MILLENIUM HERITAGE GROUP (Pty) Ltd

PHASE 1

ARCHAEOLOGICAL IMPACT ASSESSMENT

RELATING TO PROPSPECTING RIGHT ON FARM EENZAMPAN 307 NEAR HOTAZEL

NORTHERN CAPE PROVINCE

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EXECUTIVE SUMMARY

The proposed study area is situated approximately 23 kilometers west of Hotazel mining town on farm Eenzaampan 307. The farm is subdivide into livestock holding and grazing camps situated on slightly flat section of farm land currently used for animal husbandry dominated by goats and cattle. A multi-stepped methodology was used to address the terms of reference. To begin with, a robust desktop study was carried out to understand the framework for managing and accessing impact near Heritage Sites. This included consulting the 1972 Convention, the operational guidelines of 2013, the ICOMOS (2011) guidelines on assessing impact on or near Heritage sites. The IUCN guidelines and standards of best practice were also consulted. Subsequently, a review of the archaeology of the area was carried out using contract archaeology reports, research reports and academic publications. Desktop studies were followed by fieldwork carried out by expert archaeologists and heritage managers in conformity with the National Heritage Resources Act of 1999. Based on an interdisciplinary methodology, that combined ICOMOS methodology with several techniques from various disciplines, the impact of the proposed Mineral prospecting was considered. The following conclusions were reached:

1. The proposed mine development is scheduled to take place on slightly flat section of land currently subdivided into livestock holding and grazing area. The vast land is barren land dominated by Aeolian sand, dry pans and isolated layer of *Boscia Albitrunca* trees.

2. Based on the current information obtained for the area during the initial site visit no heritage sites were geo-referenced within the study area. However farm home stead exist with infant child grave. Some of these structures may be older than 60 years and qualify to be protected in term of the National Heritage Resources Act (Act 25 of 1999)

No further studies / Mitigations are recommended given the fact that within the proposed development footprint and its nearby surrounding there is no archaeological or place of historical significance that will be impacted by the proposed mineral prospecting process.

However, should any chance archaeological or any other physical cultural resources be discovered subsurface, heritage authorities should be informed. From an archaeological and cultural heritage resources perspective, there are no objections to the proposed mineral prospecting process and we recommend to the Provincial Heritage Resource Agency or South African Heritage Resource Agency to approve the project as planned.

ACKNOWLEDGEMENTS:

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CONSULTANTS: Millennium Heritage Group (PTY) LTD

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EIA	Environmental Impact Assesment
EIA	Early Iron Age
EMP	Environmental Management Plan
NEC	Naledzi Environmental Consultants
NEMA	National Environmental Management Act, 1998 (Act No.107 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No.25 of 1999)
SAHRA	South African Heritage Resources Agency
ESA	Early Stone Age
MSA	Middle Stone Age
LSA	Late Stone Age
IA	Iron Age
LIA	Late Iron Age
UNESCO	United Nations Educational, Scientific and culturural Organization
WHC	World Heritage Conventions of 1972

DEFINITIONS

Archaeological Material remains resulting from human activities, which 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.

Chance Finds Archaeological artefacts, features, structures or historical cultural remains such as human burials that are found accidentally in context previously not identified during cultural heritage scoping, screening and assessment studies. Such finds are usually found during earth moving activities such as water pipeline trench excavations.

Cultural Heritage Resources Same as Heritage Resources as defined and used in the South African Heritage Resources Act (Act No. 25 of 1999). Refer to physical cultural properties such as archaeological and paleontological sites; historic and prehistoric places, buildings, structures and material remains; cultural sites such as places of ritual or religious importance and their associated materials; burial sites or *graves* and their associated materials; geological or natural features of cultural importance or scientific significance. Cultural Heritage Resources also include intangible resources such as religion practices, ritual ceremonies, oral histories, memories and indigenous knowledge.

Cultural Significance The complexities of what makes a place, materials or intangible resources of value to society or part of, customarily assessed in terms of aesthetic, historical, scientific/research and social values.

Grave A place of interment (variably referred to as burial), including 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.

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

***In Situ* material** *Material culture* and surrounding deposits in their original location and context, for example an archaeological site that has not been disturbed by farming.

Late Iron Age this period is associated with the development of complex societies and state systems in southern Africa.

Material culture Buildings, structure, features, tools and other artefacts that constitute the remains from past societies.

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

1. INTRODUCTION

Motolo Trade and Investment (PTY) Ltd commissioned studies for the proposed Manganese and iron ore prospecting rights on farm Eenzaam pan 307 near Hotazel town in the Northern Cape Province. To ensure that the proposed development meets the environmental requirements in line with the National Environmental Management Act 107 of 1998 as amended in 2010, they appointed Ndi Geological Consulting Services as an Independent Environmental Assessment Practitioner, who then appointed Millennium Heritage Groups (PTY) LTD to undertake archaeological impact assessment of the proposed project.

The proposed activities is listed Activity No 20 as described in Government gazette Notice 1, GNR (983), promulgated on 4 December 2014 of the Regulation compiled in terms of section 24(5) read with section 44 of the National Environmental Management Act (Act 107 of 1998) that Motolo Trade and Investment intend to carry out mineral prospecting on farm Eenzaampan 307. The proposed activities form part of the development process, where application for Environmental Assessment Authorization must be completed. As part of the Environmental Impact Assessment (EMP) process, an application was lodged with the Department of Mineral Resource, Northern Cape Province. Archaeological Impact Assessment (AIA) report form part of a series of appendices prepared for Environmental Management Plan (EMP) pursued in accordance with the National Environmental Management Act,1998 (Act No. 107 of 1998) and the National Heritage Resources Act 25 of 1999.

