation has been submitted to the DMR: Free State Region on 26 March 2020. In addition, under the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) an AIA or HIA is required as a specialist sub-section of the Basic Assessment (BA) Process.

Heritage management and conservation in South Africa is governed by the NHRA and falls under the overall jurisdiction of the SAHRA and its PHRAs. There are different sections of the NHRA that are relevant to this study. The present proposed development is a listed activity in terms of Section 38 of the NHRA which stipulates that the following development categories require an HIA to be conducted by an independent heritage management consultant:

- Construction of a road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length
- Construction of bridge or similar structure exceeding 50m in length
- Development or other activity that will change the character of a site -
  - ❖ Exceeding 5000 sq m
  - ❖ Involving three or more existing erven or subdivisions
  - ❖ Involving three or more erven or divisions that have been consolidated within past five years
  - ❖ Rezoning of site exceeding 10 000 sq m
  - ❖ The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority
- Any other development category, public open space, squares, parks, recreation grounds

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). Because the proposed development will change the character of a site exceeding 5000 sq m, then an HIA is required according to this section of the Act.

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 prospecting. This means that any chance find must be reported to the heritage practitioner or SAHRA, who will assist in investigating the extent and significance of the finds and inform 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 prospecting.

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, the environmental consultant (ISS), SAHRA and interested and affected parties about existing heritage resources that may be affected by the proposed development, and to recommend mitigatory measures aimed at reducing the risks of any adverse impacts on these heritage resources.

Table 1: **Evaluation of the proposed development as guided by the criteria in NHRA and NEMA**

ACT	Stipulation for developments	Requirement details
NHRA Section 38	Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length	Yes
	Construction of bridge or similar structure exceeding 50m in length	No
	Development exceeding 5000 sq m	Yes
	Development involving three or more existing erven or subdivisions	No
	Development involving three or more erven or divisions that have been consolidated within past five years	No
	Rezoning of site exceeding 10 000 sq m	No
	Any other development category, public open space, squares, parks, recreation grounds	No
NHRA Section 34	Impacts on buildings and structures older than 60 years	None older than 60 years
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

3. METHODOLOGY

This document falls under the Basic assessment phase of the AIA/HIA and therefore aims at providing an informed heritage-related opinion about the proposed prospecting in the Free State Province. This is usually achieved through a combination of a review of any existing literature and a basic 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 development footprint. Initially a drive-through was undertaken around the proposed prospecting 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 proposed development in order to suggest further action. 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 development.

3.1. The Fieldwork survey

The fieldwork survey was undertaken on the 1st of September 2020. The main focus of the survey involved a pedestrian survey which was conducted within the proposed project site. The pedestrian survey focused on parts of the project area where it seemed as if disturbances may have occurred in the past, for example bald spots in the grass veld; stands of grass which are taller than the surrounding grass veld; the presence of exotic trees; evidence for building rubble, existing buildings and ecological indicators such as invader weeds.

The literature survey suggests that prior to the 20th century modern residential and on-going infrastructure developments; the general area where the proposed development is located would have been a rewarding region to locate heritage resources related to Stone Age and particularly 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 infrastructure and smallholder residential developments.

3.2. Visibility and Constraints

The project site is accessible making it easier to identify archaeological resources in their original places. In addition, due to the subterranean nature of cultural remains this report should not be construed as a record of all archaeological and historic sites in the area.

3.3. Consultations

In terms of Chapter 6, Regulations 40 – 44 of the EIA Regulations, 2014 (as amended), Thadi Trading is required to consult with interested and Affected Parties (I&APs). Comments received from the I&APs will be recorded and included in the Public Participation Report which will be submitted to the Department of Mineral Resources (DMR) in the Free State Province. The public participation process aims to enable landowners, lawful occupiers, directly affected individuals and or Interested and Affected Parties (I&APs) to raise any issues, comments and or concerns regarding the proposed prospecting activities.

