

**PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT REPORT
FOR PROSPECTING RIGHT APPLICATION FOR VARIOUS
MINERALS (NC12177PR AND NC12215PR) IN ZF MGCAWU
MAGISTERIAL DISTRICT IN KAI! GARIB LOCAL MUNICIPALITY
NORTHERN CAPE PROVINCE**

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Document Information

Item	Description
Proposed development and location	Proposed Prospecting Right Application for various minerals in ZF Mgcawu Magisterial District in Ka!Garib Local Municipality in the Northern Cape Province.
Purpose of the study	To carry out an Archaeological Impact Assessment to determine the presence/absence of cultural heritage sites and the impact of the proposed prospecting right application.
1:50 000 Topographic Map	
Coordinates	See Figure 1
Municipalities	Ka!Garib Local Municipality Northern Cape Provinces.
Predominant land use of surrounding area	Agriculture (livestock rearing) and isolated farmsteads..
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Reference No.	NC30/5/1/1/3/2/1/12177PR and NC12215PR
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Date of Report	28/ 01/ 2019

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, MA. (Archaeology), BA Hons, PDGE and BA & (Univ. of Pretoria) ASAPA (Professional member) with 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, 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 M2 Industrial Minerals (Pty) Ltd. Integrated Specialist Services (Pty) Ltd has no any business, personal, financial or other interest in the proposed prospecting project apart from fair remuneration for the work performed.

Conditions relating to this report

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

This report must not be altered or added to without the prior written consent of the author and M2 Industrial Minerals (Pty) Ltd. This also refers to electronic copies of the report which are supplied for the purposes of inclusion as part

of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

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

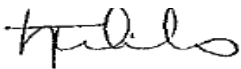
Geographic Co-ordinate Information: Geographic co-ordinates in this report were obtained using a hand-held Garmin Global Positioning System device. The manufacturer states that these devices are accurate to within +/- 5 m.

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

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

The Archaeological and Heritage Impact Assessment Study was carried out within the context of tangible and intangible cultural heritage resources as defined by the SAHRA Regulations and Guidelines as to the authorisation of Prospecting Right application being proposed by M2 Industrial Minerals (Pty) Ltd

Signed by



29/ 01/ 2019

Acknowledgement

The author acknowledges M2 Industrial Minerals (Pty) Ltd for their assistance with project information, and the associated project BID as well as responding to technical queries related to the project. ISS would like to thank all the land owners who provided access to their farms and also provided vital information regarding existence of any heritage resources within their respective farms.

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EXECUTIVE SUMMARY

M2 Industrial Minerals (Pty) Ltd is submitting a Prospecting Right application in respect of Farm 121 portion 1, Angeliers Pan 260 portion 0, Jacomyns Pan 176 portion 0 & 1, Kombaers Brand 177 portion 1 & 2, N'rougas Noord 108 portion 0, 1 & 4, Rok Optel 261 portion 2 & 3, Steyns Puts 178 portion 0 4 in Ka!Garib Local Municipality, Northern Cape Province. The proposed prospecting sites are located near Kenhardt in an area that is predominantly livestock farming (See Figure 1). Various national and provincial legislative arms mandate pre-development assessment to ensure protection of heritage resources. The rich geological and agricultural resources of the project area have also led to numerous commercial farming activities that had robbed parts of the area's pristine environments. The implications of this observation are that whatever heritage resources that still exist in the area must be protected from any developments in an appropriate manner.

Archaeological resources in the general area proposed for the current Prospecting Application stretches in to deep time starting with australopithecines. These australopithecines were gradually displaced by early hominid (*Homo Habilis*) that was later replaced by the early crude stone tool using hominid (*Homo erectus* around 1.8 million years ago). This marked the beginning of the Early Stone Age (ESA), which is not very wide spread in the study area. Nonetheless the area has isolated occurrences of the Middle Stone Age (MSA) industries associated with anatomically modern humans, *Homo sapiens* that replaced the ESA around 250000 years ago. The subsequent replacement of the MSA by Later Stone Age (LSA) occurred from about 20 000 years ago and the new technology is also represented in isolated occurrences. The LSA is triggered a series of technological innovations and social transformations within these early hunter-gatherer societies that included the advent of rock art (paining and engravings), associated with the Khoisan communities. From this period onwards, there has not been significant reports of Early Iron Age (AD200 to 1000) sites in the study area until the post 15th century Ntsuanatsatsi-Uitkomsts (Nguni-speakers) and Olifantsfontein and Buispoort (Sotho-Tswana speakers) period of Late Iron Age that is characterized by stone walling. Key historical events relate to the 19th century encroachment of Boer Trekkers and the aftermaths of Boer-Anglo and European-African military encounters that resulted in the establishment of several towns. These armed encounters left trails of historical battle grounds, cemeteries and unmarked graves that are protected by the South African heritage legislation and must not be disturbed without consultation and approval from national and provincial heritage agencies. Graves in general, and historical (over 60 years) graves in particular, are of high social significance and must be preferably preserved *in situ*. All the same, archaeological resources are known to occur in buried contexts that may only be identifiable during prospecting, such that failure to detect them during field surveys is not absolute evidence of their absence and a clear procedure for reporting chance finds must be followed during prospecting.

This Archaeological Impact Assessment (AIA/HIA) report has been prepared to address requirements of the National Heritage Resources Act, Act 25 of 1999, Section 38. Integrated Specialist Services (Pty) Ltd was retained by M2 Industrial Minerals (Pty) Ltd to conduct this Archaeological and Heritage Impact Assessment (AIA/HIA) Study for the proposed Prospecting Right application in the Ka! Garib Local Municipality of the Northern Cape Province. This report includes an impact study on potential archaeological and cultural heritage resources that may be associated with the proposed prospecting. This study was conducted as part of the specialist input for the Environmental authorisation process. The project information has been passed to ISS research team by the project EAP. Analysis of the archaeological, cultural heritage, environmental and historic contexts of the study area predicted that archaeological sites, cultural heritage sites, burial grounds or isolated artefacts were likely to be present on the affected landscape. The field survey was conducted to test this proposition and verify this prediction within the proposed prospecting site. The general project area is predominantly livestock agriculture.

The report makes the following observations:

- The findings of this report have been informed by desktop data review, field survey and impact assessment reporting which include recommendations to guide heritage authorities in making decisions with regards to the proposed Prospecting Right application.
- The proposed prospecting sites are relatively accessible and the field survey was effective enough to cover most sections of the project receiving environments. However, some sections were not accessible due to restricted access to private land.
- The immediate project area is predominantly agricultural and isolated farmsteads.
- The study did not record any archaeological sites within the proposed prospecting sites.

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

- ❖ The prospecting teams must be inducted on the possibility of encountering archaeological resources and human remains that may be accidentally exposed during clearance at the prospecting site prior to commencement of work on the sites in order to ensure appropriate mitigation measures and that course of action is afforded to any chance finds (in accordance with the chance find procedure in Appendix 1).
- ❖ If archaeological materials are uncovered, work must cease immediately and the SAHRA be notified and activity should not resume until appropriate management provisions are in place.
- ❖ The findings of this report, with approval of the SAHRA / PHRA, may be classified as accessible to any interested and affected parties within the limits of the legislations.

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

The assessment reached the following conclusions:

1. The project area was generally not preferred by prehistoric communities and colonial settlers because it is dry and it has not received much attention by researchers. There are isolated farmsteads which are most likely older than 60 years however at this prospecting stage buildings, cemeteries and any known heritage resources are protected. No prospecting activities are allowed within 100m from farmsteads and cemeteries.

Recommendations

1. The proposed prospecting may be allowed to proceed as planned from a heritage perspective.
2. Land owners who did not provide access during this survey must be requested to declare any known heritage resources in their farms.
3. Should land owners fail to cooperate in declaring archaeological resources in their farms, a professional archaeologist must be retained to monitor during prospecting at sampled sites.
4. It is also advised that the Archaeology, Palaeontology and SAHRA Meteorites Unit is alerted when site work begins.
5. Strict and clear reporting procedures for chance findings must be followed by M2 Industrial Minerals (Pty) Ltd and its contractors throughout the whole period of prospecting (see appended Chance Find Procedure).

ABBREVIATIONS

AIA	Archaeological Impact Assessment
ECO	Environmental Control Officer
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EM	Environmental Manager
EMP	Environmental Management Plan
HIA	Heritage Impact Assessment
ISS	Integrated Specialist Services (Pty) Ltd
LIA	Late Iron Age
NHRA	Nation Heritage Resources Act, Act 25 of 1999
PM	Project Manager
PHRA	Provincial Heritage Resources Agency
SM	Site Manager
SAHRA	South African Heritage Resources Agency

KEY CONCEPTS AND TERMS

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 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

1 INTRODUCTION

Background

Most heritage sites occur within communities, whose development should not be neglected in the name of heritage preservation but should be encouraged and embraced within legal and adaptive management frameworks (Carter and Grimwade 1997; Salafsky *et al* 2001). This case is true for the entire prospecting area, which hosts palaeontological, archaeological, historical, natural and contemporary heritage resources. M2 Industrial Minerals (Pty) Ltd is submitting a Prospecting Right application in respect of several properties in the Ka! Garib Municipality of Northern Cape Province.