In order to comply with relevant legislations, the applicant (Motolo Trade and Investment (PTY) Ltd requires information on the heritage resources that occur within or near the proposed site and their heritage significance. The objective of the study is to document the presence of archaeological and historical sites of significance in order to inform and guide planning on decision making. The study serve as a statutory frame of reference on archaeology and heritage sites that occur within the proposed study area. The document enable the developer to align their functions and responsibilities in order to facilitate forward planning in minimizing impact on archaeological and heritage sites.

Archaeological/ Heritage impact assessment is conducted in line with the National Heritage Resources Act of 1999 (Act No. 25 of 1999). The Act protects heritage resources through formal and general protection. The Act provides that certain developmental activities require consents from relevant heritage resources authorities. The South African Heritage Resources Agency developed minimum standards for impact assessment, In addition to these local standards, the International Council of Monuments and Sites (ICOMOS) published guideline for assessing impacts. The Burra Charter of 1999, require a caution approach to the management of sites, it set out the need to understand the significance of heritage places, and the significance guide decisions.

The proposed study serve as framework tools which ensure that the National Heritage Resources Act (25 of 1999) and the ICOMOS standard principles are applied, in an effective and equitable manner in order to avoid loss and disturbance of heritage sites in the study area. This will enable applicant to take pro-active measures to limit the adverse effects that the development could have on such heritage resources. Information presented in this report form the basis of Archaeological resources assessment of the proposed project as the proposal constitutes an activity, which may potentially have direct or indirect impact to heritage resources that may occur in the proposed study area.

The National Heritage Resources Act (NHRA - Act No. 25 of 1999) protects all structures and features older than 60 years (Section 34), archaeological sites and material (Section 35) and graves and burial sites (Section 36). In order to comply with the legislation, the applicant requires information on the heritage resources, and their significance that occur in the demarcated area. This will enable the Applicant to take pro-active measures to limit the adverse effects that the development could have on such heritage resources.

2. RELEVANT LEGISLATION

Two sets of legislation are relevant for the study with regards to the protection of heritage resources and graves.

2.1. The National Heritage Resource Act (25 of 1999)

This Act established the South African Heritage Resource Agency (SAHRA) as the prime custodians of the heritage resources and makes provision for the undertaking of heritage resources impact assessment for various categories of development as determined by section 38. It also provides for the grading of heritage resources (section 7) and the implementation of a three-tier level of responsibly and functions from heritage resources to be undertaken by the State, Provincial and Local authorities, depending on the grade of heritage resources (section 8)

In terms of the National Heritage Resource Act 25, (1999) the following is of relevance:

Historical remains

Section 34 (1) No person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the relevant Provincial Heritage Resources Authority.

Archaeological remains

Section 35(3) Any person who discover archaeological or Paleontological object or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resource authority or the nearest local authority or museum, which must immediately notify such heritage resources authority.

Section 35(4) No person may, without a permit issued by the responsible heritage resources authority-

- destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site or any meteorite;
- destroy, damage, excavate, remove from its original position, collect or own any archaeological or paleontological material or object or any meteorite;

- trade in ,sell for private gain, export or attempt to export from republic any category of archaeological or paleontological material or object or any meteorite; or
- bring onto or use at an archaeological or paleontological site any excavation equipment or any equipment which assist with the detection or recovery of metal or archaeological material or object or such equipment for the recovery of meteorites.

Section 35(5) When the responsible heritage resource authority has reasonable cause to believe that any activity or development which will destroy, damage or alter any archaeological or paleontological site is underway, and where no application for a permit has been submitted and no heritage resource management procedures in terms of section 38 has been followed, it may

- serve on the owner or occupier of the site or on the person undertaking such development an order for the development to cease immediately for such period as is specified in the order
- carry out an investigation for the purpose of obtaining information on whether or not an archaeological or paleontological site exists and whether mitigation is necessary;
- if mitigation is deemed by the heritage resources authority to be necessary, assist the person on whom the order has been served under paragraph (a) to apply for a permit as required in subsection (4); and
- recover the cost of such investigation from the owner or occupier of the land on which it is believed an archaeological or paleontological site is located or from the person proposing to undertake the development if no application for a permit is received within two week of the order being served.

Subsection 35(6) the responsible heritage resource authority may, after consultation with the owner of the land on which an archaeological or paleontological site or meteorite is situated; serve a notice on the owner or any other controlling authority, to prevent activities within a specified distance from such site or meteorite.

Burial grounds and graves

Section 36 (3) No person may, without a permit issued by SAHRA or a provincial heritage resources authority:

(i) 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

(ii) bring onto or use at a burial ground or grave any excavation equipment, or any equipment which assists in detection or recovery of metals.

Subsection 36 (6) Subject to the provision of any person who in the course of development or any other activity discover 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 resource authority which must, in co-operation with the South African Police service and in accordance with regulation of the responsible heritage resource authority-

(I) 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

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 arrangement as it deems fit.

Cultural Resource Management

Section **38(1)** Subject to the provisions of subsection (7), (8) and (9), any person who intends to undertake a development*…

- must at the very earliest stages of initiating such development notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

development means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way

result in a change to the nature, appearance or physical nature of a place, or influence its stability and future well-being, including:

(i) Construction, alteration, demolition, removal or change of use of a place or a structure at a place;

(ii) Any change to the natural or existing condition or topography of land, and

(iii) Any removal or destruction of trees, or removal of vegetation or topsoil;

place means a site, area or region, a building or other structure

structure means any building, works, device or other facility made by people and which is fixed to the ground.

