

**REVISED PHASE 1 ARCHAEOLOGICAL AND HERITAGE IMPACT
ASSESSMENT REPORT FOR THE PROPOSED MINING RIGHT AND
ASSOCIATED ENVIRONMENTAL AUTHORISATION AND WASTE
MANAGEMENT LICENCE (WML) FOR THE PROPOSED MINING OF
GRANITE ON A PORTION OF ZWART MODDER MOUNTAIN NO. 446
(445) IN THE KAI! GARIB LOCAL MUNICIPALITY, NORTHERN CAPE
PROVINCE**

DATE: May 2022

Document Information

Item	Description
Proposed development and location	Proposed Mining Right and Associated Environmental Authorisation and Waste Management Licence (WML) for the proposed Mining of Granite on a Portion of Zwart Modder Mountain No. 446 (445), Kai! Garib Local Municipality, Northern Cape Province.
Purpose of the study	To carry out an archaeological and Heritage Impact Assessment to determine the presence/absence of cultural heritage sites and the impact of proposed mining development.
Coordinates	See Table and Figure 3
Municipalities	Kai! Garib Local Municipality
Predominant land use of surrounding area	Agriculture and mining
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Date of Report	16/07/ 2021



NATIONAL LEGISLATION AND REGULATIONS GOVERNING THIS REPORT

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

DECLARATION OF INDEPENDENCE

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

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

Expertise:

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

Independence

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

Conditions relating to this report

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

This report must not be altered or added to without the prior written consent of the author and 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 a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

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

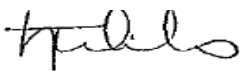
Geographic Co-ordinate Information: Geographic co-ordinates in this report were obtained using a hand-held Garmin Global Positioning System device. The manufacturer states that these devices are accurate to within +/- 5 m.

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

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

The Archaeological and Heritage Impact Assessment Study was carried out within the context of tangible and intangible cultural heritage resources as defined by the SAHRA Regulations and Guidelines as to the authorisation of the proposed mining right for granite mining being proposed by Golden Tropic Mining (Pty) Ltd.

Signed by



16/ 07/ 2021

Acknowledgement

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EXECUTIVE SUMMARY

Golden Tropic Mining (Pty) Ltd (PAMDC) is applying for a Mining Right and Associated Environmental Authorisation and Waste Management Licence (Wml) for the proposed mining of Granite on a Portion of Zwart Modder Mountain No. 446 (445), Kai! Garib Local Municipality, Northern Cape Province. The proposed mining project will cover an area of 2 627.28 hectares on a Portion of Zwart Modder Mountain located within Kai! Garib Local Municipality in an area that is predominantly mountainous and rocky (See Figure 1), and any listed development in this area must take full cognizance of potential occurrence of heritage resources. Various national and provincial legislative arms mandate pre-development assessment to ensure protection of heritage resources. The rich geological and agricultural resources of the project area have also led to numerous farming and mining activities that had robbed parts of the area's pristine environments. The implications of this observation are that whatever heritage resources that still exist in the area must be protected from any developments.

Archaeological resources in the general project area stretches into deep time starting with australopithecines. These australopithecines were gradually displaced by early hominid (Homo Habilis) that was later replaced by the early crude stone tool using hominid (Homo erectus around 1.8 million years ago). This marked the beginning of the Stone Age (ESA), which is not very widespread in the study area. Nonetheless the area has isolated occurrences of the Middle Stone Age (MSA) industries associated with anatomically modern humans, Homo sapiens that replaced the ESA around 250000 years ago. The subsequent replacement of the MSA by Later Stone Age (LSA) occurred from about 20000 years ago and the new technology is also represented in isolated occurrences. The LSA is triggered a series of technological innovations and social transformations within these early hunter-gatherer societies that included the advent of rock art (paining and engravings), associated with the Khoisan communities. This Archaeological and Heritage Impact Assessment (AIA/HIA) report has been prepared to address requirements of the National Heritage Resources Act, Act 25 of 1999, Section 38 (8). Integrated Specialist Services (Pty) Ltd (ISS) was retained by NDI Geological Consulting Services (Pty) Ltd to conduct this Archaeological and Heritage Impact Assessment (AIA/HIA) Study for the proposed Mining Right and Associated Environmental Authorisation and Waste Management Licence (Wml) for the proposed mining of Granite within Kai! Garib Local Municipality of Northern Cape Province. This report includes an impact study on potential archaeological and cultural heritage resources that may be associated with the proposed mining site. This study was conducted as part of the specialist input for the Environmental authorisation process. The project information has been passed to ISS research team by the project EAP. Analysis of the archaeological, cultural heritage, environmental and historic contexts of the study area predicted that archaeological sites, cultural heritage sites, burial grounds or isolated artefacts were likely to be present on the affected landscape. The field survey was conducted to test this hypothesis and verify this prediction within the proposed mining site. The general project area is predominantly agriculture, residential and mining.

The report makes the following observations:

- The findings of this report have been informed by desktop data review, field survey and impact assessment reporting which include recommendations to guide heritage authorities in making decisions with regards to the proposed mining.
- The proposed Mining Right site is partially accessible, and the field survey was effective enough to cover most sections of the project receiving environs. However, the boundary of the development site had limited access because of tall grass cover.
- The immediate project area is predominantly agricultural, game farming and tourism.

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

- ❖ The mining teams must be inducted on the possibility of encountering archaeological resources that may be accidentally exposed during clearance and drilling at the site prior to commencement of work on the site in order 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/ Northern Cape PHRA 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 legislations.

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

The assessment reached the following conclusions:

1. The project area did not attract prehistoric settlement due to lack of water resources and semi-arid conditions.
2. Farm workers know the locations of most burial sites in the farms, as such they must be consulted during mining.

Recommendations

1. The proposed Mining Right Application may be approved without further investigation or mitigation.

2. There is a possibility of encountering unknown burial sites, it is thus advised to seek information about burial sites from farmers and farm workers.
3. It is also advised that the Archaeology, Palaeontology and SAHRA Meteorites Unit is alerted when site work begins.
4. Strict and clear reporting procedures for chance findings must be followed by Golden Tropic Mining (Pty) Ltd and its contractors throughout the whole period of mining.

ABBREVIATIONS

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

KEY CONCEPTS AND TERMS

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

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

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

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

Early Iron Age (~ AD 200 to 1000)

Late Iron Age (~ AD1100-1840)

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

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

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

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

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

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

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

Archaeological site/materials are remains or traces of human activity that are in a state of disuse and are in, or on, land and which are older than 100 years, including artefacts, human and hominid remains, and artificial features and structures. According to the National Heritage Resources Act (NHRA) (Act No. 25 of 1999), no archaeological artefact, assemblage, or settlement (site) and no historical building or structure older than 60 years may be altered, moved, or destroyed without the necessary authorisation from the South African Heritage Resources Agency (SAHRA) or a provincial heritage resources authority.

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

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

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

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

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

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

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

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

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

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

1 INTRODUCTION

Background

Most heritage sites occur within communities, whose development should not be neglected in the name of heritage preservation but should be encouraged and embraced within legal and adaptive management frameworks (Carter and Grimwade 1997; Salafsky *et al* 2001). This case is true for the entire project area, which may host palaeontological, archaeological, historical, natural, and contemporary heritage resources. Golden Tropic Mining (Pty) Ltd is applying for a mining right, associated Environmental Authorisation and Waste Management Licence (WML) for the proposed mining of Granite on a Portion of Zwart Modder Mountain No. 446 (445), Kai! Garib Local Municipality, Northern Cape Province. Previous heritage studies (Kusel *et al* 2009, Webley 2012, Orton 2013, 2016, 2017, Morris 2010a, 2010b, 2010c, Webley & Halket 2012, Kaplan 2012a, 2012b) mentioned significant heritage resources in parts of the region under which the proposed project area is located. More specific to this study area is Orton and Webley (2012), the study covered the entire Mining Right area, and this current report must be read together with the existing report. The current study aimed at complementing Orton & Webley (2012)'s report.

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

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

- 1) Management summary
- 2) Methodology
- 3) Information with reference to the desktop study
- 4) Map and relevant geodetic images and data
- 5) GPS co-ordinates
- 6) Directions to the site

- 7) Site description and interpretation of the cultural area where the project will take place
- 8) Management details, description of affected cultural environment, photographic records of the project area
- 9) Recommendations regarding the significance of the site and recommendations regarding further monitoring of the site.
- 10) Conclusion

Description of the proposed project

Provide a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site.

The following activities will be undertaken on site including associated infrastructure as part of the site establishment.