The project will be announced in the locally distributed newspaper and notices will be placed in the project area to inform the public about the prospecting right application. Notifications will request I&APs to contribute to the identification of potential environmental impacts. Stakeholders will be notified in writing of the project via email, fax or hand delivered letters. Public meetings will be undertaken as part of the consultation process to discuss any issues and concerns. A draft BAR/ EMPr will be prepared which lists the potential environmental impacts and how they will be managed. I&APs will be provided the opportunity to review and comment on the draft BAR/EMPr.

The Basic Assessment (BA) Public Participation process is conducted by the EAP. The study team consulted residents about the heritage character of the proposed development site. The BA Public Participation Process will also invite and address comments from affected communities and any registered heritage bodies on any matter related to the proposed project including heritage concerns that may arise as a result of the project. The issues raised by the public with respect to the proposed development will also be included in the Final Basic Assessment Report.

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

Plate 1: Photo **A**. Proposed prospecting site.

Plate 2: Photo 2: Farm buildings within the prospecting right application site. Note that the buildings and structures were confirmed to be younger than 60 years.

Plate 3: Photo **C**. Proposed prospecting site and farm dwellings in the background

Plate 4: Photo **D** showing overgrazed section of the proposed prospecting site.

Plate 5: Photo **E**. Showing overgrazed section of the proposed prospecting site (see Figure 2).

Plate 6: Photo **F** showing proposed prospecting site (see Figure 1&2).

Plate 7: Photo **G**, showing proposed prospecting site.

Plate 8: Photo **H**, showing proposed prospecting site.

Plate 9: Photo **I**, showing farm structures which were confirmed to be younger than 60 years.

Plate 10: Photo **J**, showing overgrazed section of the prospecting right application site.

K

Plate 11: Photo **J**, showing overgrazed section of the prospecting right application site.

L

Plate 12: Photo **J**, showing overgrazed section of the prospecting right application site.

Plate 13: Photo **J**, showing overgrazed section of the prospecting right application site.

Plate 14: Photo **J**, showing ploughed section of the prospecting right application site.

4. ARCHAEOLOGICAL CONTEXT

South Africa is one of the privileged countries in the world to have a very long and varied history human occupation (Deacon and Deacon 1999). The Free State Cape Province is one area where indications of this rich and diverse historical sequence can be crystallised. Very limited Stone Age resources were identified in most of the consulted literature, making it unlikely but equally possible to encounter Stone Age sites and occurrences within the proposed development footprint. The primary Stone Age landmarks appear to be sparsely concentrated around the Vredefort Dome (about 20km away from study area) where cave and rock formations (together with general factors such as water, vegetation, faunal resources) continue to attract human habitation. The same area of the Vredefort Dome also has some concentration of Later Iron Age, historical and mining heritage resources of note (Figure 1; Taylor 1979; Pelser 2000; 2009; Naude 2009).

4.1. Stone Age Archaeology

Stone Age archaeology is prevalent in the larger province but is generally thin in the area under study. The ESA is generally associated with the earliest stone tool industry (Oldowan industry) which is marked by crude choppers and other unifacial core tools, followed by the still large but better fashioned hand axes and cleavers of the Acheulean techno-complex (Deacon and Deacon 1999). The MSA is better understood as a flake-technological stage characterized by faceted platforms, produced from prepared cores, as distinct from the core tool-based ESA technology (Barham and Mitchell 2008). 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 there is 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).