The purpose of this archaeology study is to assess presence/absence of archaeological remains including heritage resources on the proposed prospecting footprint. The study was designed to ensure that any significant archaeological or cultural physical property or sites are located and recorded, and site significance is evaluated to assess the nature and extent of expected impacts from the proposed prospecting. The assessment includes recommendations to manage the expected impact of the proposed prospecting activities. The report includes recommendations to guide heritage authorities in making appropriate decision with regards to the environmental approval process for the prospecting right application. The report concludes with detailed recommendations on heritage management associated with the prospecting project. Integrated Specialist Service (Pty) Ltd (ISS), an independent consulting firm, conducted an assessment; research and consultations required for the preparation of the archaeological and heritage impact report in accordance with its obligations set in the NHRA as well as the environmental management legislations.

In line with SAHRA guidelines, this report, not necessarily in that order, provides:

- 1) Management summary
- 2) Methodology
- 3) Information with reference to the desktop study
- 4) Map and relevant geodetic images and data
- 5) GPS co-ordinates
- 6) Directions to the site
- 7) Site description and interpretation of the cultural area where the project will take place
- 8) Management details, description of affected cultural environment, photographic records of the project area
- 9) Recommendations regarding the significance of the site and recommendations regarding further monitoring of the site.
- 10) Conclusion

Description of the proposed project

The proposed project will entail drilling, site camp establishment, ablution facility, accommodation, equipment storage, sample storage facilities. These activities will be done in phases within the same 78 895 ha.

Receiving Environment

This part of the Northern Cape is known as Bushmanland and the vegetation is described as Nama-Karoo. This comprises dwarf bushes, grasses and seasonal flowering annuals on gravel soils. It is semiarid to arid with frequent prolonged droughts. Small stock farming is commonly practiced in the region. There are also numbers of farm managed springbok and gemsbok. There are large boulders and calcrete in some areas alongside the railway line (Plate 1). They appear to have been uncovered during the construction of the line, which in certain areas cuts into the substrate. The calcrete seems to be lying just beneath the soil surface. In his discussion of the archaeology of Bundu Pan (to the south of the proposed substation), Kiberd notes with respect to the calcretes at the pan, that they indicate “fluctuating, short-lived wet and dry environments”.

Location of the proposed development

The proposed Prospecting Right Application Area is located in the Northern Cape Province. Farm 121 portion 1, Angeliers Pan 260 portion 0, Jacomyns Pan 176 portion 0 & 1, Kombaers Brand 177 portion 1 & 2, N'rougas Noord 108 portion 0, 1 & 4, Rok Optel 261 portion 2 & 3, Steyns Puts 178 portion 0 in ZF Mgcawu Magisterial District in Kai! Garib Local Municipality

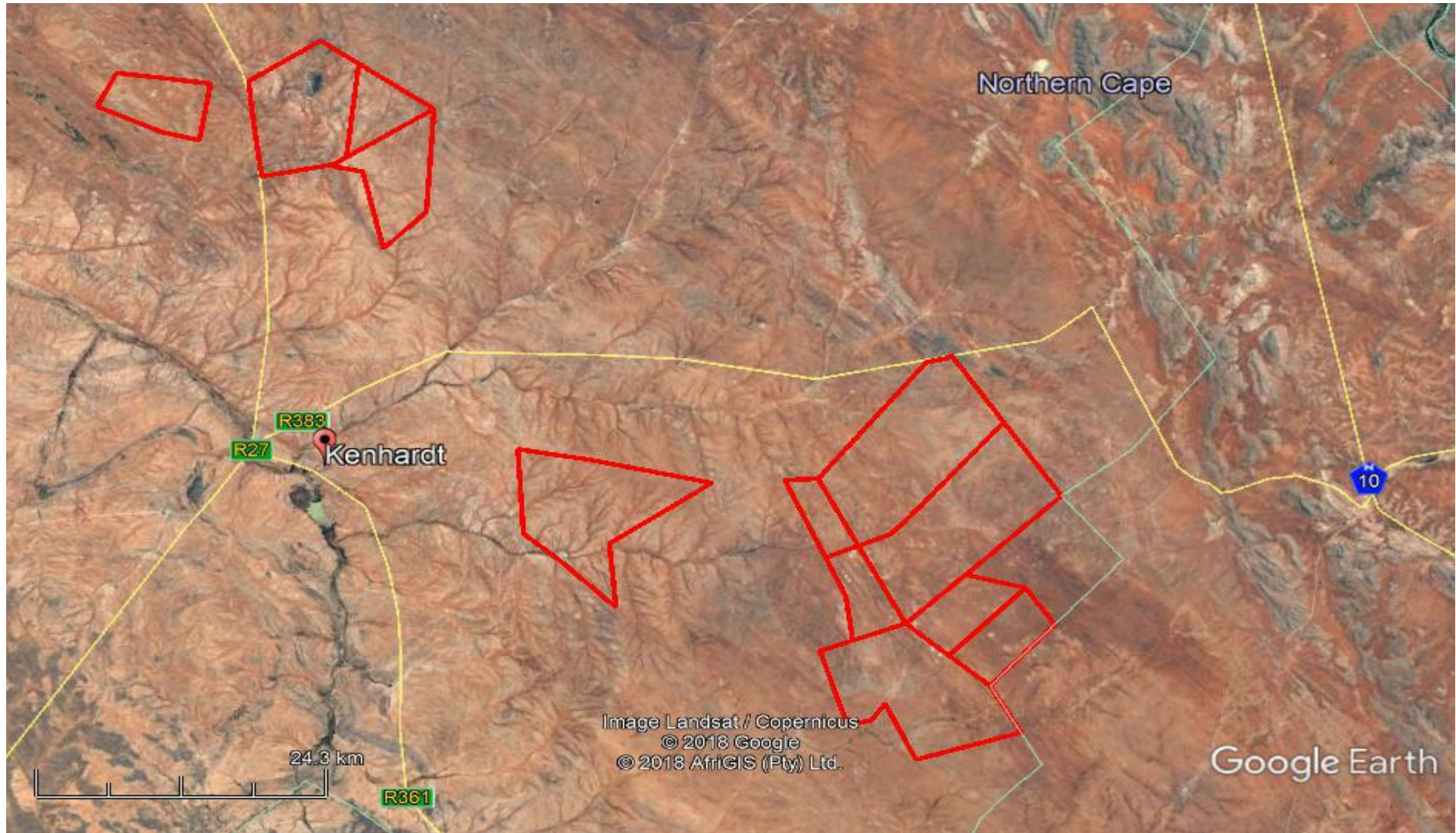


Figure 1: Proposed prospecting right application sites (M2 Industrial Minerals (Pty) Ltd)

2 LEGAL REQUIREMENTS

Relevant pieces of legislations are to the present study are presented here. Under the National Heritage Resources Act, 1999 (Act 25 of 1999) (NHRA), Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002), and the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) and 2014 Regulations, an AIA or HIA is required as a specialist sub-section of the EIA.

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 proposed development is a listed activity in terms of Section 38 of the NHRA which stipulates that the following development categories require a HIA to be conducted by an independent heritage management consultant:

- Construction of a road, wall, powerline, 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 NHRA also requires the submission of a heritage impact assessment report for authorization purposes to the responsible heritage resources agencies (SAHRA/PHRAs).

Related to Section 38 of the NHRA are Sections 34, 35, 36 and 37. Section 34 stipulates that no person may alter, damage, destroy, relocate etc. any building or structure older than 60 years, without a permit issued by SAHRA or a provincial heritage resources authority. Section 35 (4) of the NHRA stipulates that no person may, without a permit issued by SAHRA, destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object. This section may apply to any significant archaeological sites that may be discovered before or during construction. This means that any chance find must be reported to SAHRA or PHRA

(the relevant PHRA), 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 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 likely discovery of burials or graves by the developer or his contractors. Section 37 of the NHRA deals with public monuments and memorials which exist in the proposed project area.

In addition, the new EIA Regulations (4 December 2014) promulgated in terms of NEMA (Act 107 of 1998) determine that any environmental 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 M2 Industrial Minerals (Pty) Ltd, the environmental consultant, SAHRA or PHRA and interested and affected parties about existing heritage resources that may be affected by the proposed prospecting, and to recommend mitigatory measures aimed at reducing the risks of any adverse impacts on these heritage resources.