2.2. The Human Tissue Act (65 of 1983)

This act protects graves younger than 60 years, these falls under the jurisdiction of the National Department of Health and the Provincial Health Department. Approval for the exhumation and reburial must be obtained from the relevant provincial MEC as well as relevant Local Authorities.

3. TERMS OF REFERENCE

The terms of reference for the study were to undertake an Archaeological Impact Assessment on farm Eenzaampan 307near Hotazel Northern Cape and submit a specialist report, which addresses the following:

- Executive summary
- Scope of work undertaken
- Methodology used to obtain supporting information
- Overview of relevant legislation
- Results of all investigations
- Interpretation of information
- Assessment of impact

- Recommendation on effective management measures
- References

4. TERMINOLOGY

The Heritage impact Assessment (HIA) referred to in the title of this report includes a survey of heritage resources as outlined in the National Heritage resources Act,1999(Act No25 of 1999) Heritage resources, (Cultural resources) include all human-made phenomena and intangible products that are result of the human mind. Natural, technological or industrial features may also be part of heritage resources, as places that have made an outstanding contribution to the cultures, traditions and lifestyle of the people or groups of people of South Africa.

The term ' pre – historical' refers to the time before any historical documents were written or any written language developed in a particular area or region of the world. The historical period and historical remains refer, for the project area, to the first appearance or use of ' modern' Western writing brought South Africa by the first colonist who settled in the Cape in the early 1652 and brought to the other different part of South Africa in the early 1800.

The term ' relatively recent past' refers to the 20th century. Remains from this period are not necessarily older than sixty years and therefore may not qualify as archaeological or historical remains. Some of these remains, however, may be close to sixty years of age and may in the near future, qualify as heritage resources.

It is not always possible, based on the observation alone, to distiqiush clearly between archaeological remains and historical remains or between historical remains and remains from the relatively recent past. Although certain criteria may help to make this distinction possible, these criteria are not always present, or when they are present, they are not always clear enough to interpret with great accuracy. Criteria such as square floors plans

(a historical feature) may serve as a guideline. However circular and square floors may occur together on the same site.

The ‘ term sensitive remains’ is sometimes used to distiqiush graves and cemeteries as well as ideologically significant features such as holy mountains, initiation sites or other sacred places. Graves in particular are not necessarily heritage resources if they date from the recent past and do not have head stones that are older than sixty years. The distinction between ‘ formal’ and ‘ informal’ graves in most instances also refers to graveyards that were used by colonists and by indigenous people. This distinction may be important as different cultural groups may uphold different traditions and values with regard to their ancestors. These values have to be recognized and honored whenever graveyards are exhumed and relocated.

The term ‘ Stone Age’ refers to the prehistoric past, although Late Stone Age people lived in South Africa well into the historical period. The Stone Age is divided into an Early Stone Age (3Million years to 150 000 thousand years ago) the Middle Stone Age (150 000 years ago to 40 years ago) and the Late Stone Age (40 000 years to 200 years ago).
The term ‘ Early Iron Age’ and Late Iron Age respectively refers to the periods between the first and second millenniums AD.

The ‘ Late Iron Age’ refers to the period between the 17th and the 19th centuries and therefore includes the historical period.
Mining heritage sites refers to old, abandoned mining activities, underground or on the surface, which may date from the pre historical, historical or relatively recent past.
The term ‘ study area’ or ‘ project area’ refers to the area where the developers wants to focus its development activities (refer to plan)

Phase I studies refers to survey using various sources of data in order to establish the presence of all possible types of heritage resources in a given area.
Phase II studies includes in-depth cultural heritage studies such as archaeological mapping, excavating and sometimes laboratory work. Phase II work may include

documenting of rock art, engravings or historical sites and dwellings; the sampling of archaeological sites or shipwrecks; extended excavation of archaeological sites; the exhumation of bodies and the relocation of grave yards, etc. Phase II work may require the input of specialist and require the co-operation and the approval of SAHRA.

5. METHODOLOGY

Source of information

Most of the information was obtained through the initial site visit made on the 15 October 2015 by Mr. Mathoho Eric where systematic inspections were covered along linear transects which resulted in the maximum coverage of the entire site. Standard archaeological observation practices were followed; Visual inspection was supplemented by relevant written source, and oral communications with local communities from the surrounding area. In addition, the site was recorded by hand held GPS and plotted on 1:50 000 topographical map. Archaeological/historical material and the general condition of the terrain were photographed with a Canon 1000D Camera.

Assumption and Limitations

It must be pointed out that heritage resources can be found in the unexpected places, it must also be borne in mind that survey may not detect all the heritage resources in a given project area. While some remains may simply be missed during surveys (observation) others may occur below the surface of the earth and may be exposed once development (such as the construction of the proposed facilities) commences.

6. ASSESSMENTS CRITERIA

This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The significance of archaeological and heritage sites were based on the following criteria:

- The unique nature of a site.

- The amount/depth of the archaeological deposit and the range of features (stone walls, activity areas etc).
- The wider historic, archaeological and geographic context of the site.
- The preservation condition and integrity of the site.
- The potential to answer present research questions.

6.1 Site Significance

The site significance classification standards as prescribed in the guideline and endorsed by the South African Heritage Resources Agency (2006) and approved by the Association for Southern African Professional Archaeologists (ASAPA) for the Southern African Development Community (SADC) region, were used as guidelines in determining the site significance for the purpose of this report.

The classification index is represented in the Table below.