- Diesel power source vehicles and machineries will be used for the proposed activities.
- There are currently existing roads that give access to the proposed site. In areas where it's problematic or with no access at all, temporary roads will be established (through trucks moving through the bush, not bush clearing).
- It is mandatory under the health and safety act that ablution facilities are made available where people will be undertaking any activities. Chemical toilets will be erected on site for the sanitation purposes.
- Temporary contractor's yard will be erected on site and will entail site offices, ablution facilities as well as parking areas. No workers will stay on site.
- No diesel fuel, oil and lubricants will be stored on site. These will be transported on a daily basis or when required.
- Water for mining purposes will be brought to site. Portable water for contractors will be provided and will be stored on site.
- Hazardous waste to be generated includes mineral residue, hydrocarbon wastes (oil and liquid fuel wastes) and sewage waste. Hydrocarbon waste will be collected in drums for storage. The removal of the drums or any other appropriate receptacle will be undertaken by a registered waste disposal company, for disposal at a registered licensed waste disposal site. The drums will be placed on protected ground.
- Mineral residue will include muds and drilling chips generated during the drilling of the exploration boreholes. The mineral residue will be removed from the site and disposed of at a registered waste disposal site.

A site plan indicating all infrastructure to be constructed on site and drilling positions is attached in the overleaf page below.

Listed and specified activities

Section 16 of the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) requires, upon request by the Minister, that an Environmental Management Programme is submitted, and that the applicant

must notify and consult with Interested and Affected Parties (I&APs). Section 24 of the NEMA requires that activities which may impact on the environment must obtain authorisation from the relevant authority before commencing with the activity. Such activities are listed under Regulations Listing Notice 1 Government Notice (GN) 327, Listing Notice 2 GN 325 and Listing Notice 3 GN 324 of NEMA- as amended in April 2017. Please refer to Table 5 for details of the listed activities triggered by the proposed development.

Table 1: NEMA triggered activities

NAME OF ACTIVITY E.g. For mining - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc. E.g. For mining - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc.)	Aerial extent of the Activity Ha or m²		LISTED ACTIVITY Mark with an X where applicable or affected.	APPLICABLE LISTING NOTICE (GNR 544, GNR 545 or GNR 546)
Establishment of Drill Site (Drilling)	2000 m ²	0.2ha	X	Activity 20- GNR 327 of 2017
Any activity including the operation of that activity which requires a mining right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks, directly related to mining of a mineral resource, including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002) (Act No. 28 of 2002).		5,267.59ha	X	GNR 983 as amended by GNR 327, Listing 1, Activity 20
Drill boreholes (RC and Diamond Core drill)	2000 m ²	0.2ha	X	GNR 983 as amended by GNR 327, Listing 1, Activity 20
The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or	—	0.5Ha	X	GNR 983 as Amended by GNR 327, Listing 27

NAME OF ACTIVITY E.g. For mining - drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route etc. E.g. For mining - excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc.)	Aerial extent of the Activity Ha or m²		LISTED ACTIVITY Mark with an X where applicable or affected.	APPLICABLE LISTING NOTICE (GNR 544, GNR 545 or GNR 546)
(ii) maintenance purposes undertaken in accordance with a maintenance management plan.				
Fencing (No new fencing will be erected)	-	-	-	
Access and Mine Roads (Pre-existing access routes to be used)	-	-	-	GNR 983 as amended by GNR 327, Listing 1, Activity 20
Topsoil		0.01Ha	-	GNR 325, Listing 2, Activity 19
Site Office (No site office to be established)	-	-	-	GNR 983 as amended by GNR 327, Listing 1, Activity 20
Vehicle parking		0.02Ha	-	GNR 983 as amended by GNR 327, Listing 1, Activity 20
Domestic Waste Facility (None will be established on site)	-	-	-	GNR 983 as amended by GNR 327, Listing 1, Activity 20

Description of the activities to be undertaken

Golden Tropic Mining (Pty) Ltd is applying for a mining right, triggering the basic assessment process of the HIA/AIA--* regulations. The mineral of interests includes 1) Manganese (Mn), 2) Copper (Cu), 3) Iron (Fe).

This mining process will not involve or include bulk sampling. The only method that will be employed for this mining right application will be drilling. The choice of mining method in a dimension stone quarry is largely affected by the geology of the deposit. The quarrying operation cuts a block of stone free from the bedrock mass by first separating the block on all four vertical sides, and then undercutting or breaking the block away from the bedrock. If the block is large, it is called a “quarry block” and will be cut into smaller blocks at the quarry. If the block is small enough to be moved from the quarry it is called a “mill block” and may be sold as it is or taken to a mill for further processing.

Two methods for quarrying are to be employed, channel cutting and drilling. A channelling machine cuts a channel in the rock using multiple chisel-edged cutting bars that cut with a chopping action. In drilling and broaching, a drilling tool first drills numerous holes in an aligned pattern. The broaching tool then chisels and chops the web between the drill holes, freeing the block.

This mining works is divided into 3 phases which are explained in detail below;

PHASE 1: Literature Review

Existing data on the area of study with relation to the topography, geology, mineralogy, geophysics, hydrology etc. will be analysed. This data will aid in determining the amount of potential that area carries in terms of mineralisation and the factors that affect it and its extraction thereof. The report that will be produced from this study will inform the next stage which is geological mapping. The non-invasive work will take approximately twenty-four (24) months and will compile the relevant data and observations from the recent and historical work done on site. The deliverables will be a detailed report and maps highlighting areas with the best potential to contain targeted minerals.

Once this information has been assessed in detail, it will be used to further develop and refine the ongoing mining activities. Aerial photographs and a high-resolution satellite image will be acquired for the mining right application so that a target identification process using both desktop study and geological mapping. Both desktop study and geological mapping interpretations will be used to focus future mining activities. After the Desktop Study, a site geological mapping will be undertaken. This is a process of physically locating the targeted ore body outcrop while obtaining detailed information about it. This information includes the strike and dip of the outcrop, the colour, the grain size and shape amongst others. The end result of this stage will be a detailed geological map of the farm which will be correlated with the other maps obtained during the desktop study.

PHASE 2- DRILLING

This phase of drilling will consist of RC and diamond drilling and will consist of drilling approximately 30 RC boreholes. The mining drilling campaign will be aimed at defining the extent of mineralisation and will demonstrate geological continuity of the mineralized zone across the entire area under investigation (application area). Numerous samples will be collected and tested in a registered laboratory. RC drilling involves the process of crushing the rock material into fragments. Using air pressure, the rock fragments are lifted up the hole into the cyclone where they are collected into sample bags. A rifle splitter is used to homogenize the sample and to split it into two. The weights of the samples are recorded. Part of the one sample is washed and placed into a labelled chip tray after logging by the Field Geologist. This sample is stored for future reference. The remainder of the logged sample is labelled while still in the sample bag and taken to an accredited laboratory for analysis. Detailed geological, grade resource models and mineral resource estimates will be the end result of this phase.

One borehole will be drilled for each orebody by RC drilling. For the purpose of this report, it is estimated that five (5) diamond core drilling will be conducted for petrological studies. Diamond drill boreholes will be split and quartered where assaying is warranted. One quarter will be dispatched to the assay lab, one quarter kept for a permanent record, and the halves utilized for petrological studies. Borehole collars will be covered by labelled slabs, and the position measured by GPS. The planned depth of drilling is shallow and for that reason, no down-hole surveys will be necessary, as the deviation of boreholes would be negligible. Each drill borehole and sample site will be rehabilitated as mining proceeds.

PHASE 3: Analytical Desktop Studies and Decision Making

The project geologist monitors the programme, consolidates, and processes the data and amends the programme depending on the results. This is a continuous process throughout the programme and continues even when no mining is done on the ground. Each physical phase of mining is followed by desktop studies involving interpretation and modelling of all data gathered. These studies will determine the way the work programme is to proceed in terms of activity, quantity, resources, expenditure, and duration. A GIS based database will be constructed capturing all exploration data.

Location of the proposed development

The proposed mining project will cover an area of 2 627.28 hectares and is located approximately ±45km Northeast of Pofadder town, Kai! Garib Local Municipality, Northern Cape Province.

Table 2: Property details

Farm Name:	Portion of Zwart Modder Mountain No. 446 (445)
Application area (Ha)	The proposed mining area is 2 627.28 hectares (ha) in extent.
Magisterial district:	Kenhardt District Municipality
Distance and direction from nearest town	Approximately 45km Northeast of Pofadder.

