PHASE 1 HIA FOR PROSPECTING RIGHT APPLICATION FOR PROPOSED DEVELOPMENT OF SAMARA OPENCAST ALLUVIAL DIAMOND MINE AND ASSOCIATED INFRASTRUCTURE, NORTHERN CAPE PROVINCE.

AIA/HIA Study

T Mlilo

PREPARED FOR SAMARA PTY LTD

DOCUMENT SYNOPSIS (EXECUTIVE SUMMARY)

Item	Description
Proposed development and location	Proposed mining of alluvial diamonds on the remainder on the Farm Than No.280 (Vaal River) and the portion of the farm No.350 located within the Administrative District of Barkly West in the Northern Cape Province.
Purpose of the study	The Phase 1 Heritage Impact Assessment is to determine the presence of cultural heritage sites and the impact of the proposed project on these resources within the area demarcated for Prospecting Right Application.
1:50 000 Topographic Map	2723 CA
Coordinates	
Municipalities	Local Municipality.
Predominant land use of surrounding area	Mining and agriculture
EAP	NDI Geological Consulting Services (Pty) Ltd 38 Ophelia St Kimberley 8301 Tel:053 842 0687 Cell: 082 7608420 Email: ndi@geoservices.co.za Website: ndigeoservices.co.za
Ref	NC 30/5/1/1/2/12502PR
Applicant	Samara (Pty) Ltd
Heritage Practitioner	Integrated Specialist Services (Pty) Ltd Constantia Park, Building 16-2, 546, 16th Road, Midrand, 1685 Cell: 0716859247 Fax: 086 652 9774 E-mail: trust@issolutions.co.za
Authors	Trust Mlilo
Date of Report	07August 2020

This report serves to inform and guide the applicant and contractors about the possible impacts that the proposed prospecting may have on heritage resources (if any) located in the study area. In the same light, the document must also inform the South African Heritage Resources Agency (SAHRA) about the presence, absence, and significance of heritage resources located in the study area. As required by South African heritage and mining legislation, a prospecting right application such as this requires pre-development archaeology and heritage assessment by a competent heritage practitioner to identify, record and if necessary, salvage the irreplaceable heritage resources that may be impacted upon by the proposed prospecting. In compliance with these laws, NDI Geological Consulting Services (Pty) Ltd retained Integrated Specialist Services (Pty) Ltd (ISS) to conduct a Phase 1 Archaeological and Heritage Impact Assessment (AIA/HIA) of the proposed prospecting right application. Desktop studies, drive-throughs, and fieldwalking were conducted to identity heritage landmarks within the prospecting right application site. The study site is not on pristine ground, having seen significant transformations owing to previous alluvial diamond mining along the flood plain (see Figure 1). The study did not identify any archaeological, built environment, burial grounds and graves within the prospecting right application site. Besides, sub-surface archaeological material and unmarked graves may still exist and when encountered during prospecting, work must be stopped forth-with and the finds must be reported to the South African Heritage Resource Agency (SAHRA) or the heritage practitioner. This report must also be submitted to the SAHRA for review.

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 prospecting right application.
- Most sections of the project area are accessible, and the field survey was effective enough to cover significant sections of the prospecting right site.
- The prospecting right site is located within the flood plain
- Some sections of the prospecting right application site are severely degraded by previous alluvial diamond mining activities and stamping by domestic animals.

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:

- Prospecting teams must be inducted on the possibility of encountering archaeological resources that may be accidentally exposed during prospecting before the commencement of work on the site to ensure appropriate mitigation measures and that course of action is afforded to any chance finds.
- 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, may be classified as accessible to any interested and affected parties within the limits of the legislation.

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

NATIONAL LEGISLATION AND REGULATIONS GOVERNING THIS REPORT

This is a specialist report' 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 Samara (Pty) Ltd and their consultants and that all opinions expressed in this document are substantially my own, even though I have received fair remuneration from the client for preparation of this report.

Expertise:

Trust Mlilo, Ph.D. *cand* (Wits), MA. (Archaeology), BA Hons, PDGE and BA & (Univ. of Pretoria) ASAPA (Professional affiliation member), and more than 15 years of experience in archaeological and heritage impact assessment and management. Mlilo is an accredited member of the Association for Southern African Professional Archaeologists (ASAPA), KwaZulu Natal Amafa and Research Institute, and Eastern Cape Heritage Resources Agency (ECPHRA). He has conducted more than a 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 the government, parastatals (Eskom), and several private companies such as BHP Billiton and Rhino Minerals.

Independence

The views expressed in this document are the objective, independent views of Mr Trust Mlilo and the survey was carried out under NDI Geological Consulting Services (Pty) Ltd Integrated Specialist Services (Pty) Ltd has no business, personal, financial, or other interest in the proposed development 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 the 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 becomes known to the author from on-going research or further work in this field, or about this investigation.

This report must not be altered or added to without the prior written consent of the author and NDI Geological Consulting Services (Pty) Ltd. This also refers to electronic copies of the report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements, or conclusions drawn from or based on this report must make reference to this report. If these form part of the 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 South African Heritage Resources Agency (SAHRA)

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

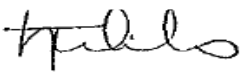
Maps**:** Maps included in this report use data extracted from the NTS Map and Google Earth Pro.

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

The Archaeological and Heritage Impact Assessment Study was carried out within the context of tangible and intangible cultural heritage resources as defined by the SAHRA Regulations and Guidelines as to the

authorisation of proposed Prospecting Right Application being proposed by Samara (Pty) Ltd.

Signed by



07/ 08/ 2020

ACKNOWLEDGEMENTS

The authors acknowledge NDI Geological Consulting Services (Pty) Ltd for their assistance with project information, and the associated project Background Information Document (BID) as well as responding to technical queries related to the project.

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ABBREVIATIONS

AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
EIA	Environmental Impact Assessment
EIA	Early Iron Age *(EIA refers to both Environmental Impact Assessment and the Early Iron Age but, in both cases, the acronym is internationally accepted. This means that it must be read and interpreted within the context in which it is used.)*
EIAR	Environmental Impact Assessment Report
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
ICOMOS	International Council of Monuments and Sites
LIA	Late Iron Age
LSA	Late Stone Age
MIA	Middle Iron Age
MSA	Middle Stone Age
NEMA	National Environmental Management Act 107 of 1998
NHRA	National Heritage Resources Act 25 of 1999
SAHRA	South African Heritage Resources Agency
ISS	Integrated Specialist Services
ToR	Terms of Reference

KEY CONCEPTS AND TERMS

Periodization

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

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

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

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

Early Iron Age (~ AD 200 to 1000)

Late Iron Age (~ AD1100-1840)

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

Definitions

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

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

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

Value is related to concepts such as worth, merit, attraction or appeal, concepts that are associated with the (current) usefulness and condition of a place or an object. Although significance and value are not mutually exclusive, in some cases the place may have a high level of significance but a lower level of value. Often, the evaluation of any feature is based on a combination of a 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 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 another 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 the 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 the 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 to establish the presence of all possible types of heritage resources in any given area.

Assumptions and disclaimer

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

INTRODUCTION

Integrated Specialist Services (Pty) Ltd was tasked by NDI Geological Consulting Services (Pty) Ltd. to carry out a Phase 1 AIA/ HIA for prospecting right application on the farms Farm Than No.280 (Vaal River) and the portion of the farm in the Administrative District of Barkly West in Northern Cape Province. The proposed new mining development is gazetted in terms of section 38 (1) of the NHRA (see Figure 1). This HIA study is triggered by the prospecting right application by the Samara (Pty) Ltd in terms of the Mineral and Petroleum Resources Development Act, 2002 (MPRDA) as amended. The overall purpose of this heritage report is to identify, assess any heritage resources that may be located in the study area, and evaluate the positive and negative impacts of the proposed mining development on these resources to make recommendations for their appropriate management. To achieve this, we conducted background research of published literature, maps, and databases (desktop studies) which was then followed by ground-truthing by means of drive-through surveys and field walking. Desktop studies revealed that the general project area is rich in the Late Stone Age (LSA) and historical sites such as historical diamond mining sites and farmsteads. It should be noted that while heritage resources may have been located in the entire study area, formal and informal alluvial diamond mining have either obliterated these materials or reduced them to isolated finds that can only be identified as chance finds during prospecting. The prospecting right application may be permitted subject to adopting recommendations and mitigation measures proposed in this report. Based on the findings of the study, there is no archaeological and heritage reason why the prospecting right application can be approved, taking full cognizance of clear procedures to follow in the event of chance findings.