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination
Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)	Grade 4A	High / Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)	Grade 4B	Medium Significance	Recording before destruction

Generally Protected C (GP.C)	Grade 4C	Low Significance	Destruction

Grading and rating systems of heritage resources

6.2 Impact Rating

VERY HIGH

These impacts would be considered by society as constituting a major and usually permanent change to the (natural and/or cultural) environment, and usually result in severe or very severe effects, or beneficial or very beneficial effects.

Example: The loss of a species would be viewed by informed society as being of VERY HIGH significance.

Example: The establishment of a large amount of infrastructure in a rural area, which previously had very few services, would be regarded by the affected parties as resulting in benefits with VERY HIGH significance.

HIGH

These impacts will usually result in long term effects on the social and /or natural environment. Impacts rated as HIGH will need to be considered by society as constituting an important and usually long term change to the (natural and/or social) environment. Society would probably view these impacts in a serious light.

Example: The loss of a diverse vegetation type, which is fairly common elsewhere, would have a significance rating of HIGH over the long term, as the area could be rehabilitated.

Example: The change to soil conditions will impact the natural system, and the impact on affected parties (e.g. farmers) would be HIGH.

MODERATE

These impacts will usually result in medium- to long-term effects on the social and/or natural environment. Impacts rated as MODERATE will need to be considered by the public or the specialist as constituting a fairly unimportant and usually short term change to the (natural and/or social) environment. These impacts are real, but not substantial.

Example: The loss of a sparse, open vegetation type of low diversity may be regarded as MODERATELY significant.

Example: The provision of a clinic in a rural area would result in a benefit of MODERATE significance.

LOW

These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as LOW will need to be considered by society as constituting a fairly important and usually medium term change to the (natural and/or social) environment. These impacts are not substantial and are likely to have little real effect.

Example: The temporary changes in the water table of a wetland habitat, as these systems are adapted to fluctuating water levels.

Example: The increased earning potential of people employed as a result of a development would only result in benefits of LOW significance to people living some distance away.

NO SIGNIFICANCE

There are no primary or secondary effects at all that are important to scientists or the public.

Example: A change to the geology of a certain formation may be regarded as severe from a geological perspective, but is of NO SIGNIFICANCE in the overall context.

6.3 Certainty

DEFINITE: More than 90% sure of a particular fact. Substantial supportive data exist to verify the assessment.

PROBABLE: Over 70% sure of a particular fact, or of the likelihood of an impact occurring.

POSSIBLE: Only over 40% sure of a particular fact, or of the likelihood of an impact occurring.

UNSURE: Less than 40% sure of a particular fact, or of the likelihood of an impact occurring.

6.4 Duration

SHORT TERM : 0 – 5 years

MEDIUM: 6 – 20 years

LONG TERM: more than 20 years

DEMOLISHED: site will be demolished or is already demolished

6.5 Mitigation

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be classified as follows:

- ✓ **A** – No further action necessary
- ✓ **B** – Mapping of the site and controlled sampling required
- ✓ **C** – Preserve site, or extensive data collection and mapping required; and
- ✓ **D** – Preserve site

7. Brief synthesis

Previous studies in the region reflected that the area is of high pre- historic and heritage significance. It is in fact a cultural landscape where heritage understanding is supported by overwhelming recorded evidence represented by the presence of cultural material fingerprints (remains). Generally the archaeology of human occupation within the study area is made out of pre-colonial elements (stone and Iron ages) as well as the colonial components. The Northern Cape Province especially Kalahari region is world renowned palae-anthropological, paleontological, Stone Age, Iron Age and historical sites. Within the study area there are at least more than 40 prominent Palae-ecological and archaeological sites and their environs. Generally, the archaeology of human occupation within the study area stretches from the Early Stone Age up to the recent past (Calabrese, 1996; Huffman, 2007). As such, the Kathu pan and surrounding environs host significant evidence of the

biological and cultural evolution of humanity as well as other animals (Walker, Chazan & Morris 2013).

This very rich cultural and natural landscape demands sustainable and effective management to ensure that the integrity and authenticity of attributes that convey its Outstanding Universal Value (OUV) is not eroded. Alongside and predating the hominid period of occupation is a sequence of fossil mammals, micro-mammals and invertebrates which provide a window onto faunal evolution, palaeobiology and palaeoecology stretching back into the Pliocene. This record has come to play a crucial role in furthering our understanding of human evolution and the appearance of modern human behaviour. The fossil evidence contained within these sites proves conclusively that the African continent is the undisputed Cradle of Humankind. Collectively these components contain the necessary evidence of sites where abundant scientific information on the evolution of homo over the past 3.5 million years was uncovered. Furthermore, the nominated serial site covers an area big enough to constitute a vast reserve of scientific information, with enormous potential.

According to Almond (2012) Sishen and its surrounding falls within the superficial sediments of probable Late Caenozoic (i.e. Late tertiary or Neogene to recent) age, many of which are assigned to the Kalahari Group. The geology and soil is characterized by colluvial sandy, gravelly and boulder, river alluvium, surface gravel of various origins, as well as spring and Pan Sediments. The colluvial and alluvial deposit may be extensively concretized (i.e cemented with pedogenic limestone). The Gordonia formation dune sand are mainly active during cold drier interval of the Pleistocene Epoch that were inimical to most of Life, apart from hardy, desert adapted species. The porous dune sands are not generally conducive to fossil preservation. However, mummification of soft tissue may play a role and migrating lime rich ground water derived from the underlying bedrock (including for example, dolerite) may lead to the rapid concretizations of organic structures such as burrows and roots cast (Almond, 2012).