To the northeast, notable MSA/LSA remains have been reported around the Vredefort Dome. Some of these materials occur in cave where they are associated with transhumance, but some have been reported in open air area, especially close to the Vaal River (Pelser 2009: 164). The finds include scrapers, blades, cores, flakes, hammerstones, and small microlithic tools that occur as scattered finds. In general, very little is known about the Stone Age archaeology of the area under study

4.2. Iron Age Archaeology

Agriculturalist communities entered southern Africa from West and East Africa around AD 200 and brought with them settled agriculture, metal working, animal husbandry, pottery making and social stratification, all of which are purported to mark a clear contrast from the Stone Age lifeways that the farmers came in contact with (Huffman 2007). Huffman (2007) argues that ceramics can be used to trace these movements, as well as the broad linguistic

identities of people but not necessarily their specific social or political groupings. After missing out on the Early Iron Age occupation, the earliest Iron Age expression in the general area under study is related to makers of Ntsuanatsatsi ceramic facies (AD 1450-1650) of the LIA. Perhaps the declining summer rainfall restricted the earlier EIA occupation to a diminishing belt close to the southeast Coast and northern parts of South Africa (Maggs 1994).

Huffman (2007) classifies Ntsuanatsatsi as Nguni, while Maggs (1976) classifies it as Sotho-Tswana but one thing is clear, this was just the formative phase of the population agglomeration is evidence during the subsequent phases of both the Nguni and Sotho-Tswana, now using stone walling to demarcate space in the nucleated settlement patterns of the already established Central Cattle Pattern (CCP). The agglomeration was later intensified by the Mfecane (the wars and population movements of the early 19th Century which culminated in the establishment of the Zulu Kingdom).

The stonewalled settlements of the LIA are better represented in the general area under study, even though one may not expect to encounter a secure LIA occupation on the clearly farmed development footprint. Noteworthy, is the site of Askoppies (ash heaps) located close to Vredefort Dome (Figure 1). This stone walled site with over 20 individual homesteads of between 8 and 15 scalloped areas (with hut foundation) produced impressive materials that include sea shells, pottery, ivory bangles, hippo tusks, iron spears, cuprous earrings, bone pendants, smelting furnace remains, slag, tuyeres and a glass bead (Pelser 2009: 166-170). The ivory bangles are clearly status insignia showing that the occupants of the particular homestead may have been elite, a view supported by the associated large cattle kraal and perhaps the cuprous tear-drop earrings. The latter were clearly obtained through trade, perhaps with communities further to the north because these earrings (some of which are bronzes made from Rooiberg tin) are common in the large Sotho-Tswana town found in Magaliesburg-Rusternberg area.

Other researchers who surveyed the general area concur that the area covered by the Vredefort Dome Conservancy and its surroundings are rich LIA remains in the form of stone-walls dating from the 17th century to early 19th Century (Bakker et al. 2004; Dreyer 1999; 2006).

4.3. Historical (~ AD 1840 to 1950) Archaeology

Southern Africa was networked with the literate world for several centuries, but the period of written history in the study area corresponds to the increased arrival of travellers and white farmers in the 1800s. Before this, the Portuguese maritime expansion had begun around in the 15th Century culminating with Vasco da Gama reaching several places along South Africa's coast and trading with Khoekhoen (Khoi) and Bantu-speaking groups along the coast. From AD 1591 the Dutch and English ships joined the trade resulting in more permanent settler life, first in Cape Town before the white farmers (free burghers) pushed into the interior.

In 1820 a major British settlement was implanted on the eastern frontier of the Cape Colony, resulting in large numbers of the community moving into the interior, initially to KwaZulu-Natal, and then after Britain annexed Natal

(1843), further into the interior to beyond the Vaal River. Disruptions of the Mfecane eased their takeover of African lands and the Boers (farmers) established several Republics. Ethnographically, recollections of major events such as the Mfecane stand out. These wars definitely affected the area under study, in as much as they affected much of the interior, even beyond the Zambezi. The ripple effects resulted in the disruptions of Sotho-Tswana groups in the Free State. In 1824 Mzilikazi, one of Shaka's exceptional general fled the Zulu king with about 20000 followers and on highway north briefly established two strong holds at Mosega and Kapain, from which he controlled and scattered the many Sotho-Tswana groups such as the Kwena, who in 1823 were settled on Kokosi hill (now Losberg) north of the Vredefort Dome (Naude 2009). Cattle raiding, conflict over land and changes in climatic and subsistence strategies characterised much of the cultural landscape of the time.