Table 3: 21-digit Surveyor General Code for each farm portion

21-digit Surveyor General Code for each farm portion	Zwart Modder Mountain No. 446 (445)	C03600000000044600000
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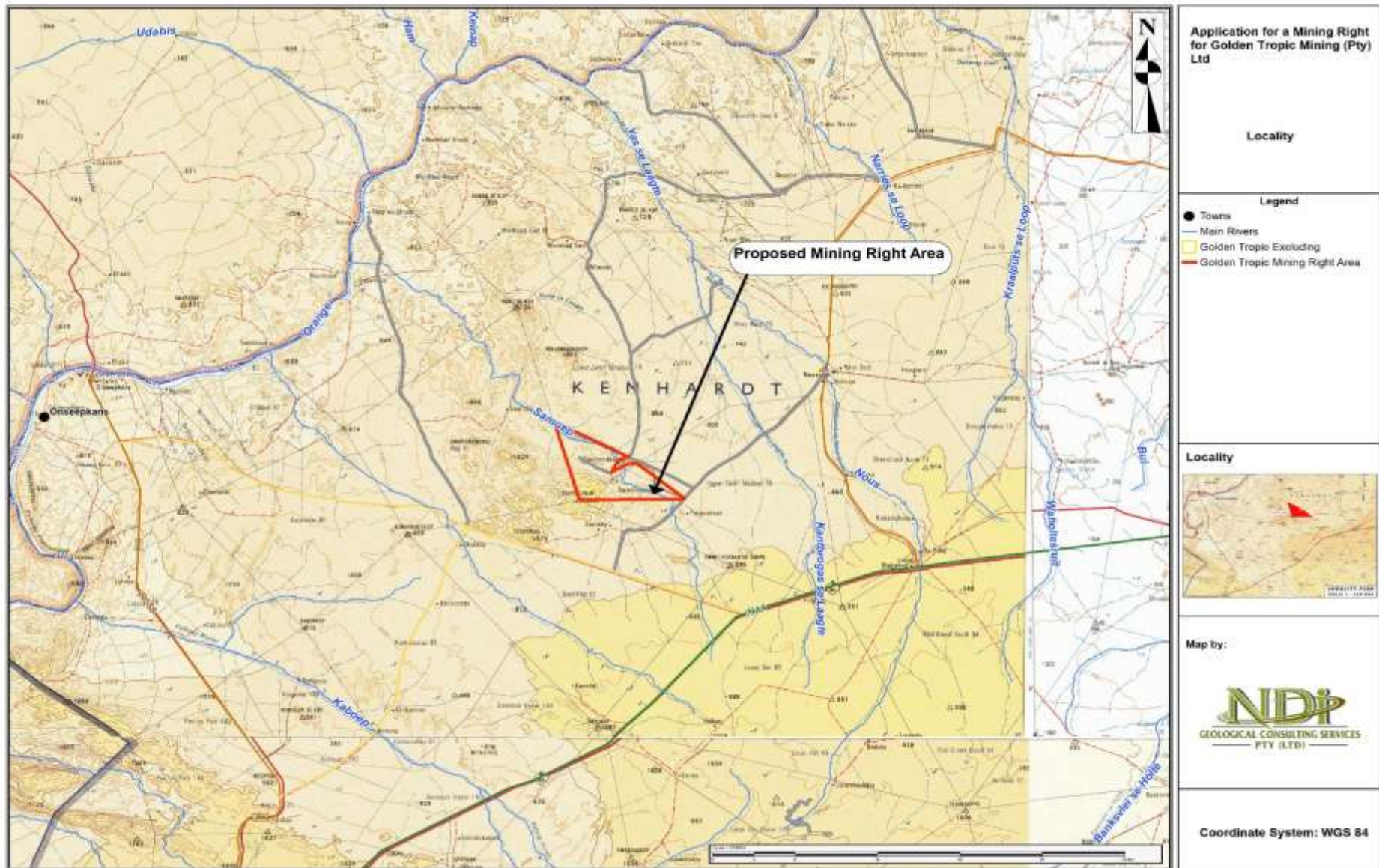


Figure 1: Proposed project area (NDI 2021)

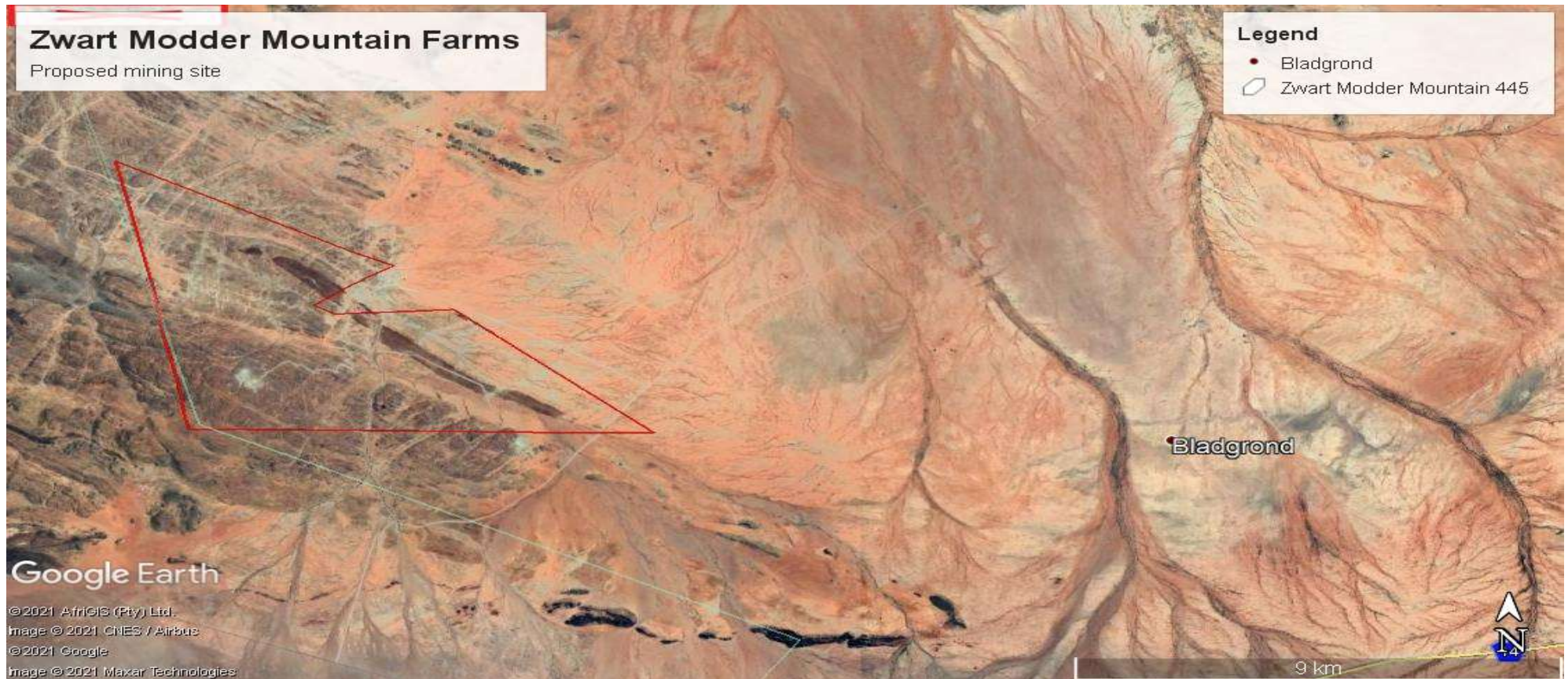


Figure 2: Proposed Mining Site

2 LEGAL REQUIREMENTS

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

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

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

Thus, any person undertaking any development in the above categories, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development. Section 38 (2) (a) of the NHRA also requires the submission of a heritage impact assessment report for authorization purposes to the responsible heritage resources agencies (SAHRA/PHRAs).

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

(the relevant PHRA), who will assist in investigating the extent and significance of the finds and inform about further actions. Such actions may entail the removal of material after documenting the find site or mapping of larger sections before destruction. Section 36 (3) of the NHRA also stipulates that no person may, without a permit issued by the SAHRA, destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority. This section may apply in case of the discovery of chance burials, which is unlikely. The procedure for reporting chance finds also applies to the likely discovery of burials or graves by the developer or his contractors. Section 37 of the NHRA deals with public monuments and memorials which exist in the proposed project area.

In addition, the new EIA Regulations (4 December 2014) promulgated in terms of NEMA (Act 107 of 1998) determine that any environmental reports will include cultural (heritage) issues. The new regulations in terms of Chapter 5 of the NEMA provide for an assessment of development impacts on the cultural (heritage) and social environment and for Specialist Studies in this regard. The end purpose of such a report is to alert the applicant (Golden Tropic Mining (Pty) Ltd), SAHRA or PHRA and interested and affected parties about existing heritage resources that may be affected by the proposed mining development, and to recommend mitigatory measures aimed at reducing the risks of any adverse impacts on these heritage resources.