Terms of Reference (ToR)

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

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

Project Location

The prospect right application site is located on the farms Farm Than No.280 (Vaal River) and the portion of the farm in Administrative District of Barkly West Northern Cape Province (Figure 1).

Figure 1: Location of the proposed project site (NDI Geological Consulting Services (Pty) Ltd.)

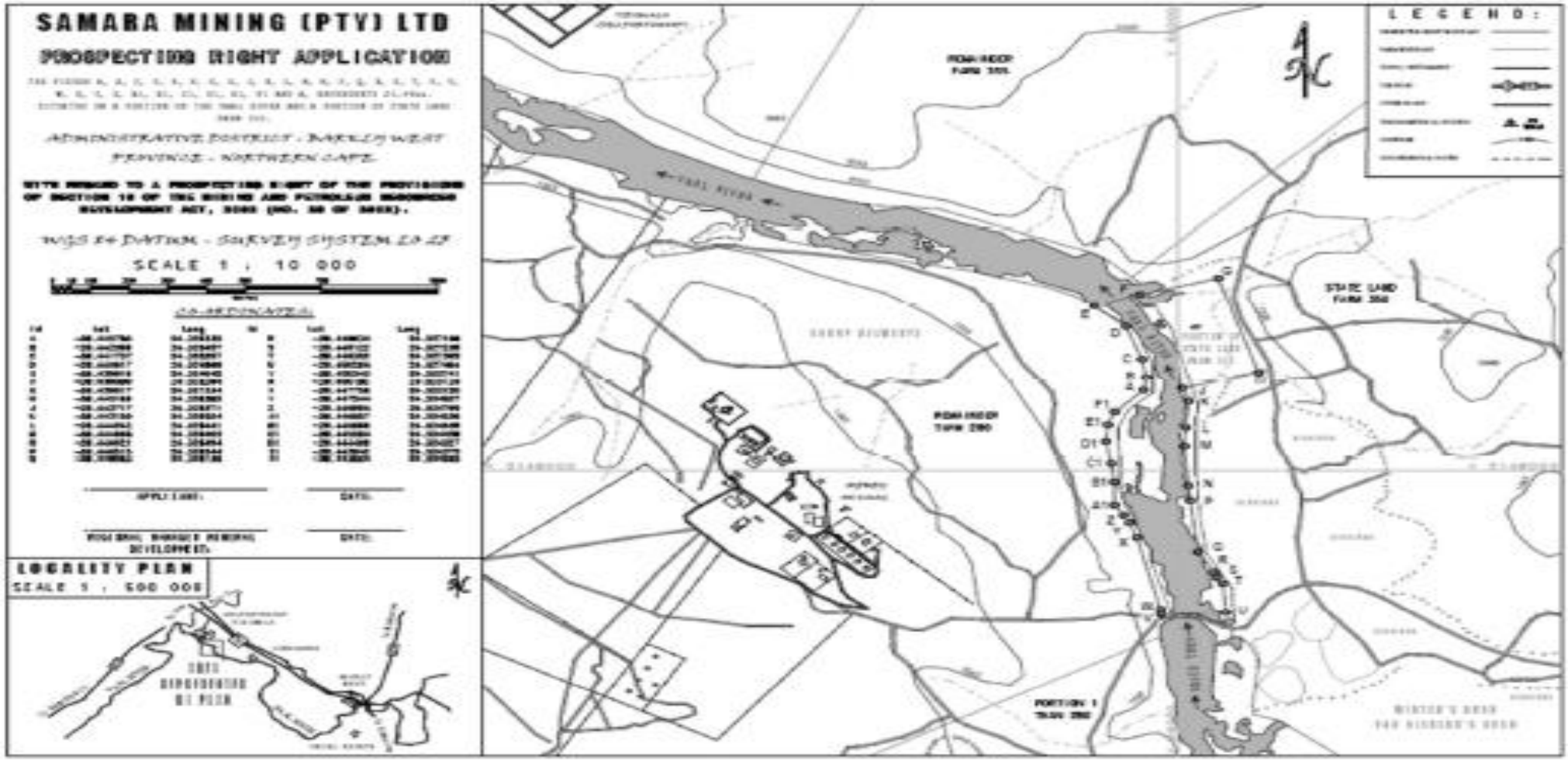

Figure 2: Location of the proposed project site (NDI Geological Consulting Services (Pty) Ltd.)

Project Background and description

The proposed prospecting area is located approximately 22km Northwest of Barkly West in the Barkly West Magisterial District in the Northern Cape Province. The area earmarked for prospecting covers approximately 25.49 hectares in extent. The proposed prospecting is for mining alluvial diamonds. The application runs on the remainder on the Farm Than No.280 (Vaal River) and the portion of the farm No.350. The property is accessed via R31 Main Road which does not also form part of the boundary (Figure1 and Figure 2 in Appendix 1). The proposed project involves the development of an opencast diamond mine and supporting infrastructure. The diamond material will be excavated from the pit using a bucket excavator and transported by an ADT to the overburden stockpile area. The proposed mine will require support infrastructure such as water access roads, storage, fuel storage, waste dump, topsoil storage etc.

LEGISLATIVE CONTEXT

Three main pieces of legislation are relevant to the present study and there are presented here. Under the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) and the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended (NEMA), an AIA or HIA is required as a specialist sub-section of the Environmental Authorisation process.

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

- Construction of a road, wall, power line, pipeline, canal or another 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 the past five years
  - ❖ Rezoning of site exceeding 10 000 sq m
  - ❖ The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority
- Any other development category, public open space, squares, parks, recreation grounds

Thus, any person undertaking any development in the above categories, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority, and furnish it with details regarding the location, nature, and extent of the proposed development. Section 38 (2)(a) of the same act also requires the submission of a heritage impact assessment report for authorization purposes to the responsible heritage resources agencies (SAHRA/PHRAs).Because the proposed development will change the character of a site exceeding 5000 sq m, then an HIA is required according to this section of the Act.

Related to Section 38 of the NHRA are Sections 34, 35, 36, and 37. Section 34 stipulates that no person may **alter damage, destroy and relocate any building or structure older than 60 years, without a permit issued by SAHRA or a provincial heritage resources authority**. This section may not apply to the present study since none were identified. Section 35 (4) of the NHRA stipulates that no person may, without a permit issued by SAHRA, destroy, damage, excavate, alter, or remove from its original position, or collect, any archaeological material or object. This section may apply to any significant archaeological sites that may be discovered before or during construction. This means that any chance find must be reported to the heritage practitioner or SAHRA/PHRA, who will assist in investigating the extent and significance of the finds and inform the applicant about further actions. Such actions may entail the removal of material after documenting the find site or mapping of larger sections before destruction. Section 36 (3) of the NHRA also stipulates that no person may, without a permit issued by the South African Heritage Resources Agency (SAHRA), destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority. This section may apply in case of the discovery of chance burials, which is unlikely. The procedure for reporting chance finds also applies to the unlikely discovery of burials or graves by the applicant or his contractors. Section 37 of the NHRA deals with public monuments and memorials but this may not apply to this study because no protected monument will be physically affected by the proposed mining development.