Occasional terrestrial fossil remains that might be expected within the proposed study area and the identified units included calcretized rhizoliths (roots cast), ostrich eggshells and shell of land snails. A wide spectrum of vertebrate and invertebrates remains, trace of fossil, plant fossil and Microfossil have been recorded from these Kalahari Group sediments (Almonds, 2008; Almonds and Pether, 2008; Almonds, 2012). They represent a succession of palaeo ecosystems. The caves, breccias and strata from which quantities of fossils or tools have been extracted, together with the landscape are generally intact, but are vulnerable to development pressures such as mining. Impacts on fossil heritage here are likely to be of low significance.

7.1. Stone Age (Esa, Msa and Lsa)

Northern Cape is marked by outstretch of plains, rocky outcrops, grassland and thornveld with strong trees growth along major rivers. Most of the Northern Cape Rivers, springs and fountains are surrounded by evidence of Stone Age occupations. Evidence of Stone Age within the study area dates back to 500 000 years ago, this time period is associated with the earliest Homo predecessors who lived near source of water. Along the Vaal River caches of stone tools manufactured from dolerites with Sangoan feature has been found.

These tools were simple meant to chop and butcher meat, de- skin animal and probably to smash bones to obtain marrow. The presence of cut marks from animal fossil bones dating to this period has led to the conclusion by researchers that human ancestors were scavengers and not hunters (Esteyhuysen, 2007). They may have preyed on a drowned or crippled animals or shared a kill by another predator, which explains why at some ESA sites occur high bone proportions of large, dangerous game (Wadley, 2007). The industries were later replaced by the Acheulian stone tool Industry which is attested to in diverse environments and over wide geographical areas. The Industry is characterized by large cutting tools mostly dominated by hand axes and cleavers. Bifaces emerged and have been reported from a wide range of areas in South Africa. These stone tools products were astonishingly similar across the geographical and chronological distribution of the Acheulian techno-complex: large flakes that were suitable in size and morphology

for the production of hand axes and cleavers perfectly suited to the available raw materials (Sharon, 2009).

Evidence presented from Sterkfontein cave, Khathu Pan reflected that the first tool making hominids belong to either an early species of the Homo or an immediate ancestor which is yet to be discovered here in South Africa (Esteyhuysen, 2007, Walker, Chazan & Morris 2013). Both the Oldwan and Acheulian industries are well represented in the archaeology of the Northern Cape and Gauteng Province in the Cradle of Humankind from sites (Strekfontein and Kromdraai). These discoveries have made considerable contribution to the body of scientific knowledge in the subject of tool manufacturing process in association with human evolutions. The Middle Stone Age dates back to about 250 000 ago ending at around 25 000 years ago. In general Middle Stone Age tools are smaller than those of the Early Stone Age period. They are characterized by smaller hand axes, cleavers, and flake and blade industries. The period is marked by the emergence of modern humans through the change in technology, behavior, physical appearance, art, and symbolism. Various stone artifact industries occur during this time period, although less is known about the time prior to 120 000 years ago, extensive systemic archaeological research is being conducted on sites across southern Africa dating within the last 120 000 years (Thompson & Marean, 2008).

Surface scatters of these flake and blade industries occur widespread across southern Africa although rarely with any associated botanical and faunal remains. It is also common for these stone artifacts to be found between the surface and approximately 50-80cm below ground. Fossil bone may be associated with MSA occurrences. These stone artifacts, like the Earlier Stone Age hand axes are usually observed in secondary context with no other associated archaeological material.

An early South African Middle Stone Age stone artifact industry referred to as the Mangosian had a very wide distribution stretching across Limpopo, the eastern Orange Free State, around Cape Point and Natal (Malan 1949). This stone artifact industry, according to the period, may have represented the final development that the prepared core technique of the Middle Stone Age reached prior to its replacement by the microlithic

techniques of the Later Stone Age. Malan (1949) also made mention that there are variations of Middle Stone Age assemblages throughout South Africa (Binnerman *et al,* 2011).

A variety of MSA tools includes blades, flakes, scraper and pointed tools that may have been hafted onto shafts or handles and used as spear heads. Residue analyses on some of the stone tools indicate that these tools were certainly used as spear heads (Widely, 2007). The presence of spear heads on some of the MSA assemblages is an indication that these group of people were hunters who targeted middle sized game such as hartebeest, wildebeest and zebra (Wadley, 2007), some assemblages show the presence of bone tools such as bone points.

The last phase of stone tool industry is associated the late stone age. The Karoo landscape is exceptionally rich in the distribution of this phase and is characterized by wide distribution of engravings. The greatest concentrations of engravings occur on the basement rocks and the intrusive Karoo dolerites, but sites are also found on rock types including dolomite, granite, gneiss, and in a few cases on sandstone (Morris, 1988). Most of these paintings depict a wide variety of the fauna of the Northern Cape artistic renderings of animal such as giraffes and other large grazers and mixed feeders such as zebra, wildebeest, hartebeest, eland and buffalo (Parkinton et al. 2008) Late Stone age period is associated with the use of micro- lithic stone tools. Few LSA tools have been found within the study area however the artifacts were out of context due to environmental and human interference. Northern Cape are well represented during the mid- Holocene. Several travelers from the 1840s onwards mentioned the carving or drawings of animals and footprints across a wide area of the Karoo (Parkington etal, 2008:31)

7.2. Iron Age Period

Iron Age communities moved into southern Africa by c. AD 200, entering the study area either by moving down into the Northern Cape via Botswana or via coastal plains route. Their movement followed various rivers inland. Being cultivators, they preferred the rich

alluvial soils to settle on. These landscapes, drainage systems and good climatic conditions could have influenced diverse societies including wildlife and farming communities to settle within the region. It is indisputable that the natural environment has played the dominant part; nevertheless it is not deterministic (Katsamudanga, 2007). The introduction of farming communities in southern Africa early in the first millennium AD is characterised by the appearance of distinctive pottery wares (Huffman, 2007), metal working (Friede, 1979), agriculture and sedentism (Maggs, 1980; Phillipson, 2005). Mining and metallurgy were largely limited to the reduction of iron and copper ore for the manufacturing of utilitarian and decorative implements.