Assessing the Significance of Heritage Resources

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

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

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

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

Categories of Significance

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

Aesthetic Value:

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

Historical Value:

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

Scientific Value:

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

Social Value:

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

Formally Protected Sites

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

General Protection

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

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

Significance Rating Action

No significance: sites that do not require mitigation.

Low significance: sites, which may require mitigation.

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

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

Medium significance: sites, which require mitigation.

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

High significance: sites, where disturbance should be avoided.

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

High significance: Graves and burial places

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

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

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

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

Table 4: Evaluation of the proposed development as guided by the criteria in NHRA, MPRDA and NEMA

ACT	Stipulation for developments	Requirement details
NHRA Section 38	Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length	No
	Construction of bridge or similar structure exceeding 50m in length	No
	Development exceeding 5000 sq. m	Yes
	Development involving three or more existing erven or subdivisions	No
	Development involving three or more erven or divisions that have been consolidated within past five years	No
	Rezoning of site exceeding 10 000 sq. m	No
	Any other development category, public open space, squares, parks, recreation grounds	No
NHRA Section 34	Impacts on buildings and structures older than 60 years	No
NHRA Section 35	Impacts on archaeological and paleontological heritage resources	Subject to identification during Phase 1 walk down survey
NHRA Section 36	Impacts on graves	Subject to identification during Phase 1
NHRA Section 37	Impacts on public monuments	No
Chapter 5 (21/04/2006) NEMA	HIA is required as part of an EIA	Yes
Section 39(3)(b) (iii) of the MPRDA	AIA/HIA is required as part of an EIA	yes

Other relevant legislations

The Human Tissue Act

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

Terms of Reference

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

- Archaeological and heritage potential of the proposed granite mining site including any known data on affected areas;
- Provide details on methods of study; potential and recommendations to guide the PHRA/ SAHRA to make an informed decision in respect of authorisation of the Mining Right Application.
- Identify all objects, sites, occurrences, and structures of an archaeological or historical nature (cultural heritage sites) located in and around the proposed mining 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 development on these cultural remains, according to a standard set of conventions;
- Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources;
- Review applicable legislative requirements;

PHOTOGRAPHIC PRESENTATION OF THE PROJECT SITE



Plate 1: Photo 1: View of existing pit still operational (Photograph © by Author 2021).



Plate 2: Photo 2: View of access road and powerline within the site (Photograph © by Author 2021).



Plate 3: Photo 3: View of Mining Right site (Photograph © by Author 2021).



Plate 4: Photo 4: View of the proposed mining Right site (Photograph © by Author 2021).



Plate 5: Photo 5: View of Mining Right Application site (Photograph © by Author 2021)



Plate 6: Photo 6: View of Mining Right Site (Photograph © by Author 2021).



Plate 7: Photo 7: View of stone structure recorded within the Mining Right Site (Photograph © by Author 2021). Note that this could have been a platform for animal traps



Plate 8: Photo 8: View of proposed mining right site (Photograph © by Author 2021).



Plate 9: Photo 9: View of mining right site (Photograph © by Author 2021).



Plate 10: Photo 10: View of proposed mining right area (Photograph © by Author 2021).



Plate 11: Photo 11: View of mining right site (Photograph © by Author 2021).



Plate 12: Photo 12: View of mining right site (Photograph © by Author 2021).



Plate 13: Photo 13: View of Mining Right Application site (Photograph © by Author 2021).



Plate 14: Photo 14: View of a pool that accumulates water after rain or frost (Photograph © by Author 2021).



Plate 15: Photo 15: View of mining right application site (Photograph © by Author 2021).



Plate 16: Photo 16: View of mining right site (Photograph © by Author 2021).



Plate 17: Photo 17: View of proposed prospecting site (Photograph © by Author 2021).

3 METHODOLOGY

Relevant published and unpublished sources were consulted in generating desktop information for this report. This included online databases such as the UNESCO website, Google Earth, Google Scholar and SAHRIS. Previous HIA in the project area were also consulted (Morris 2010, Kaplan 2010, 2012a, 12b. Pelsler 2011, Webley & Halket 2012, Orton & Webley 2013). Several published works on the archaeology, history and palaeontology were also consulted. This included dedicated archaeological, paleontological and geological works by (Breutz 1956; 1968; 1987; Humphreys and Thackeray 1983, Deacon & Deacon 1999, Beaumont & Vogel 2006, Beaumont and Vogel 1984; Beaumont and Morris 1990; Beaumont 1999; Holmgren *et al.* 1999; Johnson *et al.* 1997; Peabody 1954; Shillington 1985; Wills 1992; Young 1934; 1940, Huffman 2007, Beaumont *et al.* 1995, 2005). Thus, the proposed mining right application by Golden Tropic Mining (Pty) Ltd was considered in relation to the broader landscape, which is a key requirement of the ICOMOS and SAHRA Guidelines.

This document falls under the basic assessment phase of the HIA and therefore aims at providing an informed heritage-related opinion about the proposed mining right application. 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 HIA practices and aimed at locating all possible heritage objects, sites, and features of cultural significance on the proposed mining development site. 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. Detailed photographic recording was also undertaken where relevant. The findings were then analysed in view of the proposed mining in order to suggest further action. The result of this investigation is a report indicating the presence/absence of heritage resources and how to manage them in the context of the proposed mining development. The field survey was undertaken in June of 2021 by an archaeologist, ecologist and the EAPs. The proposed mining site was surveyed through tracks, footpaths which cut across the proposed mining site. The focus of the survey involved a pedestrian survey which was conducted across the proposed site. The pedestrian survey focussed 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, and ecological indicators such as invader weeds.

The literature survey suggests that prior to the 20th century modern agriculture and associated infrastructure; the general project area would have been a rewarding region to locate heritage resources related to Iron Age and

historical sites (Bergh 1999). However, the situation today is completely different. The study area now lies on a clearly modified landscape that has previously been cleared of vegetation but is now dominated by mining activities. Several mining infrastructure developments such as access roads, dumping sites, high voltage and minor reticulation powerlines, pipelines and other infrastructure dominate the project area.

Assumptions and Limitations

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

The field survey did not include any form of subsurface inspection beyond the inspection of burrows, road cut sections, and the sections exposed by erosion. The study area covers a hill complex which in some cases was not accessible. The study team observed that the site might not have attracted sedentary human settlement although Orton & Webly (2013) identified a few scatters of lithic tools. Some assumptions were made as part of the study and therefore some limitations, uncertainties and gaps in information would apply. It should, however, be noted that these do not invalidate the findings of this study in any significant way:

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

Consultations

Public consultations are being conducted by the project EAP and issues raised by Interested and Affected parties will be presented during project specialist integration meetings. Issues relating to heritage will be forwarded to the heritage specialist. Integrated Specialist Services (Pty) Ltd team consulted the farm owner who confirmed that the farm did not attract any human settlements and there are no graves and historical buildings and structures located in his farm.

4 CULTURE HISTORY BACKGROUND OF THE PROJECT AREA

Stone Age Archaeology

South Africa is one of the privileged countries in the world to have a very long and varied history of human occupation (Deacon and Deacon 1999). The Northern Cape is one of the regions in South Africa with the richest Stone Age scatters on the landscape, yet it remains poorly researched and understood (Lombard 2012). Stone Age archaeology is prevalent in the larger geographical area, but generally, the Poffader area does not seem to have attracted much of habitation. Perhaps the lack of large rock-shelters, the domination of exposed environments and the lack of preferred stone raw materials for tools, dissuaded early man (ESA ~ 2.6 million to 250 000 years ago) from occupying this part of the area. Further to the northwest 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 al.* 2010; Wilkins and Chazan 2012; Walter *et al.* 2014). Until recently, the Fauresmith Industry was poorly defined, being mostly identified based on the co-occurrence of Levallois points and hand axes (Beaumont and Vogel 2006: 224), and prepared cores, blades, and 'side-scrapers on flakes' (Beaumont 1990:79).

The MSA is better understood as a flake-technological stage characterized by faceted platforms, produced from prepared cores, as distinct from the core tool-based ESA technology (Barham and Mitchell 2008). In the area under study, MSA material mostly occur on the same sites with ESA material, suggesting longer sequences of occupation that have allowed researchers to probe into the behavioural changes that influenced these technological developments (Porat *et al.* 2010; Walker *et al.* 2014). Thus, characteristic MSA have been reported at sites such as Kathu Pan 1 (Wilkins and Chazan 2012), Wonderwerk Cave (Beaumont and Vogel 2006), but they also have been reported in isolated clusters (van Vollenhoven and Pelsler 2012). At Wonderwerk Cave, the MSA component was associated with pieces of haematite and several incised stone slabs, most with curved parallel lines that add to the behavioural shifts that went beyond stone tools and ushered in the appreciation of art (Beaumont and Vogel 2006).