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

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

ACT	Stipulation for developments	Requirement details
NHRA Section 38	Construction of the road, wall, power line, pipeline, canal or another linear form of development or barrier exceeding 300m in length	Yes (but not provided in the current layout plan)
	Construction of bridge or similar structure exceeding 50m in length	No
	Development exceeding 5000 sq m	Yes
	Development involving three or more existing erven or subdivisions	No
	Development involving three or more erven or divisions that have been consolidated within the 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	Buildings on the site need to be verified if they are older than 60 years
NHRA Section 35	Impacts on archaeological and palaeontological heritage resources	Subject to identification during Phase 1
NHRA Section 36	Impacts on graves	Subject to identification during Phase 1
NHRA Section 37	Impacts on public monuments	Subject to identification during Phase 1
Chapter 5 (21/04/2006) NEMA	HIA is required as part of an EIA	Yes
Section 39(3)(b) (iii) of the MPRDA	AIA/HIA is required as part of an EIA	Yes

METHODOLOGY

This document falls under the Environmental Authorisation process and EMPr of the proposed prospecting; therefore, this study aims at providing an informed heritage-related opinion about the proposed prospecting right application in Northern Cape Province. This is usually achieved through a combination of a review of any existing literature and a basic site inspection. As part of the desktop study, published literature and cartographic data, as well as archival data on heritage legislation, the history, and archaeology of the area were studied. The desktop study was followed by field surveys. The field assessment was conducted according to generally accepted AIA/HIA practices and aimed at locating all possible objects, sites, and features of cultural significance on the development footprint. Initially, a drive-through was undertaken around the proposed development site as a way of acquiring the archaeological impression of the general area. This was then followed by a walk down survey in the study area, with a handheld Global Positioning System (GPS) for recording the location/position of each possible site. The detailed photographic recording was also undertaken where relevant. The findings were then analysed in relation to proposed prospecting activities. The result of this investigation is a report indicating the presence/absence of heritage resources within the prospecting right application site and how to manage them in the context of the proposed development.

The Fieldwork survey

The fieldwork survey was undertaken on the 30thof August 2020. The desktop studies were followed by intensive and extensive field walking to verify the situation on the ground and to identify the extent of the stone walled sites and burial sites. Based on the maps, it was noted that very few farmsteads and settlements occur in the general study area. A comprehensive survey of this area was conducted to identify the salient features as well as relationships between the different components of sites. The main focus of the survey involved a pedestrian survey which was conducted within the prospecting right application site. The pedestrian survey focused on parts of the project area where it seemed as if disturbances may have occurred in the past, for example, bald spots in the grass veld; stands of grass which are taller than the surrounding grass veld; the presence of exotic trees; evidence for building rubble, existing buildings and ecological indicators such as invader weeds.

The literature survey suggests that before the 20th century modern residential and on-going infrastructure developments; the general area where the proposed development is located would have been a rewarding region to locate heritage resources related to the Stone Age and particularly Iron Age and historical sites (Bergh 1999: 4). However, the situation today is completely different. The study area now lies in a modified landscape that is dominated by stockpiled soil mounds within the riverbed.

Visibility and Constraints

Most sections of the prospecting right application site are visible because they were previously cleared by formal and informal alluvial diamond mining activities. It is conceded that due to the subterranean nature of cultural remains this report should not be construed as a record of all archaeological and historic sites in the area. To mitigate this, a professional archaeologist must be retained to inspect the sites during clearance for open cast mining pits.

Consultations

The Public Participation process is conducted by the EAP. The project archaeologist and heritage practitioner consulted residents about any heritage resources within the prospecting right application site. This process helped in understand the heritage character of the prospecting right application site. We also took the opportunity to investigate the presence of historical mining heritage. The Public Participation Process will also invite and address comments from affected communities and any registered heritage bodies on any matter related to the proposed prospecting project including heritage concerns that may arise as a result of the mining project. The issues raised by the public concerning the proposed prospecting will also be included in the Final Environmental Impact Assessment Report and EMPr.

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

Plate 1: Proposed prospecting site. Note the site have been previously disturbed by informal alluvial diamond mining

Plate 2: showing proposed prospecting right site.

Plate 3: showing access tracks cutting across the proposed prospecting site.

Plate 4: Showing the proposed prospecting right application site.

Plate 5: Showing proposed prospecting site.Note previously stockpilled soil within the site

Plate 6: showing prospecting right application site.Note the previous diggings within the site

Plate 7: showing the proposed prospecting right application site.

Plate 8:showing prospecting right application site. Note previously stockpiled soil and blue gum trees.

Plate 9: showing proposed prospecting site.

Plate 10: showing access road to the site.

ARCHAEOLOGICAL CONTEXT

Stone Age Archaeology

The Northern Cape Province is rich in archaeological heritage, mostly dominated by Stone Age occurrences. Numerous sites, bearing Earlier, Middle and Later Stone Age habitation occur across the province, mostly in open air locales or in sediments alongside rivers or pans. In addition, a wealth of Later Stone Age rock art sites, most of which are in the form of rock engravings are found in the region. These LSA sites occur on hilltops, slopes, rock outcrops and occasionally in riverbeds. Sites dating to the Iron Age occur in the north eastern part of the Province, but environmental factors delegated that the spread of Iron Age farming westwards from the 17th century was constrained mainly to the area east of the Langeberg Mountains. However, evidence of an Iron Age presence as far as the Upington area in the eighteenth century occurs in this area. The Northern Cape also boast of colonial and mining heritage moving into recent times, the archaeological record reflects the development of a rich colonial influence, characterised by mostly isolated farmsteads, missionary establishments (Kuruman Mission) and mining developments at Kimberley and other smaller towns.

The study area was previously used for livestock and game farming as well as manganese and iron ore mining. Initial mining activities stopped in 1967. The previous manganese and iron ore mining left a trail of open trenches, pits, derelict mine houses and access roads. The previous mining activities also left a scatter of mine dumps and abandoned mining equipment. The previous mining of manganese and iron ore destroyed both cultural and natural heritage resources in the area. Although vegetation has recovered in some sections of the mining area, it was established that the entire landscape was severely altered. It is within this context that the proposed EMP upgrading is seeking authorisation.

Stone Age Archaeology

In the Northern Cape ESA assemblages, including the Fauresmith, tend to occur as lag deposits on the margins of seasonal rivers, semi-permanent water holes or pans. Such assemblages commonly represent the accumulated remains of numerous reoccupations over possibly many thousands of years. In this region stone tools often occur within calcrete zones underlying the modern surface of unstratified red aeolian sands (Deacon 1988:643-647; Mason 1988:626-30). Previous research in the project area confirmed localised occurrences of low-density Stone Age scatters along the exposed calcrete areas in dry riverbeds (PGS Heritage Unit:2009).

Stone Age archaeology is prevalent in the larger geographical area, especially to the north west of the study area but generally, elsewhere the Hotazel and Santoy area does not seem to have attracted much of habitation, save for the two Late Stone Age rock shelters that occur north and south of GaMohaan hills and sites along the Gamogara ancient river bed. 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 southwest and southeast 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 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 a*l. 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 Pelser 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). In the area north of the study area, the two LSA rock shelters to the south and the north of GaMohaan Hill are the only known archaeological remains that are closer to the study area (van der Walt 2013). 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 oblong with retouch on the side. However, it is not necessary to belabour the descriptions of these industries, especially because no LSA remains were recovered on the proposed development footprint. 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.

The most notable site near the study area is the Kathu Pan site. Kathu Pan archaeological site is located about 5km west of the town of Kathu, along the R380 road to Debeng and Hotazel. The site is located on the boundaries of the farms Marsh 467, Sacha 468, Kathu 465 and Sims 462 come together here. According to Beaumont (1990), the pan covers about 30ha. There is an ancient drainage channel made by the floodwater overflow. Test boreholes reveal a 40m combination of calcrete, sand, clays and gravel layers, below the unstable peaty top sediments.