The first European settler occupation of area around the development footprint happened in the 1830s (Pelser 2009: 171). This occupation was influenced by both the need for farmland, as well as prospecting and mining for gold. The activities left unmistakable landmarks such as holes and trenches, mine dumps, mine tunnels and remains of various structures for both dwellings and farm/mine activities (Figure 3).

Figure 3: A historical image of 19th century gold mining activities near Rooderand Goldfieds in Venterskroon (Pelser 2009: 176).

Decorated historical porcelain and metals usually accompany these sites. Cemeteries, some of which have marked graves dating as early as 1910, also occur in the general area under study. One of the most important one is the Anglo-Boer War (AD 1899-1902) cemetery and concentration camp memorial near Koppies to the southwest of the dome (Pelser 2009: 178).

4.4. 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 remains because no historically known groups occupied the study area and most of the original settler descendants moved away from the area.

4.5. SAHRIS Data Base and Impact Assessment Reports in the project area.

Several AIA/HIA studies were conducted in the project area such as Van Ryneveld, (2013), Phase 1 Archaeological Impact Assessment for the Thabong Solar Farm, Uitkyk 509, Welkom, Free State, South Africa. The study recorded mostly colonial period buildings and structures which include livestock enclosures. Van der Walt (2013). Archaeological Scoping Report for the proposed Oryx Solar Energy Facility recorded buildings and structures which are older than 60 years and associated burials. Van Vollenhoven (2011) Heritage study for the Proposed Wits Gold DBM Project Close to Virginia, Free State Province noted two sites of heritage significance: Site 1: A graveyard of approximately 40 graves. The author noted that there probably are more graves as the dense grass cover made it very difficult to do an accurate count. Dates identified range between 1908 and 1978. The study also noted remains of an old station, consisting of at least three buildings, most likely dating to the 1930s or 1940s, and the ruins of more buildings. Pistorius (2013) Phase I Heritage Impact Assessment (HIA) Study for Africary Holdings (Pty) Ltd's Underground Coal Gasification and Power Generation Project near Theunissen in the Free State identified structures older than 60 years of historical significance and graveyards. Coetzee (2017) did not identify any archaeological heritage resources. Coetzee (2019) found no evidence of historical or archaeological (both Stone Age and Iron Age) artefacts, assemblages, features, structures or settlements during the survey of the project footprint. A search on the SAHRIS data base confirmed that several sites have been destroyed by infrastructure developments mining, residential developments and agriculture.

5. RESULTS OF THE FIELD STUDY

5.1. Archaeology

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 drilling, indirect impacts may occur during movement of prospecting vehicles. The excavation for foundations for houses, storm water management drains and streets 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 surface sand. Since heritage sites, including archaeological sites, are non-renewable, it is important that they are identified, and their significance assessed prior to construction. 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 development area. Further, archaeological sites and unmarked graves may be buried beneath the surface and may only be exposed during construction. 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 the proposed development by means of mitigation measures (see appended Chance Find Procedure). The study concludes that the impacts will be negligible since the project area has previously been cleared for agriculture. The following section presents results of the archaeological and heritage survey conducted within the prospecting right application site.

The proposed development site did not yield any confirmable archaeological remains. It is assumed that the chances of recovering significant archaeological materials in situ were seriously compromised by mainly agriculture and road construction. Several LIA stone walled settlements were previously recorded in the broader project area. Although the project site is heavily degraded from previous and current land use such as agriculture there is still a possibility of finding archaeological remains buried beneath the ground. It is the considered opinion of the author that the chances of recovering significant archaeological materials is low to moderate within the proposed development site.