Assessing the Significance of Heritage Resources

The appropriate management of cultural heritage resources is usually determined on the basis of their assessed significance as well as the likely impacts of any proposed developments. Cultural significance is defined in the Burra Charter as meaning aesthetic, historic, scientific, or social value for past, present, or future generations (Article 1.2). Social, religious, cultural, and public significance are currently identified as baseline elements of this assessment, and it is through the combination of these elements that the overall cultural heritage values of the site of interest, associated place or area are resolved.

Not all sites are equally significant and not all are worthy of equal consideration and management. The significance of a place is not fixed for all time, and what is considered of significance at the time of assessment may change as similar items are located, more research is undertaken and community values change. This does not lessen the value of the heritage approach, but enriches both the process and the long-term outcomes for future generations as the nature of what is conserved and why, also changes over time (Pearson and Sullivan 1995:7). This assessment of the Indigenous cultural heritage significance of the Site of Interest as its environments of the study area will be based on the views expressed by the traditional authority and community representatives, consulted documentary review and physical integrity.

African indigenous cultural heritage significance is not limited to items, places or landscapes associated with pre-European contact. Indigenous cultural heritage significance is understood to encompass more than ancient archaeological sites and deposits, broad landscapes, and environments. It also refers to sacred places and story sites, as well as historic sites, including mission sites, memorials, and contact sites. This can also refer to modern sites with particular resonance to the indigenous community. The site of interest considered in this project falls within this realm of broad significance.

Archaeological sites, as defined by the National Heritage Resources Act (Act 25 of 1999) are places in the landscape where people once lived in the past – generally more than 60 years ago – and have left traces of their presence behind. In South Africa, archaeological sites include hominid fossil sites, places where people of the Earlier, Middle and Later Stone Age lived in open sites, river gravels, rock shelters and caves, Iron Age sites, graves, and a variety of historical sites and structures in rural areas, towns and cities. Palaeontological sites are those with fossil remains of plants and animals where people were not involved in the accumulation of the deposits. The basic principle of cultural heritage conservation is that archaeological and other heritage sites are valuable, scarce and non-renewable. Many such sites are unfortunately lost on a daily basis through infrastructure developments such as powerlines, roads and other destructive economic activities such as mining and agriculture. This true for the Ka! Garib Municipality (proposed project area) whose main economic activities is agriculture. It should be noted that once archaeological sites are destroyed, they cannot be replaced as site integrity and authenticity is permanently lost. Archaeological heritage contributes to our understanding of the history of the region and of our country and continent at large. By preserving links with our past, we may be able to appreciate the role past generations have played in the history of our country and the continent at large.

Categories of Significance

Rating the significance of archaeological sites, and consequently grading the potential impact on the resources is linked to the significance of the site itself. The significance of an archaeological site is based on the amount of deposit, the integrity of the context, the kind of deposit and the potential to help answer present research questions. Historical structures are defined by Section 34 of the National Heritage Resources Act, 1999, while other historical and cultural significant sites, places and features, are generally determined by community preferences. The guidelines as provided by the NHRA (Act No. 25 of 1999) in Section 3, with special reference to subsection 3 are used when determining the cultural significance or other special value of archaeological or historical sites. In addition, ICOMOS (the Australian Committee of the International Council on Monuments and Sites) highlights four cultural attributes, which are valuable to any given culture:

Aesthetic Value:

Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria include consideration of the form, scale, colour, texture and material of the fabric, the general atmosphere associated with the place and its uses and also the aesthetic values commonly assessed in the analysis of landscapes and townscape.

Historical Value:

Historic value encompasses the history of aesthetics, science and society and therefore to a large extent underlies all of the attributes discussed here. Usually a place has historical value because of some kind of influence by an event, person, phase or activity.

Scientific Value:

The scientific or research value of a place will depend upon the importance of the data involved, on its rarity, quality and on the degree to which the place may contribute further substantial information.

Social Value:

Social value includes the qualities for which a place has become a focus of spiritual, political, national or other cultural sentiment to a certain group. It is important for heritage specialist input in the EIA process to take into account the heritage management structure set up by the NHR Act. It makes provision for a 3-tier system of management including the South Africa Heritage Resources Agency (SAHRA) at a national level, Provincial Heritage Resources Authorities (PHRAs) at a provincial and the local authority. The Act makes provision for two types or forms of protection of heritage resources; i.e. formally protected and generally protected sites:

Formally Protected Sites

- Grade 1 or national heritage sites, which are managed by SAHRA
- Grade 2 or provincial heritage sites, which are managed by the PHRA.
- Grade 3 or local heritage sites.

General Protection

- Human burials older than 60 years.
- Archaeological and palaeontological sites.
- Shipwrecks and associated remains older than 70 years.
- Structures older than 60 years.

The certainty of prediction is definite, unless stated otherwise and if the significance of the site is rated high, the significance of the impact will also result in a high rating. The same rule applies if the significance rating of the site is low. The significance of archaeological sites is generally ranked into the following categories:

Significance Rating Action

No significance: sites that do not require mitigation.

Low significance: sites, which may require mitigation.

2a. Recording and documentation (Phase 1) of site; no further action required

2b. Controlled sampling (shovel test pits, auguring), mapping and documentation (Phase 2 investigation); permit required for sampling and destruction

Medium significance: sites, which require mitigation.

3. Excavation of representative sample, C14 dating, mapping and documentation (Phase 2 investigation); permit required for sampling and destruction [including 2a & 2b]

High significance: sites, where disturbance should be avoided.

4a. Nomination for listing on Heritage Register (National, Provincial or Local) (Phase 2 & 3 investigation); site management plan; permit required if utilised for education or tourism

High significance: Graves and burial places

4b. Locate demonstrable descendants through social consulting; obtain permits from applicable legislation, ordinances and regional by-laws; exhumation and reinternment [including 2a, 2b & 3]

Furthermore, the significance of archaeological sites was based on six main criteria:

- Site integrity (i.e. primary vs. secondary context),
- Amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures),
- Density of scatter (dispersed scatter),
- Social value,
- Uniqueness, and
- Potential to answer current and future research questions.

An important aspect in assessing the significance and protection status of a heritage resource is often whether or not the sustainable social and economic benefits of a proposed development outweigh the conservation issues at stake. When, for whatever reason the protection of a heritage site is not deemed necessary or practical, its research potential must be assessed and mitigated in order to gain data /information, which would otherwise be lost.

Table 1: Evaluation of the proposed prospecting as guided by the criteria in NHRA, MPRDA 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	No
	Construction of bridge or similar structure exceeding 50m in length	No
	Development exceeding 5000 sq. m	No
	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	No
NHRA Section 35	Impacts on archaeological and paleontological heritage resources	Subject to identification during Phase 1 walk down survey
NHRA Section 36	Impacts on graves	Yes
NHRA Section 37	Impacts on public monuments	No
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

Other relevant legislations

The Human Tissue Act

Human Tissue Act of 1983 and Ordinance on the Removal of Graves and Dead Bodies of 1925 Graves 60 years or older are heritage resources and fall under the jurisdiction of both the National Heritage Resources Act and the Human Tissues Act of 1983. However, graves younger than 60 years are specifically protected by the Human Tissues Act (Act 65 of 1983) and the Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925) as well as any local and regional provisions, laws and by-laws. Such burial places also fall under the jurisdiction of the National Department of Health and the Provincial Health Departments. Approval for the exhumation and re-burial must be obtained from the relevant Provincial Member of the Executive Committee (MEC) as well as the relevant Local Authorities.

Terms of Reference

The author was instructed to conduct an AIA/HIA study addressing the following issues:

- Archaeological and heritage potential of the proposed prospecting sites including any known data on affected areas;
- Provide details on methods of study; potential and recommendations to guide the PHRA/ SAHRA to make an informed decision in respect of authorisation of the proposed prospecting rights application.
- Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located in and around the proposed prospecting sites;
- Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value;
- Describe the possible impact of the proposed 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;
- Review applicable legislative requirements;

PHOTOGRAPHIC PRESENTATION OF THE PROJECT SITES



Plate 1: Photo 1: View of proposed prospecting site (Photograph © by Author 2019)



Plate 2: Photo 2: View of farm tracks which are characteristic of the project area (Photograph © by Author 2019). Note that this dry landscape did not attract permanent settlements by prehistoric communities.



Plate 3 Photo 3: View of proposed prospecting right application area (Photograph © by Author 2019). Note previous diggings whose age could not be established during the survey.



Plate 4: Photo 4: View of farm tracks which are typical of the project area (Photograph © by Author 2019).



Plate 5: Photo 5: View of sections of the proposed project area(Photograph © by Author 2019).



Plate 6: Photo 6: View of some sections of the proposed project area (Photograph © by Author 2019).



Plate 7 Photo 7: View of a farm infrastructure typical of the project area (Photograph © by Author 2019).



Plate 8: Photo 8: View of seemingly cleared sections of the project area (Photograph © by Author 2019). Note that such dry areas did not attract prehistoric human settlements.