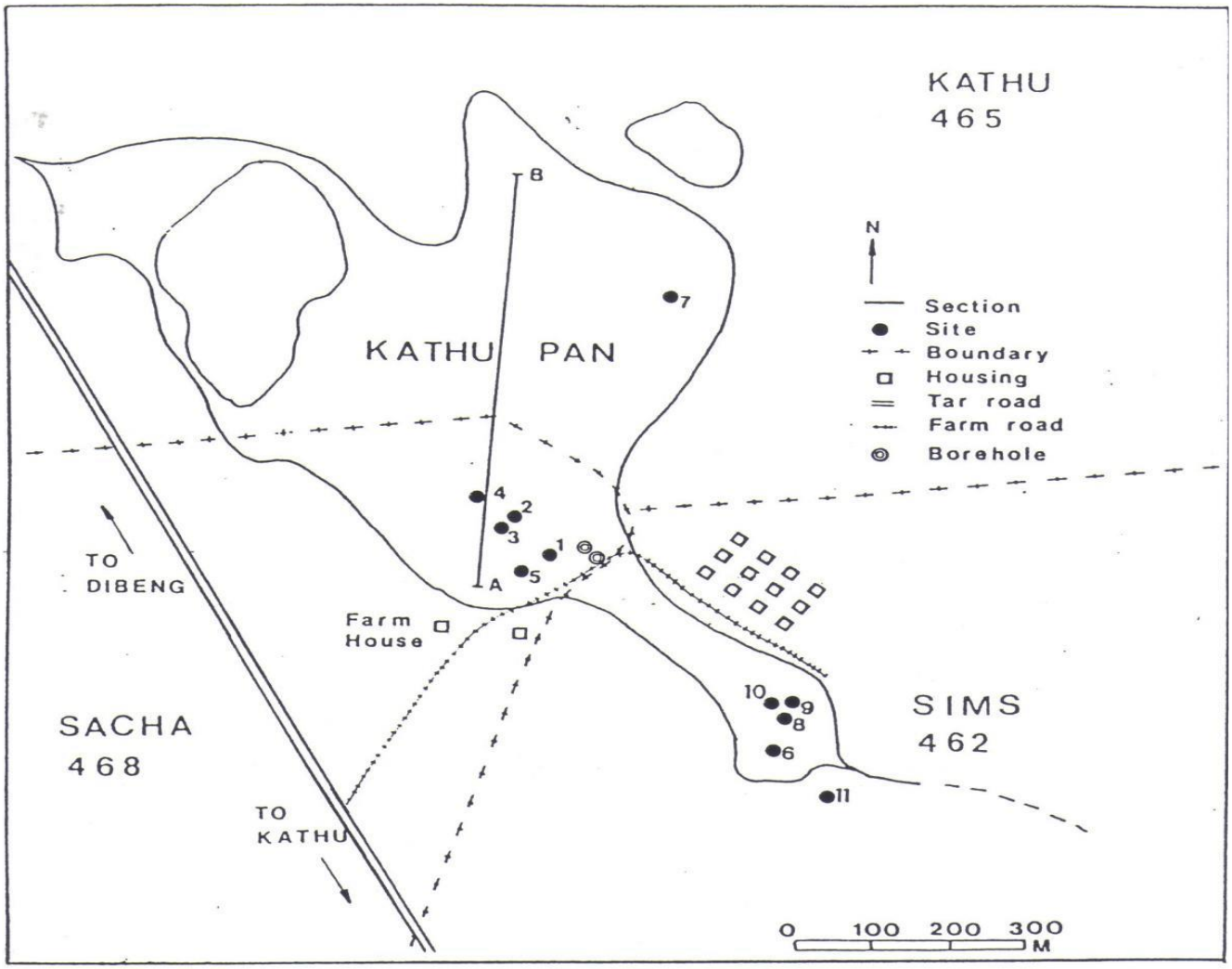

Figure 4: The location of the sites as indicated by Beaumont (1990, 2006).

The first archaeologist to conduct work on the Kathu Pan sites was A.J B. Humphreys on 13 August 1975. Subsequently, P.B. Beaumont conducted extensive studies in the vicinity. During this year several researchers visited the site. Excavations by Peter Beaumont and others produced amongst other finds, portions of clay vessels, ostrich eggshell fragments, Middle Stone Age artefacts, prepared cores, long lithic blades, retouched points and material classified as Fauresmith artefacts. Further finds include coarse Acheulean hand axes and a variety of scrapers. The flakes represent the banded ironstone material found in the area. Grass pollen, indicating prehistoric vegetation, had been recovered. The investigations at Kathu Pan also produced the remains of large mammals, such as elephant, zebra, rhino, hippo, buffalo and giraffe, together with a variety of antelope and buck (Beaumont 1990).

Several developments such as the Khai-Appel Recreation Resort, the Sishen Airport, the Kumba Village and the Mitton Transport Yard surround the Kathu Pan archaeological site. From earlier archaeological investigations at Kathu, researchers are aware that stone hand axes and pointed flakes of exceptional technological skills dating from the later phase of the Early Stone Age occur in the red sand deposits of the area. The distribution of these artefacts could be fairly general and widespread in the surroundings of Kathu (Beaumont 1990, 2007; Dreyer 2006, 2008, 2010). While exciting finds were made in the red sand deposits with significant stands of Erioloba trees around Kathu, it appears that the geology has changed rapidly in places where the deep red sand deposits transform into hills, which produce rich iron ore accumulations (Dreyer 2010).

The Kathu Pan site has been described by Klein (1984) as the best paleoenvironmental sequence from the Kalahari Basin area. It is a broad surface of organic marshland that is located in the centre of four farms (Marsh 467, Sacha 468, Kathu 465 and Sims 462), 15 km north of Sishen. The scientific value of the Kathu Pan area cannot be underestimated, and the finds also made a significant impact on the popular understanding of the Early Stone Age (Walker, Chazan & Morris 2013). The declaration of Kathu Archaeological Complex as a National Heritage Site, consisting of Kathu Pan, Kathu Cemetery Sites, Kathu Town lands and the Bestwood Site, is pending.

Plate 11: Three hand axes recovered from the Kathu Pan sites (Walker *et. al.* 2013:15)

A buffer zone has not yet been established around the Kathu Pan sites. According to Walker et al (2013) a considerable amount of fieldwork still needs to be undertaken to clarify the extent of the deposit. They noted that while the sink holes have offered windows into the deposits around the pan, and some excavations around the 1980s have offered clues to the deposits outside the sink holes, the overall extent of what the Kathu Pan sites have to offer is unknown. The Kathu Pan is an exceptionally significant landscape, one of the reasons being that the archaeological deposits contain both ESA artefacts and associated fauna in near primary context (Walker et al 2013). This is unusual as only seven southern African sites contain ESA artefacts and bones in primary context (Cave of Hearths, Wonderwerk, Pomongwe, and the open-air sites of Elandsfontain, Mwanganda, Namib IV and Kathu Pan) (Volman, 1984). The second reason for the high significance of Kathu Pan is that it also includes stratified deposits from the MSA. Walker et al point out that most MSA sites are along the coast and in caves or shelters, whereas there are MSA deposits in an open-air setting in the interior at Kathu.

In conclusion, the Kathu Pan sites are of considerable significance due to the unique geology and formation of the dolines, which could be considered as windows into the past. Kathu Pan Site 1 contains a near perfect stratigraphy

of the ESA, MSA and LSA that provides the best paleo-environmental sequence from this area as well as a useful guide to archaeological events.

Similarly, the Vaal river system is known for occurrence of stone artefacts and Stone Age material and evidence of factory or workshop sites might be found (Kruger 2019). Research along the Vaal River in the Northern Cape revealed that rivers and pans acted as focal points for grazing animals, but also a source of water and archaeological material was recovered from throughout the sedimentary sequences along the Vaal. Large numbers of Later Stone Age (LSA) tools occur on the surface around pans and within the upper red sands, while below the red sands, Middle Stone Age (MSA) lithics occurs. Earlier Stone Age (ESA) tools, which may be older than 300 000 years, occurs in the general landscape around rivers and pan.

Iron Age Archaeology

Agriculturalist communities entered southern Africa from West and East Africa around AD 200 and brought with them settled agriculture, metal working, animal husbandry, pottery making and social stratification (Huffman 2007). The view that all of these activities were introduced to southern Africa by these agriculturalists communities is still contested. The movement and spread of these EIA (~ AD200-1000) people within southern Africa seem to have been restricted to the summer rainfall (because of sorghum and millet farming) and they did not occupy much of the central interior Highveld area in South Africa. This perhaps explains the paucity of EIA sites in the study area. Ecologically, EIA preferred to settle on the alluvial soils near rivers for agricultural purposes and access to water. It was not until the mid-second millennium AD that serious Iron Age occupation began in the larger geographical area (excluding the study area) of this part of the Northern Cape.