Iron Age occupation of the region seems to have taken place on a significant scale and at least three different phases of occupation have been identified, however the last period of pre-colonial occupation consisted of Korana, Batswana speaking people that settled on stone-walled sites and caves. At present it is not clear, but, judged on the pottery found; these sites might even date to early historic times. As this was a period of population movement, conflict and change, it in large part set the scene for the current population situation in the country. Considering the time period that they were occupied, they also feature in the early historic period. Preliminary archaeological investigation by the McGregor Museum revealed that early mining had contrary to the cited historical evidence, Charcoal sample submitted for Radio Carbon dating indicated that mining activities in the excavated portion range from 19th century to AD800 (Ibid 1981).

7.3. *HISTORICAL / COLONIAL PERIOD*

Historical archaeology could be associated with the unwelcome political authority at the Cape which drive dis affected Dutch farmers in search of greener pastures outside the British sovereignty (Parkington etal, 2008). This period is associated with the last 500 years when European settlers and colonialism entered into southern Africa. Movement into the interior was closely linked with the change from farming to stock farming. The movement of Dutch into the interior got underway when Wilhelm Adrien van der Stel began to issue free grazing permits in 1703. The exoduses went hand in hand with hunting

expeditions into the interior which not only provided the farmers with meat, but also enable them to learn more about the resources of the hinterland. British government made its laws which undermine the freedom of the Boers. The mounting conflict between African and white stock farmers played the dominant part. This led to the general dissatisfaction and a feeling of insecurity among the Afrikaner. The frontier wars of 1834/35 caused the frontier farmers to suffer heavy losses. To aggravate matters, land prices rose sharply during the 1820 and 1830 and drought was a serious problem. These conditions threatened the pastoral lifestyle. There was no land for the younger generations. They opted to migration in search of land and grazing in the interior.

During the great trek into the interior they were already acquainted with conditions of the interior and with the main trek routes. They got available information from travelers, hunters and missionaries and writes such as Lichtenstein and Buchell. The region was infiltrated by Missionaries such as Moffat. Availability of springs and fountains in the vicinity attracted nomadic trek Boers who served as prospectors and miners working on the rich iron ore deposits near Sishen farm. Some of the ancient mines were described and investigated near Postmansburg. This cave site was first described from historical records by P.B Borcherds who visited the area in the early 1801.The area was further examined by Dr. Somerville who was an interpreter during the expedition. Historical documents suggest that the site was characterized by a cave with red mixed mica and iron ore, which was mined by Tswana speaking groups from the region. According to Beaumont and Thackeray (1981) the locals besprinkle themselves with this powder after besmearing themselves with grease or fat, which gives their bodies a reddish shining colour (Beaumont and Thackeray, 1981).

The site was further investigated in the early 1805 by H Lichtenstein and later in 1812 by Williem Burchell who maintained that several Tswana people lost their lives after the mine roof collapsed down while they were busy extracting ochre, He further maintained that incidences like this shows that there was no control of the mining activities in the area, entrance into the mine was open to every individual without restrictions. Investigations shows that the floor of the cave was scatted with animal bones, with sections of heath

remains, an indication that fire was used possibly as the source of light inside the cave. Records also show that the cave was also used as refuge shelter during the time of war and there is evidence that suggest that san communities as well as wild animals used to stay inside the cave (Ibid 1981).

The area was regarded as the Mecca to the Karroo region some travel from far to obtain fresh supply of the shining powder. By 1840s and 1850s Dutch had reached parts of the study area resulting in the establishment of the ZAR Republic. During that time they came into contact with African tribes for example the Korana pastoralist and the San communities. It is these contacts that brought with it genocidal attacks on the San Communities within the Karoo. The San communities specifically the Xam! Language speaker who inhabited the Karoo region responded to whites' invasion. They armed themselves and resisted against whites inventions. However the San lost their land in this conflict as long as their language they ended up being incorporated into the colonial society. Some of them were employed within the farms working for whites as shepherds, laborers and domestic workers (Parkington etal, 2008). Many of these farms have been in the ownership of Dutch families for generations. As a result, they possess a large corpus of information with regarding to the area and its history. A significant number of battles and skirmishes took place and were famously chronicled in the Anglo Boer war in the region. The remains of blockhouses can be found on many ridges and at river crossings (Van Schalkwyk, 2011).

8. SITE LOCATION AND PROJECT DESCRIPTION

The proposed study area is situated approximately 23 kilometers west of Hotazel mining town on farm Eenzaampan 307. The farm is subdivide into livestock holding and grazing camps situated on slightly flat section of farm land currently used for animal husbandry dominated by goats and cattle.

Farm Eenzaampan 307 is located on the following global positioning system co-ordinates (GPS S27°.26 ', 45.04" & E 22°.59'.27.02")

Generally the geology and soils of the Northern Cape is characterized by colluvial sand, gravel, boulder, and river alluvium, surface gravel of various origins, as well as spring and Pan of the Kalahari sediments. Its distribution stretches from Hotazel to the Botswana border. Most of the areas are dominated by flat plains with well developed, protruding sand dunes, calcrete or silcrete with shallow sand. Geologically the area is dominated by some Campbell group dolomite and chert and mostly superficial Kalahari group sediments with red blown sand. Rocky pavement are common with Hutton soil form. Some places show fericrete, hematite, migmatite and banded ironstone (Werger, 1978, Thomas & Shaw 1991, Mucina & Rutherford, 2006).