The study area, (Pofadder) received very little systematic archaeological research (Morris 2010). However, several Heritage Impact Studies have been conducted in the area and these will form the bases of the study background for example Orton (2018), Morriss 2010 and others. The studies identified scatters of ESA, MSA lithic tools including manufacturing sites in slopes of Gamsberg (Morris 2010). Pelser (2011) identified reported MSA and LSA in the area around Paulputs Substation near Pofadder. He also found eggshells. Webley and Halket (2012) found scatter of predominantly quartz and some quartzite artefacts at Aggeneys (2012). The archaeological findings in the area are sparse (Orton and Webley 2013). Orton and Webley (2013) hunted the occurrence of bedrock exposing with grounding grooves in several locations throughout at the Namies wind Energy facility. Some of these bedrock grooves are found in the proximity of water holes in the bedrock (Orton and Webley 2013). According to Rudner & Rudner 1968) rock art is scarce in the study area. Engravings occur along the Orange River and rock paintings are very rare in the region. Rudner and Rudner recorded rock paintings at Kangras 60km southwest of Aggeneys. The site was re-recorded by Orton and Webley (2012) (Orton 2013) after querying with Rudner and Rudner 1968's descriptions. The art at the site is geometric tradition art, a style thought to have been painted by herders. Several rock engravings comprising of ground copulas were recorded by Orton and Webley (2012) at Kaignas and a similar engraving at Namies suggesting a common tradition in the Pofadder area of the Northern Cape.

According to Beaumont *et al* (1995) there are widespread low-density scatters of lithic artifacts in the project area often referred to as the Bushman land. Systematic collection of lithic tools at Olyvenkolk, southwest of Kunhardt and Maals Pannen and east of Gamoep yielded scatters of prepared cores, blades, and points as well as a large aggregated moderately to heavily weathered Early Stone Age lithic tools (Beaumont et al 1995, Morris 2010). Beaumont et al (1995) suggested that MSA sites are very scarce in the general project area. A few sites that have been systematically researched yielded small samples of MSA lithic tools (Morris & Beaumont 1991, Smith 1995). According to Morris (2010) the ESA in the area included Victoria West cores on dolerite, long blades, and a very low occurrence of hand axes and cleavers. The limited occurrence of ESA and MSA suggest that the study area might have been inhospitable and not preferred by the ESA and MSA communities. The limited findings (MSA) Pleistocene occupation of the region that those artefacts must have occurred at times when the environment was more hospitable than the present situation (Morris 2010). It is evident that Acheulean times people preferred to settle in the proximity of water sources (Morris 2010). Studies conducted in the area have recorded sparsely localized scatters of stone tools mainly in the hills or at the base of hills (Morris 2010). No significant ESA and LSA sites have been found in the study area (Morris 2010)

Archaeological surveys in the Kenhardt area have focused on two areas to the northeast of the town near the Niewehoop Substation and to the southwest near the Aries Substation. Halkett & Orton (2011) surveyed a site to the south of the power line route and found the landscape to be coated in stone artefacts in varying density. They

attributed the artefacts to the early (ESA), Middle (MSA) and Later (LSA) Stone Ages. The ESA and MSA material were widespread and not clustered into discrete scatters. The artefacts included 1 small hand axe and two possible but very weathered examples. Two scatters of LSA artefacts were found, however, and these included lower grindstones. The archaeology was deemed to be of low significance Pelsler (2011) conducted Heritage Impact Assessment studies near the Aries Substation. His study recorded ESA and MSA stone artefacts to be widespread throughout his study area and found LSA material in one place only. He considered the very high density of artefacts to be important and suggested medium to high significance for most of his finds. Kaplan (2012a, 2012b) surveyed land to the north of the present study area and once again found stone artefacts to be common. He attributed most to the MSA with smaller numbers of ESA and LSA artefacts being present. Three significant sites were documented. One was an MSA site on a high point in the landscape. Large numbers of artefacts were present and outcrops of bedrock The entire study area was found to be coated in artefacts attributable to background scatter of varying age. The vast majority would appear to date to the MSA, although, aside from faceted platforms and some characteristic triangular flakes, diagnostic elements were rare or even absent.

More technological and behavioural changes than those witnessed in the MSA, occurred during the LSA (40-25 000, to recently, 100 years ago), which is also associated with Homo Sapiens (Barham and Mitchell 2008). For the first time there is evidence of people's activities derived from material other than stone tools (ostrich eggshell beads, ground bone arrowheads, small, bored stones and wood fragments) (Deacon and Deacon 1999). The LSA people are also credited with the production of rock art (engravings and paintings), which is an expression of their complex social and spiritual beliefs (Parkington *et al.* 2008). Not much is known about these rock shelters, save for the fact that they have LSA material that include rock paintings (Morris 2010; van der Walt 2013: 18).

Later stone age

In terms of characterization, the lithic succession at Wonderwerk Cave serves as a benchmark for the Stone Age sequence of the Northern Cape (Beaumont and Vogel 2006; Kusel *et al.* 2009). The sequence comprises an uppermost LSA sequence that contains Ceramic LSA, Wilton and Oakhurst industries. Some researchers have named the earlier LSA industry of the region as the Oakhurst industry (some have labelled this local variant the Kuruman), characterized by rare, retouched artefacts, most of which are large scrapers that are rectangular with retouch on the side. Several Stone Age sites and scattered finds of Stone Age material were identified by Kusel *et al.* (2009) and Archaetnos close to the town of Hotazel and adjacent to the Gamagara River during 2011. All the same, variants of the LSA industries were located at other sites such as Kathu Pan 1 (Porat *et al.* 2013) have been reported. At this site, ostrich eggshell fragments, beads and lithic artifacts attributed to Wilton and Albany industries were found. It also important to note that, it is still possible to encounter isolated finds during mining and when this happens, the procedure (described in detail below) for reporting chance finds must be followed.

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

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

It is important to note that the LSA sites are prevalent in the Aggeneys-Pofadder Region (Morris 1919-b, 2000 a-c, 2001, 2010). According to Beaumont *et al* (1995) all LSA sites recorded within the area are scattered along both sides of the Orange River, these are sites of small bands of LSA communities. with evidence of larger herder sites along the Orange River flood plain (Morns and Beaumont 1990). According to Beaumont *et al* (1995) competition for resources along the Orange River flood plain might have marginalized and driven the hunter gathers into the less hospitable hinterland (Bushman land) with no water and sandy region. This therefore confined their hunting areas to limited number of water sources in the region (Morris 2010). Evidence of hunter gather community have been identified in rock shelters of granite Inselbergs on red dunes which provide clear land for sleeping and around the seasonal pans (Beaumont *et al* 1995). Rock shelter that had been the focus of occupation. During good rain

seasons herders might also have moved to the hinterland, and the environment was more hospitable than the present situation, this is evidenced by pottery recorded near Aggeneys and East of Pofadder at Schuitdrift South (Morns 1999, Morns 2010). Stronger springs such as Pella attracted herders who only moved away during drought seasons Dun (1972) mentions a place at Schuit.Klip (Schuit-Klup) where winter collected during rains, the water drains into and sometimes fills these most useful reservoirs in which it is stored up and lasts many months and lasted year without rains in the following season (see Robnson 1978).

Iron Age

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

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

Historical period

This Middle Orange River was densely inhabited in pre and proto colonial times because it is made up of several islands that were preferred by the herders because of the natural protection from wild animals and stock thieves (Penn 1995; Smith and Metelerkamp1995).

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

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

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

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

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

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

The project area was visited by several travellers and explorers such as Gorge Thompson (1827), E J Dunn 1931, Robinson 1978. According to Penn (2005) the 18th and 19th century records provide us with a glimpse of the prehistory life of hunter gather and herder communities. Dunn (1931) mentions possible massacre sites during the genocide against Khoisan in the area (Anthing 1863). For example, Dunn (1931) refers to conflict on the Farm Zwart Modder (the current study site) where an isolated grave of a member of the Northern Border Police was recorded (Morns 2010). Another 20th Century grave was identified along the road from the Isterberg Ridge located on the Farm Scuit Klip (Morns 1999). Evidence of these graves presents the project site as a colonial frontier and genocide area directed at eliminating the hunter gathers. Key sites are found in the Pofadder Scuit Klip, Zwart Modder, Aggeneys, Gamberg and Namiesberg. Archaeologist working in the study area observed that sand spots near rock shelters yielded traces of past hunter gathers occupation for example Morris (1999) identified traces of hunter gather activities on the Farm Zwart Modder (the current study area). Morris (1999) also found that open planes have sparsely scattered artifacts such as Konkonsies near the Paulputs Substation. It is important to note that hills in the area have water pools which fill up during the rainy season and even ice during coldest months (see Figure). These pools might have attracted animals which intent attracted hunter gathers to exploit. Evidence of grinding grooves on the bed rock and lithic artifacts and pottery have been recorded elsewhere for example Schuitdrift area. Evidence of pools occurring on top of hills have been recorded by Dunn (Robinson 1978). Two holes occurring in the grass at the crest of a ridge, when heavy thunder rains sweep over this arid country the water drains into and sometimes fills these most useful reservoirs in which it is stored up and lasts many months.