The study area falls known within the fringes of the distribution of LIA (~ AD1100-1840) people who made Olifantspoort facies (ancestral Sotho-Tswana speakers) dated between AD1500 and AD1700 (Huffman 2007: 191). Olifantspoort facies represents the second phase of the Moloko sequence and settlements with people that made this type of ceramics are distributed in the area to the northeast of the study area, between the Vaal River and Pretoria. The people, just like the markers of Thabeng facies (third phase of the Moloko sequence AD1700-1840), settled in aggregated clusters where space was also demarcated by extensive stone walling. The extensive walled settlements around Kuruman are historically associated with the Tswana people such as the Rolong, Tlharo and Thlaping (De Jong 2010; Pelser 2012; Fourie 2013). Typologically, this type of walling is called Type Z, which is prevalent in the Free State and mark the most southerly expansion of Sotho-Tswana speakers, up to the edge of a viable farming environment (Nkhasi 2008). Type Z settlement units have large compact central primary enclosures, "usually from three to eight in number and often so close as to be touching' but they also have smaller primary enclosures which may be linked by secondary walling (Maggs, 1976: 40).

The nature of the interaction between the emigrant Tswana groups and Khoesan people who were already in this area is complex but there are indications of acculturation (Breutz 1981) and intensive trading (Goodwin 1956). Some of the activities that formed the locus for trade and interaction between the Tswanas and the Khoesan groups in this area are specularite mining and ivory hunting. For instance, at sites such Blinkklipkop (about 80km to the south of the study area), a Khoesan specularite mine sites dating to as early as AD800, there is evidence of either trade with or occupation of the mine by the Thlaping peoples around 1801 (Thackeray et al. 1983). Specularite was used for non-metallurgical purposes such as pottery decoration and bodily adornment (Hall 1985), and was a prized trade commodity, together with ivory and other items during the second millennium trade boom in this part of southern Africa. Thus by the mid-19th century (and probably earlier), the Thlaping people were purchasing glass beads, iron, copper, tin and bronze wares from other northern Sotho-Tswana groups such as the Kwena and Hurutse, and exchanging these items with the Khoesan groups to the southwest (Goodwin, 1956: 256).

Of the Tswana groups around the present study area, the Thlaping might be of interest because of their connections with the site of Dithakong near Kuruman (De Jong 2010: 35-36; Pelser 2012). This site, which at one point was a Thlaping capital, appears to be the only area in which there is direct archaeological evidence for settlement in the form of stone walling (Maggs 1972; Magoma 2013: 28). Socio-political tensions and permutations necessitated the shifting of most Tswana capital of which Dithakong was no exception. For instance, during the Batlhaping capital was first at Nokaneng around the year 1775, before it was moved to Dithakong on the Mashoweng River, and then at Kuruman in 1801. At around 1806 they returned to Dithakong but settled a short distance from the previous site. In 1812 people were contemplating returning to Nokaneng with an intermediate stop at Kuruman, where they re-established themselves in 1817. Thus in 1820 when Kuruman was the capital and comprised 25 wards, Dithakong was of similar size. Thus, the capital had moved three times in twenty years and suffered one major split which removed about half of its population. The reasons for these movements are not clear. This mobility presents a problem in the interpretation of the archaeological evidence and it helps to explain why many Iron Age sites have shallow accumulation of waste material (Maggs 1972).

Nonetheless, in the 1920s, the capital of the Batlhaping was permanently moved to Kuruman. All the same, none of these LIA sites were identified in the study area.

Plate 12: 'A view in the Town of Litakun' (Dithakong), a southern Tswana town near present-day Kuruman.

Delportshoop area heritage

Surveys around Kimberley have documented Acheullian industries and continuity between Earlier Stone Age (ESA) and Middle Stone Age (MSA) lithic technologies in the same area. Excavations at other well-known sites in the wider region attest to further ESA and MSA occupation, some of which have yielded have yielded significant Stone Age assemblages that all inform on our general understanding of the technological sequences of the Stone Age in the Northern Cape and the Northwest (e.g. see Beaumont 2008, 2009; Morris 2006; Morris 2007; Dreyer 2007). Within the greater Kimberley region ESA and MSA sites. With long research histories include Doornlaagte, Pniel, Canteen Koppie and Rooidam (Beaumont & Morris 1990). Open air ESA and MSA sites are often associated with raw material outcrops, dolines, playas (palaeo-lakes) and palaeo-river channels. In addition, low density ESA, MSA and Later Stone Age (LSA) occurrences remain regular phenomena characterizing the cultural landscape of the region. LSA use of the more immediate region is most prominently evidenced by the Wildebeest Kuil Rock Art Center and adjoining Rock Art site (see later reference) Here, a number of lithic artefacts with spatial distribution indicative of separate residential and knapping areas occur around the hill. Of note around Barkly West and Delportshoop is the Canteen Kopje Earlier Stone Age situated outside Barkly West. The rich Stone Age site is a Provincial Heritage Site which has yielded an as yet unpublished basal date of some 2.3 million years, making the site one of the oldest in South Africa. In 2016 the site became threatened by mining after the Department of Minerals and Energy issued a permit for part of the site to be mined.

The village resides at the confluence of the Harts and Vaal rivers. It developed from a diamond-diggers' camp and is said to have given the name after the first person to find diamonds there. The public diggings were proclaimed in

November 1871, a village management board was instituted in 1931, and municipal status attained in 1970. The town (Delport's Hope) is named after Mr Delport who was a miner and prospector in the area. Currently Delportshoop has the older in larger plot formal settlement that is linked to the R31. The newer Coloured and African extensions to Delportshoop, Tidimalo and Proteahof, are located east of the older town. An old Apartheid styled public open space buffer is the interface between these two locations. Access to the R31, from these two extensions is provided through the older town. Two Tswana names for Delportshoop are encountered, namely Tsineng, also spelt Tsining,Tsening, Tsenin and Tsoneng, and Dekgathlong, also spelt Dekhath-long, Dekatlong, Dekgathlong, Dikgatlhong, Likatlong and Likhat-lhong. The latter name means 'meeting-place', referring to the confluence of the Vaal and Harts rivers there.20th. Farms in the Delportshoop area were proclaimed in the first part of century.

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 the group(s) of people. Thus, intangible heritage is better defined and understood by the particular group of people that uphold it. In the present study area, very little intangible heritage remains because no historically known groups occupied the study area and most of the original settler descendants moved away from the area.

SAHRIS Data Base and Impact Assessment Reports in the project area

Several archaeological and heritage impact studies were conducted for mining and infrastructure developments in the vicinity of the prospecting right application site. These studies include studies conducted by Beaumont (2000) Coetzee (2017), Kaplan (2017), Matenga 2018, Kruger (2019), Rossouw (2019) and Mlilo (2019). in the project area. As previously indicated the site was previously mined. Dreyer (2010) noted, that evidence of previous mining activities occurs in the entire study area. Dreyer (2010) observed trenches, pits, tracks, mine dumps and infrastructure associated with previous mining in the project area. Archaeological research and heritage impact studies in the general project confirmed that Stone Age tools occur in red sands deposits around the Kathu area (Beaumont 1990, 2000, 2007, Dreyer 2006, 2008, 2010). Acheul quarry of similar extent to the Kathu Towlands Site occurs on the crest of Kathu Hill close to the town of Kathu. However, to extensive mining activities in the area, none of the mentioned sites still survive within the current development site.

The other studies of interest include powerline and substation projects completed by Kaplan, J. (2009), Van der Walt (2013); Fourie, (2013b), Hutten, L. & Hutten, W. (2013) Magoma (2013), Bandama (2015), Mlilo (2016), Kruger (2015a, 2015b), Pelser, A. & van Vollenhoven, A.C. 2011, Pelser (2012), Van Schalkwyk (2010, 2015a, 2015b, 2016), Van Vollenhoven, A.C. (2012) and Webley, L & Halkett (2008). Van Schalkwyk (2010, 2016) examined sites west of Hotazel town and found no cultural resources to be present in either location. Other studies further afield

(e.g. Fourie 2013) have found a similar rareness of archaeological material in open, sandy areas. However, along the margins of the Kuruman River and Ga-Mogara River, stone artefacts have been reported (Hutten & Hutten 2013) and (Kusel *et al* 2009). These artefacts are low density and appear to be largely from the Middle Stone Age (MSA), although some may be Later Stone Age (LSA). Surveys have revealed that there are large tracts of land where virtually no archaeological material occurs (Orton 2016, 2017; Van Schalkwyk 2010, 2016). Early Stone Age (ESA) material seems to be largely absent, despite how common it is at Kathu, 50 km to the south, where extensive research has been carried out (e.g. Chazan et al. 2012; Porat *et al.* 2010).