Plate 9: Photo 9: View of typical farm cemetery (Photograph © by Author 2019). Note that this cemetery is located outside the prospecting area but serves as an example of burial sites that may occur in the project area



Plate 10 Photo 10: View of typical farmsteads often located near farm roads (Photograph © by Author 2019).



Plate 11: Photo 11: View of a typical farmstead in the project area (Photograph © by Author 2019). Note that this farmstead is located outside the proposed project area but is serving as an example of isolated farmsteads that occur in the project area.



Plate 12 Photo 12: View of locked farm gate (Photograph © by Author 2019). Note that the survey team could not access some farms because of restricted entry.



Plate 13: Photo 13: View of locked farm gate (Photograph © by Author 2019).



Plate 14 Photo 14: View of some sections of the proposed project area(Photograph © by Author 2019).



Plate 15 Photo 15: View of previous diggings in the project area (Photograph © by Author 2019).



Plate 16 Photo 16: View of locked gates which characterise the entire project area (Photograph © by Author 2019). Note that access to farms is restricted due to the scourge of farm robberies and killings

3 METHODOLOGY

Relevant published and unpublished sources were consulted in generating desktop information for this report. This included online databases such as the UNESCO website, Google Earth, Google Scholar and SAHRIS. Previous HIA in the project area were also consulted. A number of published works on the archaeology, history and palaeontology were also consulted. This included dedicated archaeological, paleontological and geological works by (Breutz 1956; 1968; 1987; Button 1971; Clarck 1971; Eriksson *et al.* 1975; Bertrand and Eriksson 1977; Humphreys 1978; Humphreys and Thackeray 1983; Beaumont and Vogel 1984; Beaumont and Morris 1990; Beaumont 1999; Holmgren *et al.* 1999; Johnson *et al.* 1997; Peabody 1954; Shillington 1985; Wills 1992; Young 1934; 1940, Huffman 2007, Mason 1962). Thus, the proposed Prospecting Application by M2 Industrial Minerals (Pty) Ltd was considered in relation to the broader landscape, which is a key requirement of the ICOMOS Guidelines.

The proposed Prospecting Right application requires clearance and authorisation from government compliance agencies including the heritage authority of SAHRA. The objectives of this report are to:

- Fulfil the legislative requirements of the National Heritage Resources Act, Act 25 of 1999.
- Identify and describe, (in terms of their conservation and / or preservation importance) sites of cultural and archaeological importance that may be affected by the proposed prospecting activities. This study searched for sites and features of traditional historical, social, scientific, cultural, and aesthetic significance within the affected study area; the identification of gravesites.
- Assess the significance of the resources where they are identified.
- Evaluate the impact thereon with respect to the socio-economic opportunities and benefits that would be derived from the proposed prospecting.
- Provide guidelines for protection and management of identified heritage sites and places (including associated intangible heritage resources management that may apply).
- Consult with the affected and other interested parties, where applicable, in regard to the impact on the heritage resources in the project's receiving environment.
- Make recommendations on mitigation measures with the view to reduce specific adverse impacts and enhance specific positive impacts on the heritage resources.
- Take responsibility for communicating with the SAHRA and other authorities in order to obtain the relevant permits and authorization with reference to heritage aspects.

The following tasks were undertaken:

- Preparation of a predictive model for archaeological heritage resources in the study area.

- A review and gap analysis of archaeological, historical, and cultural background information, including possible previous heritage consultant reports specific to the affected project area, the context of the study area and previous land use history as well as a site search;
- Field survey of the proposed prospecting sites in order to test the predictive model regarding that heritage sites in the area;
- Physical cultural property recording of any identified sites or cultural heritage places;
- Identification of heritage significance; and
- Preparation of AIA/HIA report with recommendation, planning constraints and opportunities associated with the proposed prospecting.

Walking surveys were conducted in order to identify and document archaeological and cultural sites within the proposed Prospecting Right application site. Isolated farmsteads, grazing lands; farm roads and main road infrastructures, distribution & transmissions lines and other auxiliary infrastructures dominate the affected project area. The entire project area was accessible through a network of main roads and farm roads as well as tracks used to access farmsteads. Geographic coordinates were obtained with a handheld Garmin GPS global positioning unit. Photographs were taken as part of the documentation process during field study.

3.1 Assumptions and Limitations

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 noted that archaeological deposits (including graves and traces of archaeological heritage) usually occur below the ground level. Should artefacts or skeletal material be revealed at the site during prospecting, 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. The author assumes no responsibility for compliance with conditions that may be required by SAHRA in terms of this report.

The field survey did not include any form of subsurface inspection beyond the inspection of burrows, road cut sections, and the sections exposed by erosion and previous diggings. Some assumptions were made as part of the study and therefore some limitations, uncertainties and gaps in information would apply. It should however, be noted that these do not invalidate the findings of this study in any significant way: The study area is predominately livestock farming, sheep and isolated farmsteads are very vulnerable. As such the study team could not access the entire prospecting sites. In addition, consultations were disturbed by poor network coverage in the study area.

- The proposed prospecting activities will be limited to specific right of site as detailed in the development layout (Figure 1& 2).
- No prospecting activities will take place within 100m from any farmstead and heritage resources such as cemeteries or isolated graves
- The prospecting team to provide link and access to the proposed site by using the existing access roads and there will be no prospecting beyond the demarcated site.
- No excavations or sampling were undertaken, since a permit from heritage authorities is required to disturb a heritage resource. As such the results herein discussed are based on surficially observed indicators. However, these surface observations concentrated on exposed sections such as road cuts.
- This study did not include any ethnographic and oral historical studies nor did it investigate the settlement history of the area.

3.2 Consultations

Public consultations are being conducted by an independent practitioner and issues raised by Interested and Affected parties will be presented to the EAP who will in turn forward them to the relevant specialists. As such issues relating to heritage will be forwarded to the heritage specialist. Integrated Specialist Services (Pty) Ltd team consulted farm owners (directly affected by the proposed prospecting) in respect of heritage resources such as graves, historical buildings and structures located in their farms. The study team consulted land owners regarding existence of archaeological remains, graves, historical buildings and any other heritage resources within their farms. Some farmers responded but we are still waiting for feedback from other landowners to have a clear picture of the heritage character of their farmsteads and their surroundings. Although the study team could not access all the farmsteads within the study area, it is important to note that these are already protected whether known or unknown because no prospecting activities are allowed within 100m from a cemeteries and farmsteads. The following land owners were consulted during the study.

Land	Land Owner	Contact
Farm 121 Ptn 1	Wilcaris (Pty) Ltd	hendri@hen1.co.za 0827831233
Angeliers Pan 260 Ptn no.	Ben Gobbler Trust	Mike Lobschers Johan 0731550137 Box 65 Kenhardt 8900
Jacomyns Pan 176 Ptn 0	Swartputs Trust	Farmers Union
Jacomyns Pan 176 Ptn 1	Liebenberg Johannes Christiaan Rudolf	082 337 7571 jliebenberg@gmail.com
Kombaers Brand 177 Ptn1	Liebenberg Johannes Christiaan Rudolf	082 337 7571
Kombaers Brand 177 Ptn 2	Swartputs Trust	Farmers Union
N'rougas Noord 108 PTN 0	P J Van Wyk Trust	
N'rougas Noord 108 Ptn 1 0	Roorich Strausss Family	Veronica
N'rougas Noord 108 Ptn 4	Wilcaris Pty Ltd	hendri@hen1.co.za 0827831233
Rok Optel 261 PTN 2	Toit Andrew Vreledu	P.O.Box 2613 Upington 8800 0823733841, 0544913053 plankies@farm-book.com
Rok. Optel 261 Ptn 3	Pool Christiaan Frederick	riaanpool@telkomsa.net
Styns Puts 178 PTN 0	Sidi Barrani Trust	Farmers Union Rep

4 CULTURE HISTORY BACKGROUND OF THE PROJECT AREA

South Africa is one of the privileged countries in the world to have a very long and varied history of human occupation (Deacon and Deacon 1999). The Northern Cape is one of the regions in South Africa with the richest Stone Age scatters on the landscape, yet it remains poorly researched and understood (Lombard 2012). Stone Age archaeology is prevalent in the larger geographical area, but generally, the Kenhardt area does not seem to have attracted much of habitation. Perhaps the lack of large rock-shelters, the domination of exposed environments and the lack of preferred stone raw materials for tools, dissuaded early man (ESA ~ 2.6 million to 250 000 years ago) from occupying this part of the area. Further to the north west of this area, the ESA is very well represented at sites such as Kathu Pan 1, Kathu Townlands, Bestwood 1 (Wilkins and Chazan 2012; Chazan et al. 2012; Walker et al. 2014) and Wonderwerk Cave (Thackeray et al. 1981). All of the above sites produced well-made Acheulean hand axes and cleavers, as well as Fauresmith lithic materials that are transitional between the Acheulean (ESA) and the MSA.