John Barion (1801) observed that the number of herder groups was declining in the area. Thompson (1824) confirmed that the area between Garlped, and the Kamisberg is occupied with numerous people who possessed

large flocks and herds. He says most of them are confined to the Pella area. It is important to note that both Thompson (1824) and John Borrow (1801) confirm that these areas were inhabited by Indigenous people who were displaced by the colonial encroachment. Pofadder was founded in 1825 by Reverend Christian Schroler. It was named after Kovana Chief Klaas Pofadder who was short in colonial settling. Colonist began settling around the perennial spring from 1889 and the first resident plots were surveyed in 1917 (Eksteen 2012).

Intangible Heritage

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

5 RESULTS OF THE ARCHAEOLOGICAL/HERITAGE ASSESSMENT STUDY

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 severe impacts are likely to occur during clearance, and blasting, indirect impacts may occur during movement of mining equipment. Similarly, the clearing of access roads will impact material that lies buried in the surface sand. Since heritage sites, including archaeological sites, are non-renewable, it is important that they are identified, and their significance assessed prior to construction. It is important to note, that due to the localised nature of archaeological resources, that individual archaeological sites could be missed during the survey, although the probability of this is very low within the proposed mining right application site. Further, archaeological sites and unmarked graves may be buried beneath the surface and may only be exposed during mining. The purpose of this study is to assess the sensitivity of the area in terms of archaeology and to avoid or reduce the potential impacts of the proposed mining by means of mitigation measures (see appended Chance Find Procedure). The study concludes that the impacts will be negligible since the drilling points are spaced and smaller. The following section presents results of the field survey. The following section presents results of the archaeological and heritage survey conducted within the proposed development project site

Heritage resource	Status/Findings
Buildings, structures, places and equipment of cultural significance	None were recorded
Areas to which oral traditions are attached or which are associated with intangible heritage	None exists on the study area
Historical settlements and townscapes	None recorded on the study site
Landscapes and natural features of cultural significance	None
Archaeological sites	None recorded within the proposed mining site
Graves and burial grounds	None recorded within the proposed project site must be protected/
Movable objects	None
Overall comment	Although no burial site was recorded within the proposed mining site, there is potential to encounter unmarked graves.

Table 5: List of Heritage sites identified by the study conducted by Jayson Orton and Lita Webley (2013)

Site number	Field number (Area)	Location	Type	Description	Distance from mine boundary	Significance
LZM2012/003	087 (Area 7)	S28 48 14.7 E19 40 51.9	Rock shelter / artefact scatter	Quartz, burnt bone, OES (some burnt), UG. Ephemeral scatter	0m	Low (within mining right)
LZM2012/002	086 (n/a)	S28 48 05.1 E19 41 42.8	Structure	Early 20th century house (1930s-1940s).	350m	Low (outside mining right)
LZM2012/004	088 (n/a)	S28 48 15.5 E19 41 35.3	Graveyard	Six graves, Claassens 1900, Jordaan 1938, Claassens 1942, Classens 1942, Spanneberg 1945, no headstone	279m	Low (outside mining right)

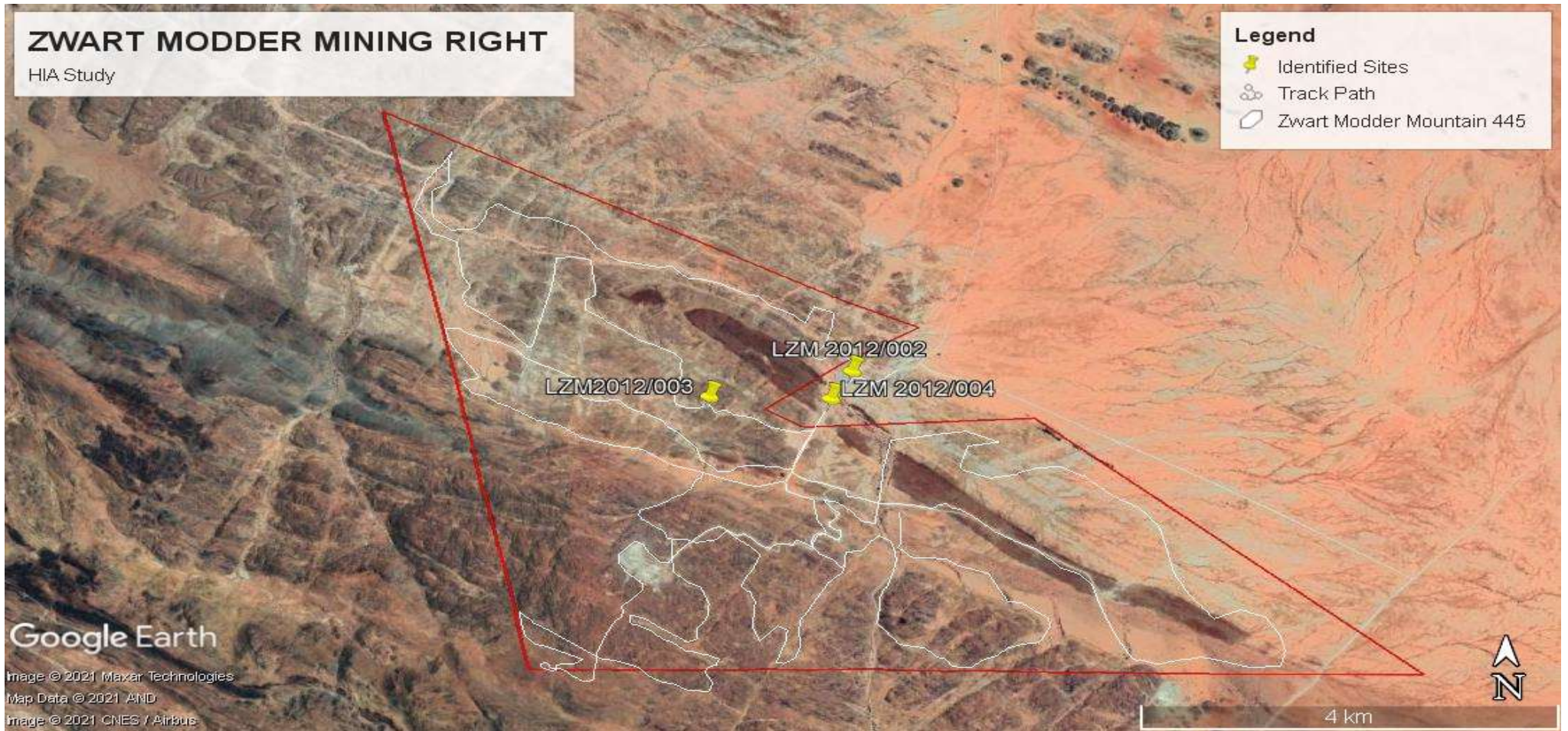


Figure 3: Track logs and Heritage sites identified by the study conducted by Jayson Orton and Lita Webley (2013)

Archaeological and Heritage Sites

The Mining Right area was extensively researched by Orton and Webly (2013) who mapped all their findings within the mining right site. This current study focused on the areas which seemed to have not been fully covered by previous studies. This study is therefore complementary to the previous study by Orton and Webly (2013). The focus areas of this study did not yield any confirmable archaeological remains. The study confirmed that only site LZM2012/003 falls within the Mining Right Area and the rest fall outside the study area. The site was rated low and therefore, mitigation is not necessary. The site is mainly rocky, and it might have not attracted any prehistoric communities to settle. The proposed mining right application site did not yield any confirmable archaeological sites or material. Previous studies such as Morris (2010) and Orton and Webly (2013) in the project area recorded scatters of lithic remains. Most prehistoric settlements and farmsteads are clustered along Orange River because past communities preferred location near sources of water. For example, MSA, LSA and historic sites recorded on both sides of the Orange River. The study area did not attract prehistoric settlement (Morris 2010, Orton & Webly (2013), it is the considered opinion of the author that the site is not likely to yield any significant archaeological findings. Based on the field study results and field observations, it is the considered opinion of the author that the receiving environment for the proposed mining is medium to high potential to yield previously unidentified archaeological sites during mining work.