RESULTS OF THE FIELD STUDY

Archaeology

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

Similarly, the clearing of access road will impact material that lies buried in the topsoil although the chances are limited. Since heritage sites, including archaeological sites, are non-renewable, they must be identified, and their significance assessed before prospecting. It is important to note that due to the localised nature of archaeological resources, that individual archaeological sites could be missed during the survey, although the probability of this is very low within the prospecting right application site. Further, archaeological sites and unmarked graves may be buried beneath the surface and may only be exposed during surface clearance and prospecting. The purpose of the AIA is to assess the sensitivity of the area in terms of archaeology and to avoid or reduce the potential impacts of the proposed development employing mitigation measures (see appended Chance Find Procedure). The following section presents the results of the archaeological and heritage survey conducted within the proposed development project site.

As a result of advances in technology, it is possible to survey large tracts of land on the desktop. A scoping survey was thus conducted for the entire prospecting right application site. The desktop scoping survey in Google Earth and Ortho-rectified satellite imagery identified heritage features and burial sites as well as farm steads and structures which may require protection under the NHRA. Sites known from written sources were marked pending verification during ground-truthing. During the scoping survey using Google Earth it became clear that most of the

images were taken when there was little vegetation cover. It was thus easier to map the sites pending verification during ground-truthing. This mapping exercise also gave indications regarding the possible size of the settlements. Some areas were not visible enough to allow for the mapping of traditional graves. These were noted and the maps were verified during field walking.

Based on the field study results and field observations, the receiving environment for the proposed prospecting is low to medium potential to yield previously unidentified archaeological sites during subsurface excavations and work associated with the proposed prospecting. The literature review also revealed that no Stone Age sites are shown on a map contained in a historical atlas of this area. This, however, should rather be seen as a lack of research in the area and not as an indication that such features do not occur.

Burial grounds and Graves

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

The field survey did not identify any graves within the prospecting right application site. It should be noted that burial grounds and grave sites are accorded the highest social significance threshold (see Appendix 3). They have both historical and social significance and are considered sacred. Also, graves are important in providing evidence for communities seeking land restitution. Wherever they exist or not, they may not be tampered with or interfered with during any development without a permit from SAHRA. It is also borne in mind that the possibility of encountering human remains during subsurface earth moving works anywhere on the landscape is ever present. Although the possibility of encountering previously unidentified burial sites is low within the proposed prospecting site, should such sites be identified during subsurface construction work, they are still protected by applicable legislation and they should be protected.

Public Monuments and Memorials

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

Buildings and Structures

There are no buildings and structures within the prospecting right application site. The prospecting right application does not trigger Section 34 of the NHRA which protects buildings, and structures older than 60 years.

Palaeontology

The SAHRIS Palaeosensitivity map indicates that the mining development site is of moderate high sensitivity from the point of view of fossil heritage and that at least a desktop study should be conducted. Durand (2019) indicated that the Kalahari Sands and underlying calcretes are not sensitive from a palaeontological point of view because the types of fossils expected to be found are common and widespread within the region. These include invertebrate burrows and root and reed castes. These sorts of fossils are the only ones recorded by Almond in the project area (see Almond 2016). Almond (2016) observed that the site is underlain by sediments of the Kalahari Group. These include the Pleistocene-aged red sands of the Gordonia Formation as well as the underlying calcretes of the Mokolanen Formation. Fossils occur in both but are expected to be sporadic and widespread. Although mammalian bones, teeth and horn cores may occur in these sediments, their distribution is likely to be very sparse. Since the proposed prospecting right application site was surveyed previously, they may not be any need to conduct another survey.

Table 2: Summary of Findings

Heritage resource	Status/Findings
Buildings, structures, places and equipment of cultural significance	None recorded.
Areas to which oral traditions are attached or which are associated with intangible heritage	None exist
Historical settlements and townscapes	None survives in the proposed area
Landscapes and natural features of cultural significance	None
Archaeological sites	None recorded within the prospecting right application site
Graves and burial grounds	None recorded
Movable objects	None
Overall comment	The surveyed area has no confirmable archaeological resources on the surface, but sub-surface chance finds are still possible.

Assessment of Mining impacts

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

Methodology Adapted in Assessing the Impacts

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

Table 3: Criteria Used for Rating of Impacts

Nature of the impact (N)		
Positive	+	The impact will be beneficial to the environment (a benefit).
Negative	-	The impact will not be beneficial to the environment (a cost).
Neutral	0	Where a negative impact is offset by a positive impact, or mitigation measures, to have no overall effect.
`Magnitude(M)		
Minor	2	Negligible effects on heritage or social functions/processes. Includes areas / environmental aspects which have already been altered significantly and have little to no conservation importance (negligible sensitivity*).
Low	4	Minimal effects on heritage or social functions/processes. Includes areas / environmental aspects which have been largely modified, and / or have a low conservation importance (low sensitivity*).
Moderate	6	Notable effects on heritage or social functions/processes. Includes areas / environmental aspects which have already been moderately modified and have a medium conservation importance (medium sensitivity*).
High	8	Considerable effects on heritage or social functions/processes. Includes areas / environmental aspects which have been slightly modified and have high conservation importance (high sensitivity*).
Very high	10	Severe effects on heritage or social functions/processes. Includes areas / environmental aspects which have not previously been impacted upon and are pristine, thus of very high conservation importance (very high sensitivity*).
Extent (E)		
Site only	1	Effect limited to the site and its immediate surroundings.
Local	2	Effect limited to within 3-5 km of the site.
Regional	3	Activity will have an impact on a regional scale.
National	4	Activity will have an impact on a national scale.
International	5	Activity will have an impact on an international scale.

Duration (D)		
Immediate	1	Effect occurs periodically throughout the life of the activity.
Short term	2	Effect lasts for a period of 0 to 5 years.
Medium term	3	Effect continues for a period between 5 and 15 years.
Long term	4	Effect will cease after the operational life of the activity either because of a natural process or by human intervention.
Permanent	5	Where mitigation either by natural process or by human intervention will not occur in such a way or such a period that the impact can be considered transient.
Probability of occurrence (P)		
Improbable	1	Less than 30% chance of occurrence.
Low	2	Between 30 and 50% chance of occurrence.
Medium	3	Between 50 and 70% chance of occurrence.
High	4	Greater than 70% chance of occurrence.
Definite	5	Will occur, or where applicable has occurred, regardless of or despite any mitigation measures.

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

Significance Points (SP) = (Magnitude + Duration + Extent) x Probability

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

Table 4: Criteria for Rating of Classified Impacts

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

Table 5: Operational Phase

Impacts and Mitigation measures relating to the proposed project during the Operational Phase														
Activity/Aspect	**Impact /**	**Aspect**	**Nature**	**Magnitude**	**Extent**	**Duration**	**Probability**	**Significance before mitigation**	**Mitigation measures**	**Magnitude**	**Extent**	**Duration**	**Probability**	**Significance after mitigation**
Clearing and construction	Destruction of archaeological remains	Cultural heritage	-	2	1	1	2	8	Mitigation not required because the study did not record any archaeological sites, Chance find procedure applies.	2	1	1	1	4
	Disturbance of graves	Cultural heritage	-	2	1	1	2	8	Mitigation not required because the site did not yield any graves	4	1	1	1	4
	Disturbance of buildings and structures older than 60 years old	Operational	-	2	1	1	1	4	Mitigation not required because there are no buildings at the site	4	1	1	1	4
Mining and haulage	Destruction of public monuments and plaques	Operational	-	2	1	1	1	4	• Mitigation is not required because there are no public monuments within the prospecting right application site	2	1	1	4	Low

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

The impacts of the proposed prospecting were assessed by comparing the post-project situation to a pre-existing baseline. Where projects can be considered in isolation, this provides a good method of assessing a project's impact. However, in this case, the site has been previously disturbed by previous alluvial diamond mining activities which affected baselines, the proposed prospecting will contribute to the existing impacts in the project area. As such increased development in the project area will have several cumulative impacts on heritage resources whether known or covered in the ground. For example, during clearance they will be an increase in human activity and movement of heavy prospecting equipment and vehicles that could change, alter or destroy heritage resources within and outside the development sites given that archaeological remains occur on the surface. Cumulative impacts that could result from a combination of the proposed prospecting and other actual or 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.