The ESA is generally associated with the earlier Oldowan industry (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 Fauresmith Industry is characterized by a prepared core technology that produced both blades and points, making it transitional between the ESA and the MSA (~ 250 000 to 40-25 000 years ago) (Porat et al. 2010; Wilkins and Chazan 2012; Walter et al. 2014). Until recently, the Fauresmith Industry was poorly defined, being mostly identified based on the co-occurrence of Levallois points and hand axes (Beaumont and Vogel 2006: 224), and prepared cores, blades, and 'side-scrapers on flakes' (Beaumont 1990:79).

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). In the area under study, MSA material mostly occur on the same sites with ESA material, suggesting longer sequences of occupation that have allowed researchers to probe into the behavioural changes that influenced these technological developments (Porat et al. 2010; Walker et al. 2014). Thus, characteristic MSA have been reported at sites such as Kathu Pan 1 (Wilkins and Chazan 2012), Wonderwerk Cave (Beaumont and Vogel 2006), but they also have been reported in isolated clusters (van Vollenhoven and Pelsler 2012). At Wonderwerk Cave, the MSA component was associated with pieces of haematite and several incised stone slabs, most with curved parallel lines that add to the behavioural shifts that went beyond stone tools and ushered in the appreciation of art (Beaumont and Vogel 2006).

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). Not much is known about these rock shelters, save for the fact that they have LSA material that include rock paintings (Morris 2010; van der Walt 2013: 18).

In terms of characterization, the lithic succession at Wonderwerk Cave serves as a benchmark for the Stone Age sequence of the Northern Cape (Beaumont and Vogel 2006; Kusel *et al.* 2009). The sequence comprises an uppermost LSA sequence that contains Ceramic LSA, Wilton and Oakhurst industries. Some researchers have named the earlier LSA industry of the region as the Oakhurst industry (some have labelled this local variant the Kuruman), characterized by rare retouched artefacts, most of which are large scrapers that are rectangular with retouch on the side. A number of Stone Age sites and scattered finds of Stone Age material were identified by Kusel *et al.* (2009) and Archaetnos close to the town of Hotazel and adjacent to the Gamagara River during 2011. However, it is not necessary to belabour the descriptions of these industries, especially because no LSA remains were recovered within the proposed prospecting sites. All the same, variants of the LSA industries were located at other sites such as Kathu Pan 1 (Porat *et al.* 2013) have been reported. At this site, ostrich eggshell fragments, beads and lithic artifacts attributed to Wilton and Albany industries were found. It also important to note that, it is still possible to encounter isolated finds during construction and when this happens, the procedure (described in detail below) for reporting chance finds must be followed.

Other than the Wonder Cave the Northern Cape Province is characterized by a general scarcity of cave sites. There is an abundance of inherently short term open air sites (Parson 2003) These assemblages, all of which are associated with ceramics, are described as belonging to either the Swartkop (hunters) or the Doornfontein Industry (Herders) (Beaumont & Morris 1990; Beaumont *et al.* 1995). Most of these open air sites consist of a collection of stone artefacts and it is difficult to distinguish if the sites belonged to herders or hunter gatherers. Beaumont *et al.* (1995) argues that the Swartkop Industry is characterized by a formal component almost identical to that of the preceding local Wilton Complex, namely the Springbokoog. All Swartkop sites occur close to pans for example the Bundu pan south east of the project area, streambeds or other potential water sources, on low kopjes or in deflation hollows (Beaumont *et al.* 1995). In contrast the contemporary Doornfontein Industry consists of mainly amorphous (shapeless) lithic artefacts, often manufactured on quartz and almost no formal tools (Beaumont *et al.* 1995). The implication is that the Wilton Complex gave direct rise to the Swartkop Industry approximately 2000 years ago. Swartkop assemblages are described as having the following elements in common: they are characterized by cryptocrystalline silicates, contain high frequencies of blade flakes and backed blades and also associated with undecorated, grass tempered ceramics (Beaumont & Vogel 1989).

The raw material used for stone tool production of the LSA industries constitute four basic types: chert, quartz, quartzite and banded shale (Humphreys and Thackeray 1983). The chert includes siliceous types such as chert, agate, chalcedony and jasper, which are essentially fine grained raw materials. Quartz is equally fine grained but tends to be very brittle. The flake implements of the MSA were replaced by the long small blades of the Later Stone Age (LSA) from 20 000 years onwards. However, the traditional life style did not change significantly in a very long time (Deacon and Deacon 1999). Assemblages provisionally assigned to the Doornfontein Industry, are associated with groups of people practicing some form of herding during most of the last 2000 years (Beaumont *et al.* 1995: 247–8). Doornfontein assemblages are generally described as including predominantly shapeless lithic flakes, with a formal lithic component.

Information on the pre-colonial archaeology of the study area is largely derived from a number of impact assessment reports which have been undertaken in the last few years. The desktop study revealed that very little scientific archaeological work had been done in the project area and the small settlements in the general study area, however due to infrastructure and mining developments in the last few years several heritage studies have been conducted in the area, as part of the EIA authorization process, eg Kaplan (2008, 2010) and Webly 2010). Studies have revealed that archaeological remains mostly consist of thin surface scatters of LSA, MSA and ESA lithic assemblages, although there have been rare exceptions where larger scatters do occur.

Iron Age

While there is some evidence that the EIA continued into the 15th century in the South African Lowveld, on the escarpment it had ended by AD1100. The Highveld became active again from the 15th century onwards due to a gradually warmer and wetter climate. From here communities spread to other parts of the interior. This later phase, termed the Late Iron Age (LIA), was accompanied by extensive stonewalled settlements, such as the Thlaping capital Dithakong, 40 km north of Kuruman (De Jong 2010: 35-36).

Sotho-Tswana and Nguni societies, the descendants of the LIA mixed farming communities, found the region already sparsely inhabited by the Late Stone Age (LSA) Khoisan groups. Most of them were eventually assimilated by LIA communities and only a few managed to survive, such as the Korana and Griqua. This period of contact is sometimes known as the Ceramic Late Stone Age and is represented by sites such as the Blinkklipkop specularite mine near Postmasburg and finds at the Kathu Pan (De Jong 2010: 36). No known Iron Age archaeological sites are located in the proposed prospecting area.

Historical

This Middle Orange River was densely inhabited in pre and proto colonial times because it is made up of several islands that were preferred by the herders because of the natural protection from wild animals and stock thieves

(Penn 1995; Smith and Metelerkamp 1995). In addition, the resources of the river were shared by hunter gatherers, while the area west of the Langeberg, (located to the east of Upington near the Orange River), was also occupied by Iron Age groups particularly the BaTlhaping, whose influence reached as far down the river as Upington (Morris 1992). By the early eighteenth century, the Khoekhoe and the San hunter gatherers had reached a form of stability in the region. As the colonial frontier expanded northwards during the eighteenth century, 'Bastaards' (persons of white/Khoe or white/slave parentage) and 'Bastaard Hottentots' (persons of slave/Khoe parentage) gradually moved away towards Namaqualand and eventually also focused on the Orange River as a sanctuary from colonial rule (Penn 1995: 48).

Due to the introduction of loan farms, the Orange River became increasingly complicated in the second half of the eighteenth by an influx of newcomers wishing to avoid the colonial powers at the Cape. By 1870 Trekboers had reached the Kalahari basin (Penn 1995). This marked a period of northward colonial invasion and disruption of the social and political fabric of the Orange River valley which previously had accommodated the herders and San hunter-gatherers. Other than Treboers, European game hunters and livestock thieves were extremely violent there by disrupting the stability along the Orange River valley (Penn 1995: 51–8). Consequently, such a state of contact and interaction inevitably lead to sociocultural stress and transformation (Webley 2009)

In terms of prehistoric mining in the general project area, radiocarbon dates indicate that specularite and red ochre mining at Blinkklipkop and Doornfontein near Postmansburg in the Northern Cape began some time before 1200 B P (Humphreys and Thackeray 1983). The evidence from Blinkklipkop indicates that pottery appeared in the Postmasburg area by this date (1200 BP). This is older than the previously suggested date of only 400 BP. The importance of Blinkklipkop in the context of the history of the Northern Cape is thus to provide evidence that domestic animals and pottery were present in the region by 1200 BP. It also serves to remind that historically in the last few hundred years in the Northern Cape involves a complex interaction of at least three different peoples in the region at the time of the arrival of Europeans in the eighteenth century.

According to Smith (1995), Gordonia and lower Orange River area was one of the last frontiers of resistance that faced European settlers who began to encroach into the remoter areas of the Northern Cape by the mid-18th century. As indicated the emergence of the Griquas and penetration of the Korana and early white communities from the south-west resulted in a period of instability in the Northern Cape that began in the late 18th century and effectively ended with the settlement of white farmers in the interior. This period is known as the *Difaqane* or *Mfecane* and the Northern Cape Province was not spared from the consequences of these upheavals, this however, occurred in the 1820s much later than the rest of Southern Africa. The Mfecane in the Northern Cape was triggered by the incursion of displaced refugees associated with the Tlokwa, Fokeng, Hlakwa and Phuting tribal groups.