Buildings and Structures older than 60 years

The study did not record any buildings and structures within the proposed Mining Right area. As such in terms of Section 34 of the NHRA, the mining right application may be approved without any further investigation and mitigation.

Burial grounds and graves

Human remains and burials are commonly found close to archaeological sites; they may be found in abandoned and neglected burial sites or occur sporadically anywhere as a result of prehistoric activity, victims of conflict or crime. It is often difficult to detect the presence of archaeological human remains on the landscape as these burials, in most cases, are not marked at the surface. Archaeological and historical burials are usually identified when they are exposed through erosion and earth moving activities for infrastructure developments such as powerlines and roads. In some instances, packed stones or stones may indicate the presence of informal pre-colonial burials.

The study did not identify any graves or burial sites within the proposed Mining Right site however, the possibility of encountering previously unidentified burial sites is low within the proposed mining site, should such sites be identified during mining, they are still protected in terms of Section 36 of the NHRA and graves younger than 60 years are protected in terms of the Human Tissue Act of 1983. In terms of Section 36 of the NHRA, the mining right application may be approved without any further investigation and mitigation.

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

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

Public Monuments and Memorials

The survey did not identify any historical monument and public memorials within the proposed Mining Right Application site. The proposed mining will not impact on any listed monuments and memorials in the project area.

Battle fields

According to Orton & Webley (2013) there was fight between the Korana and the Border Police at Swart Modder which resulted in one commando being killed. The grave of a commando who was killed in the battle was identified and mapped by Morris, 2010 and Orton & Webley (2013). However, the grave falls outside the Mining Right Area and this study did not document the site since it was deemed to be safe from the mining activities. No reference was made to the Korana casualty and this study scanned the study area for any potential graves not mentioned by previous reports. The exact position of the battle was not mapped.

Archaeo-Metallurgy, Prehistoric Mining and Mining Heritage

There are historical and current mining activities in the entire Northern Cape Province, however none are located on the proposed mining site.

Palaentology

It is well known that fossil resources are absent from granitic rocks, and this is expected to be the case here. Almond and Pether (2008) note the Namaqua-Natal Metamorphic rocks to have no palaeontological significance, since no fossils have yet been recorded in them. However, water-laid deposits around the granite outcrops can include relatively recent fossils.

Mitigation

Heritage Mitigation is not required for this project because the site recorded by Orton & Webley 2013 (LZM2012/003) was considered to be of low archaeological significance. Based on Orton and Webley (2013) recommendations, the recorded scatter of lithic tools may be destroyed without further investigation and mitigation. As such the current study noted the existence of the scatter of lithic tools previously recorded for reference purpose. The study did not document the previously recorded scatter of lithic tools because they were deemed to be of low significance and not conservation worthy (see Orton and Webley 2013).

6 CUMMULATIVE IMPACTS

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

The current and mining right application will see the entire hill being destroyed and will have significant impact on the visual and sense of place. This mine combined with other proposed mining activities will effectively transform a natural invitations area into a mining area such as Kathu. The mining proposed an alternative power generation facility eg Wind energy facilities will have a combined visual impact on the landscape. The cumulative impact will negatively affect the landscape quality of the area which are ordinarily considered to be source. The frequency of mining and other proposals in the area has a potential of collectively changing the character of the landscape (see Kathu area as an example). The once isolated landscape will see volumes of people establishing low settlement or enlarging the existing ones such as Pofadder to allow for working and offices facilities. In the long run the accumulative impact will be of high significance in terms of its potential to change the characteristics and quality of the landscape in the long run.

The field survey focused on potential stone grooves engravings, rock art and lithic tools. Our study focuses on areas that the previous studies did not reach. This study should be seen as complimentary to the existing reports and must be read together with them. The study was not to re confirm what was already identified but complimenting the existing body of knowledge about the art of the area.

7 ASSESSMENT OF SIGNIFICANCE

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

Table 6: Criteria Used for Rating of Impacts

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

Improbable	1	Less than 30% chance of occurrence.
Low	2	Between 30 and 50% chance of occurrence.
Medium	3	Between 50 and 70% chance of occurrence.
High	4	Greater than 70% chance of occurrence.
Definite	5	Will occur, or where applicable has occurred, regardless or in spite of any mitigation measures.

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

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

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

Table 7: Criteria for Rating of Classified Impacts

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

Table 8: Operational Phase

Impacts and Mitigation measures relating to the proposed project during Operational Phase														
Activity/Aspect	Impact /	Aspect	Nature	Magnitude	Extent	Duration	Probability	Significance before mitigation	Mitigation measures	Magnitude	Extent	Duration	Probability	Significance after mitigation
Clearing and mining	Destruction of archaeological remains	Cultural heritage	-	4	1	2	2	14	<ul style="list-style-type: none"> Use chance find procedure to cater for accidental finds 	4	1	2	2	14
	Disturbance of graves	Cultural heritage	-	4	1	2	4	28	<ul style="list-style-type: none"> Consult Landowners and farm workers to identify burial sites before mining 	4	1	2	2	14
	Disturbance of buildings and structures older than 60 years old	Operational	-	4	1	2	2	14	<ul style="list-style-type: none"> None required 	4	1	2	2	14
Movement of equipment	Destruction public monuments and plaques	Operational	-	2	1	1	1	4	<ul style="list-style-type: none"> Mitigation is not required because there are no public monuments within the mining right application site 	2	1	1	4	4

Based on the results of the Impact Assessment Matrix the proposed mining site is viable from a heritage perspective.

8 STATEMENT OF SIGNIFICANCE

Aesthetic Value

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

The proposed mining site will be situated within an environment and associated cultural landscape, which, although developed by existing settlements, remains representative of the original historical environment and cultural landscape of this part of Northern Cape. The local communities consider the project area a cultural landscape linked to their ancestors and history. However, the proposed mining will not alter this aesthetic value in any radical way since the mining holes will be limited in number and small.

Historic Value

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

Scientific value

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

Social Value

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

also provides the canvas upon which daily socio-cultural activities are painted. All these factors put together confirms the social significance of the project area. However, this social significance is unlikely to be negatively impacted by the proposed mining especially given the fact that the development will add value to the human settlements and activities already taking place. Some sections of development site are covered by thick bushes and vegetation retains social value as sources of important herbs and traditional medicines. As such, they must be considered as significant social value sites

9 DISCUSSION

Several Phase 1 Heritage studies for various infrastructure developments and mining developments were conducted since 2006 in the general project area. Although these studies recorded sites of significance for example Morris (2010) Orton and Webley, (2013), Pelsler (2011); Kaplan (2012) and Orton (2013), the recorded sites of varying significance. Orton & Webley (2013) recorded scatters of lithic tools which they rated low from a heritage perspective. However, they concluded that should no significant deviation from the areas already examined be apparent then it is likely that no further studies will be required. It is against this conclusion that our study mainly focused on areas where Orton & Webley (2013) did not cover. 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 (Pelsler 2010) see Kusel *et al* (2009). The significance of sites so far recorded in the study compared to other sites indicate that they are of lesser importance because they are small scatters and confined pans and foothills of mountains (Morris 2010, Orton & Webley 2013). 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, the area has probably been relatively marginal to human settlement for most of its history (Morris 2010, Pelsler 2011). Some areas are richer than others, and not all sites are equally significant, and this is true for the current mining site. 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 granite mining site is located within a heavily degraded grazing area and have reduced sensitivity for the presence of high significance physical cultural site remains, be they archaeological, historical or burial sites, due to stamping and overgrazing by livestock.
2. Limited ground surface visibility on sections of the proposed mining site may have impeded the detection of other physical cultural heritage site remains or archaeological signatures within the mining 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 that such sites do

not exist in the proposed mining right application site. Significance of the sites of Interest (mining site) is not limited to presence or absence of physical archaeological sites.

10 RECOMMENDATIONS

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

- The proposed mining development may be approved to proceed as planned under observation that project work does not extend beyond the surveyed site.
- The study confirmed that the sites recorded by Orton and Webley (2013) fall outside the mining right area and they are located more than the 100m buffer zone required by SAHRA Regulations of 2020. Judging by the nature of granite mining, the sites do not require any mitigation because the mining pits are located at the top of the hill.
- Should any unmarked burials be exposed during mining, potential custodians must be trekked, consulted and relevant rescue/ relocation permits must be obtained from SAHRA and or Department of Health before any grave relocation can take place. Furthermore, a professional archaeologist must be retained to oversee the relocation process in accordance with the National Heritage Resources Act 25 of 1999.
- Should chance archaeological materials or human burial remains be exposed during subsurface construction work on any section of the proposed development laydown sites, work should cease on the affected area and the discovery must be reported to the heritage authorities immediately so that an investigation and evaluation of the finds can be made. The overriding objective, where remedial action is warranted, is to minimize disruption in construction scheduling while recovering archaeological and any affected cultural heritage data as stipulated by the NHRA regulations.
- Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project EMP, there are no other significant cultural heritage resources barriers to the proposed mining. The Heritage authority may approve the proposed mining right application to proceed as planned with special commendations to implement the recommendations here in made.
- If during mining, operational or closure phases of this project, any person employed by the applicant, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance, work must cease at the site of the find and this person must report this find to their immediate supervisor, and through their supervisor to the site manager.