Based on the field study results and field observations, the receiving environment for the proposed development is low to medium potential to yield previously unidentified archaeological sites during subsurface excavations and construction work associated with the proposed development. Literature review also revealed that no Stone Age

sites are 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 as a result of prehistoric activity, victims of conflict or crime. It is often difficult to detect the presence of archaeological human remains on the landscape as these burials, in most cases, are not marked at the surface. 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 construction 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 record any burial site within the proposed prospecting site. It should, however, be noted that burial grounds and gravesites are accorded the highest social significance threshold (see Appendix 3). They have both historical and social significance and are considered sacred. Wherever they exist or not, they may not be tempered with or interfered with without a permit from SAHRA. It is also borne in mind that the possibility of encountering human remains during subsurface earth moving works anywhere on the landscape is ever present. Although the possibility of encountering previously unidentified burial sites is low within the proposed project site, should such sites be identified during subsurface construction work, they are still protected by applicable legislations and they should be protected.

5.3. Public Monuments and Memorials

The study did not record any public memorials and monuments within the proposed prospecting site.

5.4. Buildings and Structures

The study did not identify any building or structures that are older than 60 years. As such the proposed prospecting does not trigger Section 34 of the NHRA. The farm buildings and structures within the site were confirmed to be younger than 60 years.

Table 2: Summary of Findings

Heritage resource	Status/Findings
Buildings, structures, places and equipment of cultural significance	Buildings and structures in the farm were confirmed to be younger than 60 years
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 within the proposed prospecting site.
Graves and burial grounds	None
Movable objects	None
Overall comment	The surveyed area has no confirmable archaeological resources on the surface, but sub-surface chance finds are still possible. The impacts of the proposed prospecting are considered to be low.

5.5. Assessment of construction impacts

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

Table 3: 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 heritage 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 heritage 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 heritage 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 heritage 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:

Significance Points (SP) = (Magnitude + Duration + Extent) x 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 4: 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 5: **Impact Assessment Matrix**

Impacts and Mitigation measures relating to the proposed project during Operational Phase														
Activity/Aspect	**Impact /**	**Aspect**	**Nature**	**Magnitude**	**Extent**	**Duration**	**Probability**	**Significance before mitigation**	**Mitigation measures**	**Magnitude**	**Extent**	**Duration**	**Probability**	**Significance after mitigation**
Clearing and prospecting	Destruction of archaeological remains	Cultural heritage	-	2	1	1	1	55	• None required because no archaeological remains were recorded • Use chance find procedure to cater for accidental finds	2	1	1	1	4
	Disturbance of graves	Cultural heritage	-	2	1	1	1	4	• None required	2	1	1	1	4
	Disturbance of buildings and structures older than 60 years old	Operational	-	4	1	2	2	14	• None required	4	1	2	2	14
Movement of equipment	Destruction public monuments and plaques	Operational	-	2	1	1	1	4	• Mitigation is not required because there are no public monuments within the mining right application site	2	1	1	4	4

Based on the impact rating, the main impact will be on heritage resources buried beneath the surface. Although the potential of encountering significant heritage resources during prospecting, these are covered by the appended Chance Find Procedure.

5.6. Cumulative Impacts

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 prospecting is considered the total impact associated with the proposed development when combined with other past, present, and reasonably foreseeable future developments projects. An examination of the potential for other projects to contribute cumulatively to the impacts on heritage resources from this proposed prospecting was undertaken during the preparation of this report. The total impact arising from the proposed project (under the control of the applicant), other activities (that may be under the control of others, including other developers, local communities, government) and other background pressures and trends which may be unregulated.

The impacts of the proposed prospecting were assessed by comparing the post-project situation to a pre-existing baseline. Where projects can be considered in isolation, this provides a good method of assessing a project's impact. However, in this case there are several infrastructure developments, including residential, road networks, commercial infrastructure where baselines have already been affected, the proposed housing development will add to the existing impacts in the project area. As such increased development in the project area will have a number of cumulative impacts on heritage resource whether known or covered in the ground. For example, during prospecting phase they will be increase in human activity and movement of heavy drilling equipment and vehicles that could change, alter or destroy heritage resources within and outside the development sites given that archaeological remains occur on the surface. Cumulative impacts that could result from a combination of the proposed prospecting and other actual or proposed future developments in the broader study area include site clearance and the removal of topsoil could result in damage to or the destruction of heritage resources that have not previously been recorded for example abandoned and unmarked graves.