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

Palaeontological Impact Assessment is underway, the results will be incorporated into the heritage study as soon as they are available. Sites of archaeological 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.

A significant cumulative impact that needs attention is related to stamping by especially prospecting vehicles during clearance and drilling within the site. 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 construction vehicles are not monitored to avoid driving through undetected heritage resources.

Mitigation

Mitigation is not required because they survey did not record any heritage sites within the prospecting right application site. However, the Chance Find procedure is required to cater for any accidental finds during prospecting.

ASSESSING SIGNIFICANCE

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

Aesthetic Value

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

Historic Value

Historic value encompasses the history of aesthetics, science, and society, and therefore to a large extent underlies all the terms set out in this section. A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase, or activity. It may also have historic value as the site of an important event. For any given place, the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact than where it has been changed or

evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment.

Scientific value

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

Social Value

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

DISCUSSION

Several Phase 1 Heritage studies for various mining and infrastructure developments were conducted since 2000. The studies noted that significant Stone Age sites occur in and around project area and on adjacent farms. The current site did not yield any archaeological remains as confirmed by Beaumont (2004) the scarcity of archaeological remains within the study area. As such the current study should be read in conjunction with other specialist reports such as Beaumont (2004). The archaeology of the Northern Cape is rich and varied, covering long spans of human history (Morris 2006). In the Northern Cape ESA assemblages, including the Fauresmith, tend to occur on the margins of seasonal rivers, semi-permanent water holes or pans (Beaumont 2004) The significance of ruined farm workers houses recorded in the study area are of lesser importance because they were destroyed by previous mining activities and years of neglect. Similarly, rock engravings previously occurred on the nearby farms, Bruce and Sishen, were also destroyed by mining activities. Although the boundaries of the Kathu Pan site are not clearly defined, the site is located far from the current mining site. The proposed mining development is not a threat to the site in any way.

Other than the Kathu Pan and other small finds, the vast areas are devoid of archaeological remains. Archaeological remains that may have occurred in the project area have been affected by extensive iron and manganese mining activities in the area. The region's remoteness of the Northern Cape may be a reason for

the lack of archaeological research in the area. Probably because of its dryness, most areas have probably been relatively marginal to human settlement for most of its history (Fourie 2010, Kusel *et al* 2009, Morris 2006, Pelser 2010). All archaeological studies (Beaumont 2004, Dreyer 2010) within the site of interest have confirmed the almost total absence of any archaeological material. 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 mine right application site is located within a heavily degraded mining area and have reduced sensitivity for the presence of high significance physical cultural site remains, be they archaeological, historical or burial sites, due to extensive mining activities.

2. Limited ground surface visibility on sections of the proposed prospecting site that were not cleared at the time of the study may have impended the detection of other physical cultural heritage site remains or archaeological signatures within the mining development site. 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 mining.

The absence of confirmable and significant archaeological cultural heritage site is not evidence in itself that such sites did not exist in the prospecting right application site (see appended Chance Find Procedure). Significance of the sites of Interest (mining site) is not limited to presence or absence of physical archaeological sites.

RECOMMENDATIONS

1. From a heritage perspective supported by the findings of this study, the proposed prospecting is feasible if appropriate measures are taken to deal with the recorded burial site
2. Under DMR regulations on blasting, no blasting is permitted within 500m of a heritage site because blasting causes excessive vibrations which will cause the collapse of buildings and tombstones.
3. The footprint impact of the proposed development and associated infrastructure should be kept to a minimum to limit the possibility of encountering chance finds.
4. Prospecting teams must be inducted on the possibility of encountering archaeological resources that may be accidentally exposed during subsurface clearance before the commencement of work on the site to ensure appropriate mitigation measures and that course of action is afforded to any chance finds.

5. Should chance archaeological materials or human remains be exposed during subsurface construction work on any section of the proposed mining 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.
6. Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project EMP, there are no significant cultural heritage resources barriers to the prospecting right Application. SAHRA may approve the prospecting right application to proceed as planned with special commendations to implement the recommendations herein made.

CONCLUSIONS

Integrated Specialist Services (Pty) Ltd was tasked by NDI Geological Consulting Services (Pty) Ltd to carry out HIA for the prospecting right application on the farms Farm Than No.280 (Vaal River) and the portion of the farm Northern Cape Province. Desktop research revealed that the North West region and the RBN land in particular is rich in LIA stone walled sites (Kusel 2003) and Pelser (2007. In terms of archaeology and heritage in respect of the prospecting right application, there are no obvious 'Fatal Flaws' or 'No-Go' areas. However, the potential for chance finds, remains and the developer and contractors are advised to be diligent and observant during the construction of the land site. The procedure for reporting chance finds has been laid out and if this report is adopted by SAHRA, then there are no archaeological reasons why the prospecting right application cannot be approved.

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Researching the SAHRIS online database (http://www.sahra.org.za/sahris) further studies were identified in the vicinity of the study area:

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SAHRIS case number 1089. Consultation in terms of Section 40 of the Mineral and Petroleum Resources Development Act 2002, (Act 28 of 2002) for the approval of an Environmental Management Programme for a mining right in respect of manganese and iron ore on Erf

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SAHRIS case number 1332. Resources Development Act 2002, (Act 28 of 2002) for the approval of an amendment to the Environmental Management Programme for a mining right in respect of iron ore on Portion 2, 6 and the remainder of farm Parson Po. 564, Portions 1,2,3 and the remainder of farm King No. 561, Portion 3,4,5 and the remainder of Bruce No.544, Portion 1,2,3,4,5 remainder of Mokaning No.560 situated in the Magisterial District of Kuruman, Northern Cape.

SAHRIS case number 1402. Consultation in terms of Section 40 of the Mineral and Petroleum Resources Development Act of 2002, (Act 28 of 2002) for the approval of an Environmental Management Plan in respect of borrow pits 1,2,3,4,5,6,7,8 & 9 on Portion 19 of farm 543, remaining extent and Portion 1 of Gamagara 541, Portion 1 and Portion 2 of Fritz 540, remainder of Nooitgedacht 469 and remainder of Lylyveld 545, situated in the Magisterial District of Kuruman Northern Cape region.

SAHRIS case number 1411. Consultation of scoping report submitted in terms of Section 22 of the Mineral and Petroleum Resources Development Act 2002, (Act 28 of 2002) in respect of remaining extent of Portion 1 (Barnadene) of farm sims No.462, remaining extent of and remaining extent and remaining extent of Portion 2 (Rusoord) and remaining extent of Portion 3 (Portion of Portion 1) of Farm Sacha No.468, remaining extent of Portion 4 of the farm Gamagara No.541, remaining extent of Portion 1 (lot a) of the farm Sishen No. 543, situated in the Magisterial District of Kuruman.

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SAHRIS case number 3698. Proposed relocation of the Vaal Gamagara water pipeline at the Sishen Iron Ore Mine.

SAHRIS case number 3701. Proposed relocation of Rail and Associated Infrastructure at Sishen Iron Ore Mine.

SAHRIS case number 4456. Proposed development of 380ha for residential uses, Kathu, Portion 175/1 and Portion 175/2, Joe Morolong Local Municipality, John Taolo District Municipality, Northern Cape Province.

SAHRIS case number 4785. SAHRA comments for the Heritage Impact Assessment Report for the Kalahari Solar Power Project located on Famr Kathu 465, near Kathu within the Northern Province.

SAHRIS case number 4460. Residential development on Remainder, and Portion 3 of Farm Bestwood 459 near the town of Kathu, Northern Cape.

SAHRIS case number 5323. EIA and EMPr for the Proposed Solar CSP Integration Project: Project 2 - 400kV Power Line from Ferrum to the Solar Substation.