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

11 CONCLUDING REMARKS

The literature review and field surveys confirmed that the project area is situated within a contemporary cultural landscape dotted with settlements with long local history. In terms of the archaeology and heritage in respect of the proposed mining site, there are no obvious 'Fatal Flaws' or 'No-Go' areas. However, the potential for chance finds, remains and the applicant and contractors are advised to be diligent and observant during mining, should mining activities commence on the site. The procedure for reporting chance finds has clearly been laid out (see Appendix 3). This report concludes that the mining right application may be approved by SAHRA to proceed as planned subject to recommendations herein made and heritage monitoring plan being incorporated into the EMP (also see Appendices). The mitigation measures are informed by the results of the AIA/HIA study and principles of heritage management enshrined in the NHRA, Act 25 of 1999.

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APPENDIX 1: CHANCE FIND PROCEDURE FOR THE PROPOSED MINING RIGHT AND ASSOCIATED ENVIRONMENTAL AUTHORISATION AND WASTE MANAGEMENT LICENCE (WML) FOR THE PROPOSED MINING OF GRANITE ON A PORTION OF ZWART MODDER MOUNTAIN NO. 446 (445) IN THE KAI! GARIB LOCAL MUNICIPALITY, NORTHERN CAPE PROVINCE

June 2021

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

Definitions

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

Background

The proposed right application site is located on a Portion of Zwart Modder Mountain No. 446 (445), Kai! Garib Local Municipality, Northern Cape Province., the development site is subject to heritage survey and assessment at planning stage in accordance with the NHRA. These surveys are based on surface indications alone and it is therefore possible that sites or significant archaeological remains can be missed during surveys because they occur beneath the surface. These are often accidentally exposed during 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 (2021) on the proposed mining right application site. The AIA/HIA conducted was very comprehensive covering the entire site.

Purpose

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

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

CHANCE FIND PROCEDURE

General

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

- All construction/clearance activities in the vicinity of the accidental find/feature/site must cease immediately to avoid further damage to the find site.
- Briefly note the type of archaeological materials you think you have encountered, and their location, including, if possible, the depth below surface of the find
- Report your discovery to your supervisor or if they are unavailable, report to the project ECO who will provide further instructions.

- If the supervisor is not available, notify the Environmental Control Officer immediately. The Environmental Control Officer will then report the find to the Site Manager who will promptly notify the project archaeologist and SAHRA.
- Delineate the discovered find/ feature/ site and provide 25m buffer zone from all sides of the find.
- Record the find GPS location, if able.
- All remains are to be stabilised *in situ*.
- Secure the area to prevent any damage or loss of removable objects.
- Photograph the exposed materials, preferably with a scale (a yellow plastic field binder will suffice).
- The project archaeologist will undertake the inspection process in accordance with all project health and safety protocols under direction of the Health and Safety Officer.

- **Finds rescue strategy:** All investigation of archaeological soils will be undertaken by hand, all finds, remains and samples will be kept and submitted to a Museum as required by the heritage legislation. 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.

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

- a. Heritage Specialist to inspect, evaluate and document the exposed burial or skeletal remains and determine further action in consultation with the SAPS and Traditional authorities:
- b. Heritage specialist will investigate the age of the accidental exposure in order to determine whether the find is a burial older than 60 years under the jurisdiction of SAHRA or that the exposed burial is younger than 60 years under the jurisdiction of the Department of Health in terms of the Human Tissue Act.
- c. The local SAPS will be notified to inspect the accidental exposure in order to determine where the site is a scene of crime or not.
- d. Having inspected and evaluated the accidental exposure of human remains, the project Archaeologist will then track and consult the potential descendants or custodians of the affected burial.
- e. The project archaeologist will consult with the traditional authorities, local municipality, and SAPS to seek endorsement for the rescue of the remains. Consultation must be done in terms of NHRA (1999) Regulations 39, 40, 42.
- f. Having obtained consent from affected families and stakeholders, the project archaeologist will then compile a Rescue Permit application and submit to SAHRA Burial Ground and Graves Unit.
- g. As soon as the project archaeologist receives the rescue permit from SAHRA he will in collaboration with the company/contractor arrange for the relocation in terms of logistics and appointing of an experienced undertaker to conduct the relocation process.
- h. The rescue process will be done under the supervision of the archaeologist, the site representative and affected family members. Retrieval of the remains shall be undertaken in such a manner as to reveal the stratigraphic and spatial relationship of the human skeletal remains with other archaeological features in the excavation (e.g., grave goods, hearths, burial pits, etc.). A catalogue and bagging system shall be utilised that will allow ready reassembly and relational analysis of all elements in a laboratory. The remains will not be touched with the naked hand; all Contractor personnel working on the excavation must wear clean cotton or non-powdered latex gloves when handling remains in order to minimise contamination of the remains with modern human DNA. The project archaeologist will document the process from exhumation to reburial.
- i. Having fulfilled the requirements of the rescue/burial permit, the project archaeologist will compile a mitigation report which details the whole process from discovery to relocation. The report will be submitted to SAHRA and to the company.

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

Appendix 1: Heritage Management Plan Input into the Proposed Mining Right Application EMP

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

Appendix 2: Heritage mitigation measures table

SITE REF	HERITAGE ASPECT	POTENTIAL IMPACT	MITIGATION MEASURES	RESPONSIBLE PARTY	PENALTY	METHOD STATEMENT REQUIRED
Chance Archaeological and Burial Sites	General area where the proposed project is situated is a historic landscape, which may yield archaeological, cultural property, remains. There are possibilities of encountering unknown archaeological sites during subsurface construction work which may disturb previously unidentified chance finds.	<p>Possible damage to previously unidentified archaeological and burial sites during construction phase.</p> <ul style="list-style-type: none"> • Unanticipated impacts on archaeological sites where project actions inadvertently uncovered significant archaeological sites. • Loss of historic cultural landscape; • Destruction of burial sites and associated graves • Loss of aesthetic value due to construction work • Loss of sense of place <p>Loss of intangible heritage value due to change in land use</p>	<p>In situations where unpredicted impacts occur construction activities must be stopped, and the heritage authority should be notified immediately.</p> <p>Where remedial action is warranted, minimize disruption in construction scheduling while recovering archaeological data. Where necessary, implement emergency measures to mitigate.</p> <ul style="list-style-type: none"> • Where burial sites are accidentally disturbed during construction, the affected area should be demarcated as no-go zone by use of fencing during construction, and access thereto by the construction team must be denied. • Accidentally discovered burials in development context should be salvaged and rescued to safe sites as may be directed by relevant heritage authority. The heritage officer responsible should secure relevant heritage and health authorities permits for possible relocation of affected graves accidentally encountered during construction work. 	<ul style="list-style-type: none"> • Contractor / • Project Manager • Archaeologist • Project EO 	Fine and or imprisonment under the NHRA	<p>Monitoring measures should be issued as instruction within the project EMP.</p> <p>PM/EO/Archaeologists Monitor construction work on sites where such development projects commence within the farm.</p>

Appendix 3: Legal background in South Africa

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

General principles for heritage resources management

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

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

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

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

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

(2) To ensure that heritage resources are effectively managed—

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

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

(3) Laws, procedures and administrative practices must—

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

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

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

(4) Heritage resources form an important part of the history and beliefs of communities and must be managed in a way that acknowledges the right of affected communities to be consulted and to participate in their management.

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

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

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

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

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

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

(d) contribute to social and economic development;

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

(f) be fully researched, documented and recorded.

Burial grounds and graves

36. (1) Where it is not the responsibility of any other authority, SAHRA must conserve and generally care for burial grounds

and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit.

(2) SAHRA must identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with the grave referred to in subsection (1), and must maintain such memorials.

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

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

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

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

(4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.

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

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

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

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

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

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

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

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

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

(9) SAHRA must assist other State Departments in identifying graves in a foreign country of victims of conflict connected with the liberation struggle and, following negotiations with the next of kin, or relevant authorities, it may re-inter the remains of that person in a prominent place in the capital of the Republic.

General policy

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

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

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

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

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

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

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

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

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