Consequently, Difaqane coincided with the infiltration of the interior of South Africa by white traders, hunters, explorers and missionaries who eventually paved the way for colonists.

The Great Trek of the Boers from the Cape in 1836 brought large numbers of Voortrekkers up to the borders of large regions of Bechuanaland and Griqualand West, thereby clashing with many Tswana groups and also the missionaries of the London Mission Society. The conflict between Boer and Tswana communities escalated in the 1860s and 1870s when the Korana and Griqua communities became involved and later also the British government. The conflict mainly was centered on land claims by competing communities and the KhoiSan were and are still the losers.

In 1868 the first Korana war broke out which saw a detachment of professional soldiers along with locals and Bastard soldiers loyal to the government break up a number of dissident Korana gangs and see their leaders sent to Robben island. The Chief of the Korana, Klaas Lukas who lived at what is now Upington requested that a Christian Mission be set up to bring some measure of political stability. This heralded the beginnings of the town of Upington. After a brief period of relative stability, the Korana reverted to their old ways having been left destitute by a serious drought in 1877. The entire Korana nation and allies led by Klaas Lucas rebelled against the government in a short and vigorous war. The colonial forces made use of artillery eventually breaking up the rebel forces. The leaders of the Korana nation were imprisoned on Robben Island where Klaas Lucas eventually died. By the time other Korana Chiefs had been released in 1883 they were elderly and no longer able to rally their communities who were mostly employed on the European farms or had trekked into Namibia to escape colonial rule. The islands were fully occupied and under cultivation by white farmers, the Korana communities were irrevocably fragmented (Smith AB 1996) and culturally extinct

The town of Kenhardt owes its existence to the conflict between San, Korana, Baastards and white settlers. A scouting party from the Cape Colony reported in 1834 that the area west of the confluence of the Vaal and Orange Rivers is dry, with no water and an inhospitable, sandy region. It was only 13 years later that the region up to the Orange River was incorporated into the Cape colony. As a result of the efforts of Louis Anthing, magistrate of Namaqualand, Mr M Jackson was sent to the then Bushmanland, as magistrate to keep law and order between the different race groups. He established his headquarters under a big camel thorn tree at what was even then known as Kenhardt. This tree – estimated to be between 500 and 600 years old – is still standing and was declared a national monument in 1978. The 27th of December 1868 is regarded as the founding day of the town. Most interesting are the remnants of the “Flat Bushman” lifestyle on the farm Arbeidsvreugd some 60km outside Kenhardt. The history of this San colony was told by //Kabbo, also known as Oud Jantjie Tooren. //Kabbo was imprisoned at the Breakwater Prison in Cape Town in 1870 where his story was documented by Dr Wilhelm Bleek and his sister-in-law, Lucy Lloyd (www.greenkalahari.co.za).

Intangible Heritage

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

SAHRIS Database and Impact assessment reports in the proposed project area

SAHRIS was consulted to collect data from previously conducted CRM projects in the region to provide a comprehensive account of the archaeological and heritage character of the study area. Several heritage sites are on record in the Kenhardt area (De Kock 2012, Kaplan 2008, 2010, Halkett and Webley 2010, Hart 2010, Pelsler, 2012, Van der Walt 2011, Webley and Orton 2003, Morris 1989, 1990). The studies observed that the project area did not attract settlement because its dry. However, archaeological remains have been documented in the region, close to pans eg Bundu Pan, springs, and among sand dunes near dry river beds, while the round dolerite boulders scattered over the flat landscape and on mountain tops and kopjes contain many different types of rock engravings (Kiberd 2006, Webley 2010). It seems most in situ archaeological remains occur along the Orange River Valley and those recorded elsewhere mainly occur in disturbed contexts such as fence lines and road reserves (Kaplan 2008, 2010). Most of the sites with stone tools, pottery and ostrich eggshell appear to belong to the Wilton Complex of the Later Stone Age, dating to around 2000 or 3000 years ago (Deacon 1986). The studies noted that isolated historical farmsteads occur in the project area although the current study did not access them due to restricted access. Furthermore, farmsteads and structure are technically protected on the basis that no prospecting activities may take place within 100m from any building, cemetery and any heritage resources.

5 RESULTS OF THE ARCHAEOLOGICAL/HERITAGE ASSESSMENT STUDY

The proposed Prospecting Right Application site is located near Kenhardt in Ka!Garib Local Municipality in the Northern Cape Province. The proposed prospecting sites have been established through consideration of biophysical, social, technical, and cultural aspects. The following section presents results of the archaeological and heritage survey conducted within the proposed prospecting site.

Heritage resource	Status/Findings
Buildings, structures, places and equipment of cultural significance	A number of historical farmsteads occur in the project area
Areas to which oral traditions are attached or which are associated with intangible heritage	None exists on the study area
Historical settlements and townscapes	There are historical settlements outside the proposed prospecting area
Landscapes and natural features of cultural significance	None
Archaeological and palaeontological sites	The project area is archaeologically and palaeontological sensitive however, no significant archaeological remains were recorded during the survey
Graves and burial grounds	It is assumed that graves for landowners occur especially near farmsteads and these are known to farm owners.
Movable objects	None
Overall comment	No significant archaeological remains were recording within the proposed prospecting area

Archaeological and Heritage Sites

The proposed prospecting area not preferred by precolonial communities and colonialists who preferred the well-watered Orange River Valley (Kaplan 2008). As such the distribution of archaeological sites in the Kenhardt District is mainly along the river valley and pans such as the Bundu Pan east of the proposed project area which yielded several ESA, MSA and LSA implements (Kiberd 2006, Webley 2010). In addition, the project area has not been extensively researched and some gaps apply (Webley 2010). The proposed Prospecting Right application sites did not yield any confirmable archaeological sites or material. There are farm boundary fence lines, farm dwellings and

associated infrastructure, grazing land, power lines and farm roads and tracks within the entire project area which might have disturbed archaeological traces in the project area. As such the proposed prospecting, will be an additional on the project area. It is assumed that the chances of recovering significant archaeological materials were seriously compromised and limited due to agriculture activities and previous diggings.

Buildings and Structures older than 60 years

The field study identified farm houses and associated infrastructure that must be protected in accordance with Section 34 of the National Heritage Resources Act. However, the study did not assess the farmstead because of restricted access to the farmsteads. It is assumed that the farmsteads will not be affected by the proposed prospecting activities because the law provides for a 100m buffer zone from buildings. It is important to note that buildings and structures older than 60 years regardless of their condition are protected by Section 34 of the NHRA.

Burial grounds and graves

Human remains and burials are commonly found close to archaeological sites and homesteads; 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. Archaeological and historical burials are usually identified when they are exposed through erosion and earth moving activities for infrastructure developments such as powerlines and roads. In some instances, packed stones or stones may indicate the presence of informal pre-colonial burials. They are regularly exposed during construction activities, either through the disturbance of lost grave yards, prehistoric burials or illegal burials. As such the such the Chance find procedure apply. Such remains are protected by a number of legislation including the Human Tissues Act (Act No 65 of 1983), the Exhumation Ordinance of 1980 and the National Heritage Resources Act (Act No 25 of 1999) which applies to graves and their contents which are greater than 60 years of age.

The field survey did not record any burial site within the prospecting sites, if any graves or burial grounds occur they are likely to be located closer to farmstead and farm worker's dwellings. It therefore assumed that these graves and burial grounds are known by their custodians and safe from the proposed prospecting activities. One such burial site was recorded not necessarily within the proposed project sites but in the general study area.

The possibility of encountering previously unidentified burial sites is very low within the proposed prospecting sites, should such sites be identified during construction, they are still protected by applicable legislations and they should be protected (also see Appendixes for more details). Burial sites older than 60 years are protected by the NHRA and those younger than 60 years are protected by the Human Tissue Act. Exhumation of graves must confirm to

the standards set out in the ordinance on excavation (Ordinance no.12 of 1980 which replaced the old Transvaal Ordinance no.7 of 1925).

Significance valuation for Burial Ground, Historic Cemeteries, and Individual Graves

The significance of burial grounds and gravesites is closely tied to their age and historical, cultural, and social context. Nonetheless, every burial should be considered as of high socio-cultural significance protected by practices, a series of legislations, and municipal ordinances.

Mitigation

The study team will continue to solicit information regarding the existence of graves and burial grounds within the prospecting sites. The names and contact details of affected land owners have been forwarded to the author. In addition, prospecting teams will be inducted on how to identify burial sites and the chance find procedure (see appended Chance Find Procedure). Depending on the outcome of the continued consultation with land owners, an archaeologist may be retained to monitor the prospecting activities to ensure that any chance finds are appropriately dealt with.