Heritage resources such as burial grounds and graves, archaeological as well as historical sites are common occurrences within the greater study area. These sites are often not visible and as a result, can be easily affected or lost. Furthermore, many heritage resources in the greater study area are informal, unmarked and may not be visible, particularly during the wet season when grass cover is dense. As such, prospecting workers may not see these resources, which results in increased risk of resource damage and/or loss. Earth moving and extraction of gravel have the potential to interact with archaeology, architectural and cultural heritage.

No specific paleontological resources were found in the project area during the time of this study; however, this does not preclude the fact that paleontological resources may exist within the greater study area. As such, the proposed prospecting has the potential to impact on possible paleontological resources in the area. Sites of archaeological, paleontological, or architectural significance were not specifically identified, and cumulative effects are not applicable. The nature and severity of the possible cumulative effects may differ from site to site depending on the characteristics of the sites and variables.

Cumulative impacts that need attention are related to the impacts of clearances and movement of drilling equipment and impacts to buried heritage resources. Allowing the impact of the proposed prospecting to go beyond the surveyed area would result in a significant negative cumulative impact on sites outside the surveyed area. A significant cumulative impact that needs attention is related to stamping by especially construction vehicles during clearance and excavation within the development sites. Movement of heavy prospecting vehicles must be monitored to ensure they do not drive beyond the approved sites. No significant cumulative impacts, over and above those already considered in the impact assessment, are foreseen at this stage of the assessment process. Cumulative impacts can be significant, if prospecting vehicles are not monitored to avoid driving through undetected heritage resources.

5.7. Mitigation

Mitigation is not required for the proposed prospecting; however, the appended chance procedure applies in case of any accidental finds.

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 of 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

Various specialists conducted several Phase 1 Archaeological/ Heritage studies for various infrastructure developments in the project area since 2006. The current study should be read in conjunction with previous Phase 1 Impact Studies conducted in the proposed project area. Although these studies recorded sites of significance for example Pistorius (2004), Van Vollenhoven (2011), Van Ryneveld, (2013), Coetzee (2017, 2019). Pistorius (2013) The studies recorded sites of varying types and significance; however, none were recorded within the proposed prospecting site. The lack of confirmable archaeological sites recorded during the current survey is thought to be a result of the following factor:

1. That proposed prospecting is located within a degraded area and have reduced sensitivity for the presence of high significance physical cultural site remains, be they archaeological, historical, or burial sites, due to previous disturbances resulting from developments and other land uses in the project area.

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 prospecting site was rated **low** because no archaeological and heritage resources were identified during the survey. However, 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 clearance and drilling. (see appended chance find procedure).

8. RECOMMENDATIONS

1. From a heritage perspective supported by the findings of this study, the proposed prospecting is viable. However, the prospecting right application should be approved to proceed as planned under observation that the development dimensions do not extend beyond the proposed site.
2. The footprint impact of the proposed prospecting should be kept to a minimal to limit the possibility of encountering chance finds.
3. Should chance archaeological materials or human remains be exposed during drilling work on any section of the proposed prospecting laydown sites, 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 prospecting 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 development. SAHRA may approve the proposed prospecting to proceed as planned with special commendations to implement the recommendations here in made.

9. CONCLUSIONS

Integrated Specialist Services (Pty) Ltd was appointed by Kimopax (Pty) Ltd to carry out Heritage Impact Assessment for prospecting right application in the Free State Province. In terms of the archaeology and heritage in respect of the proposed development, there are no obvious 'Fatal Flaws' or 'No-Go' areas. However, the potential for chance finds, still remains and the applicant and contractors are advised to be diligent and observant during prospecting of the land site. 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 prospecting right application cannot proceed as planned. It is the considered opinion of the author that the impacts of the proposed prospecting are very low.