The vast area of study is still covered by natural vegetation and landscape features are characterized by sparse, patchy grass and sedge land. Some of the common dominant grass species include (*Panicum, Eragrostis, Euneapogon tragus, Chloris, Cenchrus)* on the bottom of mostly dry riverbeds occur low shrubs (Mucina & Rutherford, 2006). This type of geology has influenced the presence of medium and tall tree layers with *Acacia erioloba* in places but mostly open and including *Boscia albitrunca* as the prominent trees. The shrubs layer are generally dominated by *Acacia mellifera, Diospyroslycioides* and *Lyceum luisutum* and grass layers is variable in cover. Plant taxa associated with the study includes, *Ziziphus mucronata, tereminalia serecea, grewia flava, gymnosporia buxilifolia, Dicrostachys cineria and acacia species.*

The proposed development entails:

- ✓ Underground drillings of core rock sample with interval excavations in order to determine base geological stratigraphy with manganese and iron mineral deposit.

Figure 1: View of Eenzaampan farm dominated by isolated Acacia species bush

Figure 2: The area is dominated by Kalahari sand with few isolated trees

Figure 3: View of some of the farm livestock

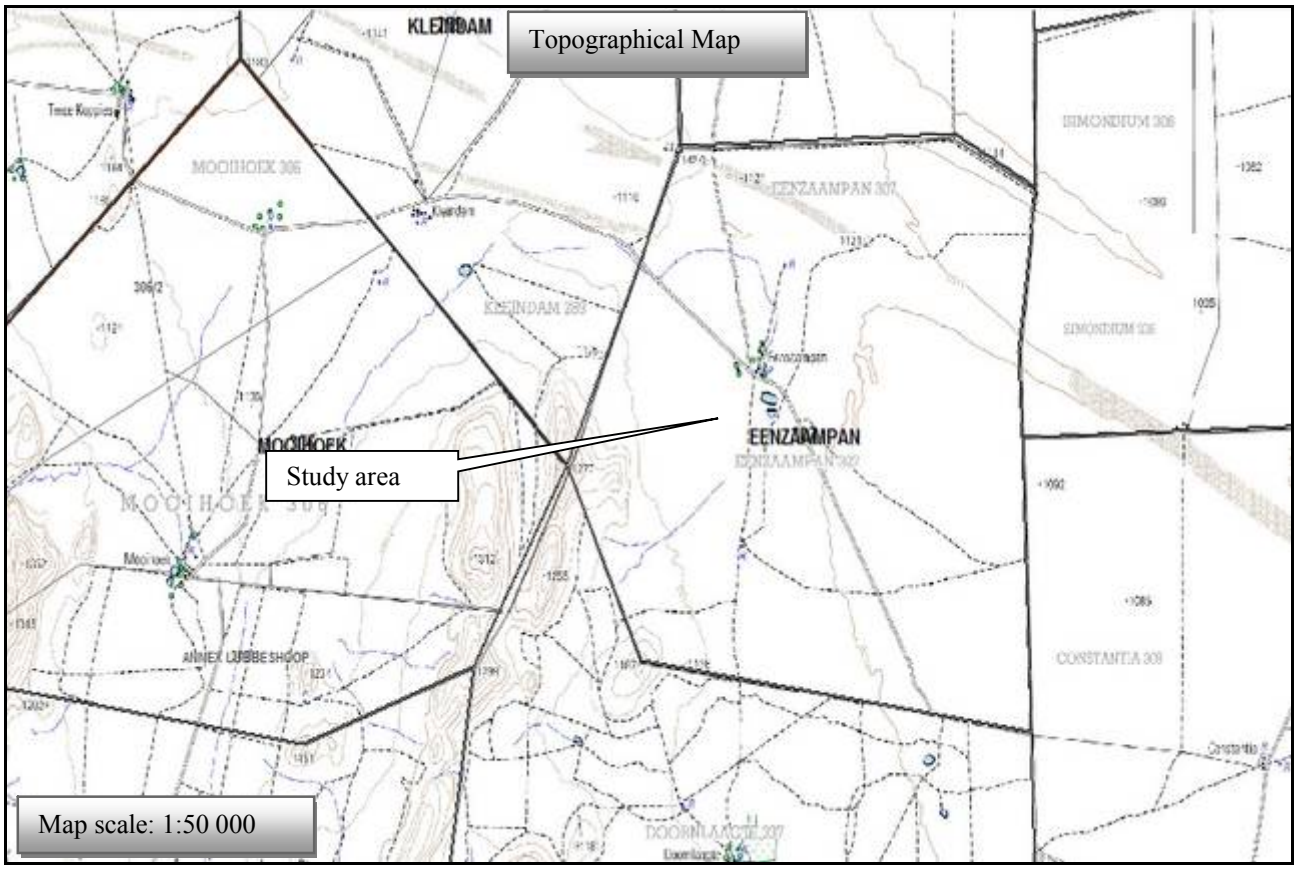


Figure 4: Topographical map of the study area

9. ASSESSMENT OF SITES AND FINDS

This section contains the results of the heritage site/find assessment. The phase 1 heritage scoping assessment program as required in terms of the section 38 of the National Heritage Resource Act (Act 25 of 1999) done for the proposed prospecting rights on farm Eenzaam 307near Hotazel in the Northern Cape Province. The study has revealed that the area is not rich in heritage resources; meaning that the proposed prospecting activities is generally acceptable. There are no primary or secondary effect at all that are important to scientist or the general public that will be impacted in terms of generally protected heritage.