Public Monuments and Memorials

The survey did not identify any public monument memorials within the proposed Prospecting Right application sites. There are no monuments or plaques within the proposed prospecting site that are on the National Heritage or provincial List. However, it should be noted that there are Historical Monuments listed on SAHRIS Data base in the Ka!Garib Local Municipality of the Northern Cape Province. The proposed prospecting will not impact on any listed monuments and memorials in the project area.

Battle fields

No known battles or skirmishes associated with the Anglo-Boer war and resistance to colonialism by the local communities.

Archaeo-Metallurgy, Prehistoric Mining and Mining Heritage

There are recent diggings in the project area which are associated with road construction and prospecting activities in the project area.

Visual impacts

The proposed Prospecting Right Application site is not on the view shed of any listed heritage site. However, stockpiling of topsoil/ overburden will impact the visual quality of the project area.

6 CUMMULATIVE IMPACTS

The European Union Guidelines define cumulative impacts as: “Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project. Therefore, the assessment of cumulative impacts for the proposed prospecting is considered the total impact associated with the proposed prospecting 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 project 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 project’s impact is therefore one part of the total cumulative impact on the environment. The analysis of a project’s incremental impacts combined with the effects of other projects can often give a more accurate understanding of the likely results of the project’s presence than just considering its impacts in isolation. 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 agricultural activities where baselines have already been affected, the proposed prospecting will continue to add to the impacts in the region, it was deemed appropriate to consider the cumulative effects of proposed prospecting.

This section considers the cumulative impacts that would result from the combination of the proposed prospecting. There are existing infrastructure developments and agriculture activities within the proposed prospecting sites. 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 prospecting equipment and vehicles that could change, alter or destroy heritage resources within and outside the proposed prospecting 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 and 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. Vibrations and earth moving

activities associated with drilling and excavation tower have the potential to crack/damage rock art covered surfaces, which are known to occur in the greater study area. In addition, vibration from traffic has the potential to impact buildings and features of architectural and cultural significance. A potential interaction between archaeology, architectural and cultural heritage and landscape and visual during both the construction and operational phase of the proposed project is identified. Prospecting will result in a visual impact and impact on features of architectural and cultural significance. Construction works associated with the provision of material assets such as gravel, in particular underground works 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 refer to additional impacts, which even if acceptable if considered in isolation, would together with the existing impacts, exceed the threshold of acceptability and cause harm to the cultural landscape. Cumulative impacts that need attention are related to the impacts of access roads 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 prospecting vehicles during clearance and excavation within the prospecting sites. Movement of heavy construction 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/equipment are not monitored to avoid driving through undetected heritage resources.

7 ASSESSMENT OF SIGNIFICANCE

Assessment Criteria

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

The significance of the impacts will be determined through a synthesis of the criteria below:

Probability: This describes the likelihood of the impact actually occurring

Improbable: The possibility of the impact occurring is very low, due to the circumstances, design or experience.

Probable: There is a probability that the impact will occur to the extent that provision must be made therefore.

Highly Probable: It is most likely that the impact will occur at some stage of the development.

Definite: The impact will take place regardless of any prevention plans and there can only be relied on mitigatory measures or contingency plans to contain the effect.

Duration: The lifetime of the impact

Short Term: The impact will either disappear with mitigation or will be mitigated through natural processes in a time span shorter than any of the phases.

Medium Term: The impact will last up to the end of the phases, where after it will be negated.

Long Term: The impact will last for the entire operational phase of the project but will be mitigated by direct human action or by natural processes thereafter.

Permanent: The impact is non-transitory. Mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient.

Scale: The physical and spatial size of the impact

Local: The impacted area extends only as far as the activity, e.g. footprint

Site: The impact could affect the whole, or a measurable portion of the above mentioned properties.

Regional: The impact could affect the area including the neighboring residential areas.

Magnitude/ Severity: Does the impact destroy the environment, or alter its function

Low: The impact alters the affected environment in such a way that natural processes are not affected.

Medium: The affected environment is altered, but functions and processes continue in a modified way.

High: Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.

Significance: This is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required.

Negligible: The impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.

Low: The impact is limited in extent, has low to medium intensity; whatever its probability of occurrence is, the impact will not have a material effect on the decision and is likely to require management intervention with increased costs.

Moderate: The impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.

High: The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in mitigation.

8 STATEMENT OF SIGNIFICANCE

Aesthetic Value

The aesthetic values of the AIA Study Area and the overall project area are contained in the valley bushveld environment and landscape typical of this part of the Northern Cape Province. The visual and physical relationship between AIA study area and the surrounding historical Cultural Landscape demonstrates the connection of place to the local and oral historical stories of the African communities who populated this region going back into prehistory.

The proposed prospecting right application site will be situated within an environment and associated cultural landscape, which, although developed by existing settlements, remains representative of the original historical environment and cultural landscape of this part of Northern Cape Province. The local communities consider the project area a cultural landscape linked to their ancestors and history. However, the proposed development will not alter this aesthetic value in any radical way since it will add to the constantly changing and developing settlements.

Historic Value

The Indigenous historic values of the Site of Interest and overall study area are contained in the claim of possible historic homesteads being located on the affected area. The history of generations of the Sotho-Tswana clans is tied to this geographical region. Such history goes back to the pre-colonial period, through the colonial era, the colonial wars and subsequent colonial rule up to modern day Northern Cape Province.

Scientific value

Past settlements and associated roads and other auxiliary infrastructure developments and disturbance within the HIA Study Area associated with the proposed prospecting right application has resulted in limited intact landscape with the potential to retain intact large scale or highly significant open archaeological site deposits.

Social Value

The project sites fall within a larger and an extensive cultural landscape that is integrated with the wider inland. The overall area has social value for the local community, as is the case with any populated landscape. Literature review suggests that social value of the overall project area is also demonstrated through local history which associates the area with the coming of European missionaries, explorers and colonialists and the African struggle against settler colonialism in the second half of the 1800s and at the end of the 1800s, the colonial wars of resistance, the century long struggle for democracy that followed colonial subjugation. Several generations of communities originate from the project area and continue to call it home. As such, they have ancestral ties to the area. The land also provides the canvas upon which daily socio-cultural activities are painted. All these factors put together

confirms the social significance of the project area. However, this social significance is unlikely to be negatively impacted by the proposed prospecting especially given the fact that the development will add value to the human settlements and activities already taking place.

9 DISCUSSION

Several Phase 1 Archaeological and Heritage Impact studies were conducted in the project area since 2006. The studies were conducted for various infrastructure developments such as powerlines and substations, bulk water supply pipelines and residential developments. These studies noted that the project area was not preferred by prehistoric communities and is currently thinly populated by sheep farmers who stay in isolated farmsteads. Isolated Archaeological remains occur near pans such as the Bundu pan which yielded several Stone Age tools. Therefore, the current study should be read in conjunction with previous Phase 1 Impact Studies conducted in the proposed project area. The lack of confirmable archaeological sites recorded during the current survey is thought to be a result of two primary interrelated factors:

1. That proposed project area was not preferred by prehistoric communities except for temporary camp sites which have limited traces.
2. Restricted access to some sections of the project site might have limited the chances of encountering archaeological and heritage sites in the project area. This factor is exacerbated by the fact that the study was limited to general survey without necessarily conducting any detailed inspection of specific locations that will be affected by the proposed prospecting.

The absence of confirmable and significant archaeological cultural heritage site is not evidence in itself that such sites did not exist in the general project area. It should be noted that significance of the sites of Interest (prospecting sites) is not limited to presence or absence of physical archaeological sites.

Chance finds procedures

It has already been highlighted that sub-surface materials may still be lying hidden from surface surveys. Therefore, absence (during surface survey) is not evidence of absence all together. The following monitoring and reporting procedures must be followed in the event of a chance find, in order to ensure compliance with heritage laws and policies for best-practice. This procedure applies to the applicant's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. Accordingly, all construction teams must be properly inducted to ensure they are fully aware of the procedures regarding chance finds.

- ❖ If during the prospecting or closure phases of this prospecting project, any person employed by the applicant, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance, work must cease at the site of the find and this person must report this find to their immediate supervisor, and through their supervisor to the site manager.
- ❖ The site manager must then make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area before informing the applicant.

- ❖ The client will then contact a professional archaeologist for an assessment of the finds who will in turn inform SAHRA.

10 RECOMMENDATIONS

The study did not find any permanent barriers to the proposed Prospecting Right application in respect of the various prospecting sites. It is the considered opinion of the author that the proposed prospecting may proceed from a heritage resources management perspective, provided that mitigation measures are implemented if and when required. The following recommendations are based on the results of the AIA/HIA research, cultural heritage background review, site inspection and assessment of significance.