SAHRIS case number 5648. The project will consist of the construction of an approximately 67km Double Circuit 400kV powerline from the Manganore Substation to the Ferrum Substation, including the construction of the new Manganore TX (Transmission) Substation adjacent to the existing Manganore DX (Distribution) Substation. The line runs in a northerly direction through areas of the Tsantsabane, Ga-Segonyana and Gamagara Local Municipalities in the Northern Cape Province.

APPENDIX 1: CHANCE FIND PROCEDURE FOR THE PROSPECTING RIGHT APPLICATION ON THE FARMS FARM THAN NO.280 (VAAL RIVER) AND THE PORTION OF THE FARM IN THE BARKLEY WEST MAGISTERIAL DISTRICT, NORTHERN CAPE PROVINCE

August 2020

ACRONYMS

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

CHANCE FIND PROCEDURE

Introduction

An Archaeological Chance Find Procedure (CFP) is a tool for the protection of previously unidentified cultural heritage resources during construction and mining. The main purpose of a CFP is to raise awareness of all construction, mine workers, and management on site regarding the potential for the 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 the discovery of cultural heritage resources that were not identified during archaeological and heritage impact assessments. As such, it is considered to be a valuable instrument when properly implemented. For the CFP to be effective, the site manager must ensure that all personnel on the prospecting right application site understand the CFP and the importance of adhering to it if cultural heritage resources are encountered. Besides, training or induction on cultural heritage resources that might potentially be found on the site should be provided. In short, the Chance finds procedure details the necessary steps to be taken if any culturally significant artefacts are found during construction.

Definitions

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

Background

The proposed prospecting site is located near Barkley West in the Northern Cape Province. The site is subject to heritage survey and assessment at the planning stage following the NHRA. These surveys are based on surface indications alone and it is therefore possible that sites or significant archaeological remains can be missed during surveys because they occur beneath the surface. These are often accidentally exposed in the course of construction or any associated construction work and hence the need for a Chance Find Procedure to deal with accidental finds. In this case, an extensive Archaeological Impact Assessment was completed

by T. Mlilo (2020) on the prospecting right application site. The AIA/HIA conducted was very comprehensive covering the entire site. The current study (Mlilo 2020) did not record any significant archaeological or heritage resources within the prospecting right application site.

Purpose

The purpose of this Chance Find Procedure is to ensure the protection of previously unrecorded heritage resources along with the proposed project site. This Chance Find Procedure intends to provide the applicant and contractors with an appropriate response in accordance with the NHRA and international best practices. This CFP aims to avoid or reduce project risks that may occur as a result of accidental finds whilst considering international best practices. Besides, this document seeks to address the probability of archaeological remains finds and features becoming accidentally exposed during the digging of foundations and movement of construction equipment. 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 tall grass cover. Integrated Specialist Services (Pty) Ltd 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 the preservation of archaeological remains while minimizing disruption of the construction schedule. It is recommended that due to the low to moderate archaeological potential of the project area, all site personnel and contractors be informed of the Archaeological Chance Find procedure and have access to a copy while on site. This document has been prepared to define the avoidance, minimization, and mitigation measures necessary to ensure that negative impacts to known and unknown archaeological remains as a result of project activities and are prevented or where this is not possible, reduced to as low as reasonably practical during clearance and 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 another appropriately qualified person to its rescue or salvage.

CHANCE FIND PROCEDURE

General

The following procedure is to be executed if archaeological material is discovered:

- All construction/clearance activities in the vicinity of the accidental find/feature/site must cease immediately to avoid further damage to the find site.
- Briefly note the type of archaeological materials you think you have encountered, and their location, including, if possible, the depth below the surface of the find
- Report your discovery to your supervisor or if they are unavailable, report to the project ECO who will provide further instructions.
- If the supervisor is not available, notify the Environmental Control Officer immediately. The Environmental Control Officer will then report the find to the Site Manager who will promptly notify the project archaeologist and SAHRA.
- Delineate the discovered find/ feature/ site and provide a 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 the direction of the Health and Safety Officer.

- **Finds rescue strategy**: All investigation of archaeological soils will be undertaken by hand, all finds, remains, and samples will be kept and submitted to a Museum as required by the heritage legislation. If any artefacts need to be conserved, the relevant permit will be sought from the SAHRA.
- An on-site office and finds storage area will be provided, allowing storage of any artefacts or other archaeological material recovered during the monitoring process.
- In the case of human remains, in addition to the above, the SAHRA Burial Ground Unit will be contacted and the guidelines for the treatment of human remains will be adhered to. If skeletal remains are identified, an archaeological will be available to examine the remains.
- The project archaeologist will complete a report on the findings as part of the permit application process.
- Once authorisation has been given by SAHRA, the Applicant will be informed when mining 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.

If human remains are accidentally exposed, SAHRA Burial Ground Unit or ISS Specialist must immediately be notified of the discovery to take the required further steps:

a. Heritage Specialist to inspect, evaluate, and document the exposed burial or skeletal remains and determine further action in consultation with the SAPS and Traditional authorities:

b. Heritage specialist will investigate the age of the accidental exposure 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 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 an experienced undertaker to conduct the relocation process.

h. The rescue process will be done under the supervision of the archaeologist, the site representative, and affected family members. Retrieval of the remains shall be undertaken in such a manner as to reveal the stratigraphic and spatial relationship of the human skeletal remains with other archaeological features in the excavation (e.g., grave goods, hearths, burial pits, etc.). A catalogue and bagging system shall be utilised that will allow ready reassembly and relational analysis of all elements in a laboratory. The remains will not be touched with the naked hand; all Contractor personnel working on the excavation must wear clean cotton or non-powdered latex gloves when handling remains 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 the company.

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

APPENDIX 2: HERITAGE MANAGEMENT PLAN INPUT INTO THE PROSPECTING RIGHT APPLICATION EMP

Objectiv	• Protection of archaeological sites and land considered to be of cultural value. • Protection of known physical cultural property sites against vandalism, destruction and theft; and • The preservation and appropriate management of new archaeological finds should these be discovered during construction.							
No.	Activity	Mitigation Measures	Duration	Frequency	Responsibility	Accountable	Contacted	Informed
Pre-Construction Phase								
1	Planning	Ensure all known sites of cultural, archaeological, and historical significance are demarcated on the site layout plan and marked as no-go areas.	Throughout Project	Weekly Inspection	Contractor [C] CECO	SM	ECO	EA EM PM
Construction Phase								
1	Emergency Response	Should any archaeological or physical cultural property heritage resources be exposed during excavation for the purpose of construction, construction in the vicinity of the finding must be stopped until heritage authority has cleared the development to continue.	N/A	Throughout	C CECO	SM	ECO	EA EM PM
		Should any archaeological, cultural property heritage resources be exposed during excavation or be found on the 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 the 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 the prospecting phase.						
Operational Phase								
		Same as the 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 in a historic landscape, which may yield archaeological, cultural property, remains. There are possibilities of encountering unknown archaeological sites during subsurface construction work which may disturb previously unidentified chance finds.	Possible damage to previously unidentified archaeological and burial sites during the construction phase. • Unanticipated impacts on archaeological sites where project actions inadvertently uncovered significant archaeological sites. • Loss of historic cultural landscape. • Destruction of burial sites and associated graves • Loss of aesthetic value due to construction work • Loss of sense of place Loss of intangible heritage value due to change in land use	In situations where unpredicted impacts occur construction activities must be stopped, and the heritage authority should be notified immediately. Where remedial action is warranted, minimize disruption in construction scheduling while recovering archaeological data. Where necessary, implement emergency measures to mitigate. • Where burial sites are accidentally disturbed during construction, the affected area should be demarcated as a no-go zone by the 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 permit for possible	• Contractor / • Project Manager • Archaeologist • Project EO	Fine and or imprisonment under the PHRA Act & NHRA	Monitoring measures should be issued as instruction within the project EMP. PM/EO/Archaeologists Monitor construction work on sites where such development projects commence within the farm.

			relocation of affected graves accidentally encountered during construction work.			

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

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

General principles for heritage resources management

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

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

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

(c) heritage resources can 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 the conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

(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 accordance with regulations of the responsible heritage resources authority

(a) investigate 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 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, concerning 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-enter 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, before 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