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11. APPENDIX 1: CHANCE FIND PROCEDURE FOR PROPOSED PROSPECTING WITHIN MATJHABENG LOCAL MUNICIPALITY AND LEJWELEPUTSWA DISTRICT MUNICIPALITY, FREE STATE PROVINCE

September 2020

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

CHANCE FIND PROCEDURE

INTRODUCTION

An Archaeological Chance Find Procedure (CFP) is a tool for the protection of previously unidentified cultural heritage resources during construction. The main purpose of a CFP is to raise awareness of all mining 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 construction 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 prospecting 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 construction.

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.

BACKGROUND

The proposed prospecting in the Free State Province is subject to heritage survey and assessment at planning stage in accordance with the 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 (2020) on the proposed project site. The AIA/HIA conducted was very comprehensive covering the entire site. The current study (Mlilo

2020) did not record any significant archaeological or heritage resources along the proposed prospecting site.

PURPOSE

The purpose of this Chance Find Procedure is to ensure the protection of previously unrecorded heritage resources within the proposed prospecting 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 digging of foundations and movement of mining equipment. The proposed 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. ISS heritage specialists developed this Chance Find Procedure to define the process which govern the management of Chance Finds during construction. This ensures that appropriate treatment of chance finds while also minimizing disruption of the construction 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 construction scheduling. It is recommended that due to the low to 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 construction.

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.

CHANCE FIND PROCEDURE

General

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

- All mining/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 25m 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 archaeological will be available to examine the remains.
- The project archaeologist will complete a report on the findings as part of the permit application process.
- Once authorisation has been given by SAHRA, the Applicant will be informed when construction activities can resume.

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), ISS 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 accidently 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 company.

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 PROSPECTING SITE

Objective	• 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-Construction Phase								
1	Planning	Ensure all known sites of cultural, archaeological, and historical significance 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
Construction 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 form 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 PHRA.		When necessary	C CECO	SM	ECO	EA EM PM
		Should any remains be found on site that is potentially human remains, the PHRA and South African Police Service should be contacted.		When necessary	C CECO	SM	ECO	EA EM PM
Rehabilitation Phase								
		Same as construction phase.						
Operational Phase								
		Same as construction phase.						

13. APPENDIX 3: HERITAGE MITIGATION MEASURES TABLE

SITE REF	HERITAGE ASPECT	POTENTIAL IMPACT	MITIGATION MEASURES	RESPONSIBLE PARTY	PENALTY	METHOD STATEMENT REQUIRED
Chance Archaeological and Burial Sites	General area where the proposed project is situated is a historic landscape, which may yield archaeological, cultural property, remains. There are possibilities of encountering unknown archaeological sites during subsurface construction work which may disturb previously unidentified chance finds.	Possible damage to previously unidentified archaeological and burial sites during construction phase. • Unanticipated impacts on archaeological sites where project actions inadvertently uncovered significant archaeological sites. • Loss of historic cultural landscape; • Destruction of burial sites and associated graves • Loss of aesthetic value due to construction work • Loss of sense of place Loss of intangible heritage value due to change in land use	In situations where unpredicted impacts occur construction activities must be stopped and the heritage authority should be notified immediately. Where remedial action is warranted, minimize disruption in construction scheduling while recovering archaeological data. Where necessary, implement emergency measures to mitigate. • Where burial sites are accidentally disturbed during construction, the affected area should be demarcated as no-go zone by use of fencing during construction, and access thereto by the construction team must be denied. • Accidentally discovered burials in development context should be salvaged and rescued to safe sites as may be directed by relevant heritage authority. The heritage officer responsible should secure relevant heritage and health authorities permits for possible relocation of affected graves accidentally encountered during construction work.	• Contractor / • Project Manager • Archaeologist • Project EO	Fine and or imprisonment under the NHRA	Monitoring measures should be issued as instruction within the project EMP. PM/EO/Archaeologists Monitor construction work on sites where such development projects commences within the farm.

14. 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.

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.

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.