- From a heritage point of view, the proposed prospecting sites are viable because the proposed project site has been generally altered by agriculture activities and other associated infrastructure developments.
- The proposed prospecting may be approved to proceed as planned under observation that prospecting work does not extend beyond the surveyed site.
- No stone robbing, or removal of any material is allowed. Any disturbance or alteration on this burial site would be illegal and punishable by law, under section 36 (3) of the National Heritage Resources Act NHRA of 1999 (Act 25 of 1999).
- Should any unmarked burials be exposed during prospecting, potential custodians must be tracked, consulted and relevant rescue/ relocation permits must be obtained from SAHRA and or Department of Health before any grave relocation can take place. Furthermore, a professional archaeologist must be retained to oversee the relocation process in accordance with the National Heritage Resources Act 25 of 1999.
- Should chance archaeological materials or human burial remains be exposed during subsurface construction work on any section of the proposed development 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 construction scheduling while recovering archaeological and any affected cultural heritage data as stipulated by the NHRA regulations.
- Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project EMP, there are no other significant cultural heritage resources barriers to the proposed development. The Heritage authority may approve the proposed development to proceed as planned with special commendations to implement the recommendations here in made.
- If during prospecting or closure phases of this project, any person employed by the applicant, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance,

work must cease at the site of the find and this person must report this find to their immediate supervisor, and through their supervisor to the site manager.

- The site Manager must then make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area before informing ISS / an appropriate heritage specialist.
- In the event that archaeological materials are unearthed, all prospecting activities within a radius of at least 20m of such indicator should cease and the area be demarcated by a danger tape. Accordingly, a professional archaeologist should be contacted immediately
- It is the responsibility of the applicant to protect the site from publicity (i.e. media) until a mutual agreement is reached.
- Noteworthy that any measures to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law. In the same manner, no person may exhume or collect such remains, whether of recent origin or not, without the endorsement by SAHRA
- The applicant is reminded that unavailability of archaeological materials (e.g., pottery, stone tools, remnants of stone-walling, graves, etc) and fossils does not mean they do not occur, archaeological material might be hidden underground, and as such the client is reminded to take precautions during prospecting.
- The foot print impact of the proposed prospecting activities should be kept to minimal to limit the possibility of encountering chance finds within the proposed Prospecting Right application site.
- Overall, impacts to heritage resources are not considered to be significant for the project receiving environment. It is thus concluded that the project may be cleared to proceed as planned subject to the Heritage Authority ensuring that detailed heritage monitoring procedures are included in the project EMP for the prospecting phase, include chance archaeological finds mitigation procedure in the project EMP (See Appendix 1).
- The chance finds process will be implemented when necessary especially when archaeological materials and burials are encountered during subsurface construction activities.
- The findings of this report, with approval of the SAHRA, may be classified as accessible to any interested and affected parties within the limits of the laws.

11 CONCLUDING REMARKS

The literature review and field research confirmed that the project area is situated within a contemporary cultural landscape dotted with settlements with long local history. Field survey established that the proposed Prospecting Right application sites is degraded by previous and current agriculture activities. In terms of the archaeology and heritage in respect of the proposed prospecting sites, there are no obvious 'Fatal Flaws' or 'No-Go' areas. How the potential for chance finds, still remains and the applicant and contractors are advised to be diligent and observant during prospecting, should prospecting activities commence on the sites. The procedure for reporting chance finds has clearly been laid out. This report concludes that the proposed Prospecting Right application may be approved by SAHRA to proceed as planned subject to recommendations herein made and heritage monitoring plan being incorporated into the construction EMP (also see Appendices). The mitigation measures are informed by the results of the AIA/HIA study and principles of heritage management enshrined in the NHRA, Act 25 of 1999.

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APPENDIX 1: CHANCE FIND PROCEDURE

CHANGE FIND PROCEDURE FOR PROPOSED PROSPECTING RIGHT APPLICATION IN KA!GARIB LOCAL MUNICIPALITY, NORTHERN CAPE PROVINCE

January 2019

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 prospecting. The main purpose of a CFP is to raise awareness of all mine workers 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 mine manager must ensure that all personnel on the proposed mine 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 prospecting.

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 Sectionv36 will be discussed separately as this require the implementation of separate criteria for CFPs.

BACKGROUND

Proposed prospecting sites are 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 prospecting work and hence the need for a Chance Find Procedure to deal with accidental finds. The known heritage sites in the general project area were noted (See Figure 1).

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 (M2 Industrial Minerals (Pty) Ltd) 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 earth moving and ground altering activities associated with the proposed prospecting. The proposed prospecting activities have the potential to cause severe impacts on significant tangible and intangible cultural heritage resources buried beneath the surface or concealed by vegetation cover. ISS developed this Chance Find Procedure to define the process which govern the management of Chance Finds during prospecting. This ensures that appropriate treatment of chance finds while also minimizing disruption of the prospecting 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 prospecting scheduling. It is recommended that due to the moderate to high archaeological potential of the project, 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 prospecting.

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 prospecting activities in the vicinity of the accidental find/feature/site must cease immediately avoid further damage to the site.
- Briefly note the type of archaeological materials you think you've 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 Prospecting 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. 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 (M2 Industrial Minerals (Pty) Ltd) will be informed when prospecting 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 accidentally exposed, ISS Heritage Specialist must immediately be notified of the discovery in order to take the required further steps:

- a. ISS 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. ISS 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 mine 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.

Archaeological Chance Finds

Should Project Archaeologist determine that the cultural heritage site is a highly significant archaeological site without skeletal remains, Contractor's Archaeologist, in consultation with Company shall determine the appropriate action.

The following management options will be considered:

Avoidance: This option minimises the impact to the site through partial or complete project redesign or relocation. This is the preferred option from a heritage management perspective.

Salvage Excavation: This data recovery option is site destructive and can delay project progress. If required, salvage excavation shall be conducted in accordance with the requirements of the NHRA.

In-situ Management: This option includes the application of site protection measures, such as fencing or barricades, or capping the site area with fill. Appropriate protection measures will be identified and agreed between Contractor, Company and the SAHRA. If this option is the best but likely to involve some damage to a significant site (e.g. in process of capping site area with fill), it may be combined with limited salvage excavation.

Surface Collection: If a site is assessed as having limited salvage excavation potential but contains significant surface archaeological items, those surface finds may be individually mapped and collected in accordance with the National Heritage Resources Act.

Destruction: If a site is assessed as having limited archaeological significance, it may be destroyed once a complete photographic record has been made and the Chance Finds Report Form has been completed

CONCLUSION

The Chance Find Procedure presented in this document serves as international best practice policy for potential accidental exposure of heritage resources and human burials during prospecting activities. Based on the definitions provided within this document and the proposed lines of communication, M2 Industrial Minerals (Pty) Ltd will be able to mitigate the accidental exposure of heritage resources and human burials throughout the various phases of the prospecting project. ISS is always available to assist in the event of any accidental exposure of archaeological, palaeontological or human remains in the course of prospecting activities. The Prospecting manager /supervisor may contact the ISS archaeologist: (Trust Mlilo) on the following numbers: Cell: 071 685 9247, Tel: 010 492 4330 or SAHRA, Tel. 021 462 4502.

Appendix 2: Heritage Management Plan Input into the prospecting project EMP

Objective		<ul style="list-style-type: none"> • Protection of archaeological sites and land considered to be of cultural value; • Protection of known physical cultural property sites against vandalism, destruction and theft; and • The preservation and appropriate management of new archaeological finds should these be discovered during construction. 						
No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Prospecting 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
Prospecting Phase								
1	Emergency Response	Should any archaeological or physical cultural property heritage resources be exposed during excavation for the purpose of construction, construction in the vicinity of the finding must be stopped until heritage authority has cleared the development to continue.	N/A	Throughout	C CECO	SM	ECO	EA EM PM
		Should any archaeological, cultural property heritage resources be exposed during excavation or be found on development site, a registered heritage specialist or PHRA official must be called to site for inspection.		Throughout	C CECO	SM	ECO	EA EM PM
		Under no circumstances may any archaeological, historical or any physical cultural property heritage material be destroyed or removed from site;		Throughout	C CECO	SM	ECO	EA EM PM
		Should remains and/or artefacts be discovered on the development site during earthworks, all work will cease in the area affected and the Contractor will immediately inform the Construction Manager who in turn will inform 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 prospecting phase.						
Operational Phase								
		Same as prospecting phase.						

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.	<p>Possible damage to previously unidentified archaeological and burial sites during construction phase.</p> <ul style="list-style-type: none"> • 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 <p>Loss of intangible heritage value due to change in land use</p>	<p>In situations where unpredicted impacts occur construction activities must be stopped and the heritage authority should be notified immediately.</p> <p>Where remedial action is warranted, minimize disruption in construction scheduling while recovering archaeological data. Where necessary, implement emergency measures to mitigate.</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Contractor / • Project Manager • Archaeologist • Project EO 	Fine and or imprisonment under the NHRA	<p>Monitoring measures should be issued as instruction within the project EMP.</p> <p>PM/EO/Archaeologists Monitor construction work on sites where such development projects commences within the farm.</p>

Appendix 4: Legal background 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.