10. CONCLUSION AND RECOMMENDATIONS

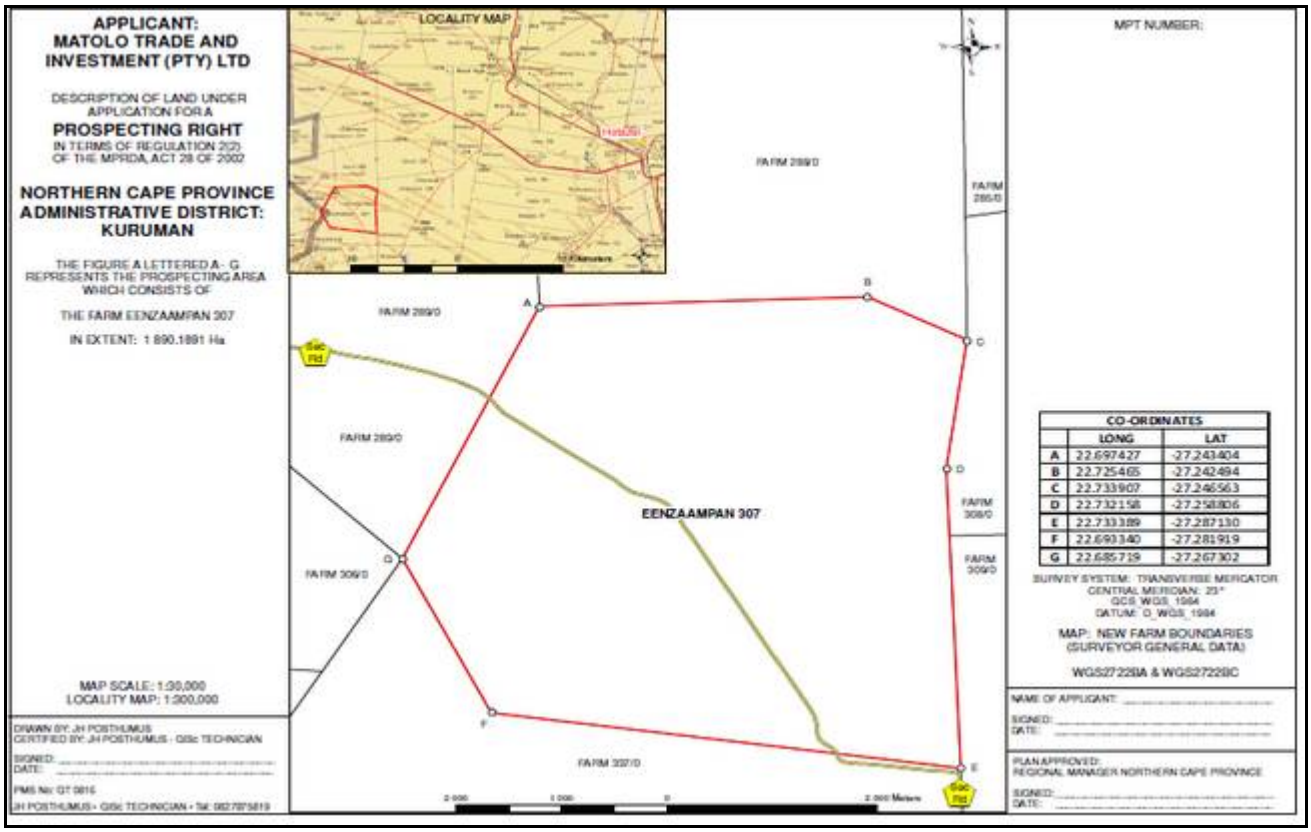
In conclusion there are no written documents on previous archaeological investigations on Eenzaam pan 307 farm from the South African Heritage Resource database. The phase 1 Archaeological Impact Assessments for prospecting rights on farm Eenzaam pan 307 revealed no heritage resources sites within the study area. Farm homestead exist and this maybe of heritage significance. Based on personal communication, a grave of a child exist at the backside of the farm house. It is strongly recommended that exploration team should avoid centering their drilling activities in close proximity to homesteads and ruins.

The objective of the AIA is to limit primary and secondary impacts on archaeological and cultural heritage sites in the path of the proposed mineral prospecting site. The study informs and makes recommendations for any further mitigation that should take place before mineral prospecting commences. In the event of any unexpected heritage feature being encountered during mineral prospecting phase. Immediate reporting is very much crucial to relevant heritage authorities of any heritage resource discovered during prospecting periods. This recommendation should also be incorporated into the Environmental Management Plan for the proposed mineral prospecting rights.

No further studies / Mitigations are recommended given the fact that within the proposed mining site footprint and its surrounding there is no archaeological or place of historical

significance that will be impacted by the proposed mineral prospecting activities. From an archaeological and cultural heritage resources perspective, there are no objections to the proposed project and we recommend to the Provincial Heritage Resource Agency, South African Heritage Resource Agency to approve the project as planned.

11. TOPOGRAPHICALMAP AND SITE LAYOUT PLAN



PROFESSIONAL DECLARATION

I, the undersigned Mr. Ndivhuho Eric Mathoho hereby declare that I am a Professional archaeologist accredited with the Association for South African Professional Archaeologists (ASAPA) and that Millennium Heritage Group (Pty) Ltd is an independent Consultants with no association or with no any other interest what so ever with any institution, organization, or whatever and that the remuneration earned from consulting work constitute the basis of company livelihood and income.

Mr. Mathoho Ndivhuho Eric

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Archaeologists and Heritage Consultants for Millennium Heritage Group (Pty) Ltd

ASAPA Member

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