MILLENIUM HERITAGE GROUP (PTY) LTD

PHASE 1:

ARCHAEOLOGICAL IMPACT ASSESSMENT RELATING TO THE MINING PERMIT AND ENVIRONMENTAL AUTHORIZATION FOR THREE EXISTING BORROW PITS ON FARM KUNANA LOCATION 4IQ WITHIN TSWAING LOCAL MUNICIPALITY OF NGAKA MODIRI MOLEMA DISTRICT, NORTH WEST PROVINCE, SOUTH AFRICA

***Compiled** by:* Millennium Heritage Group (PTY) LTD

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30/08/19- Report

i. Technical and Executive Summaries

Property details	
Province	North West Province
Magisterial District	Ngaka Modiri Molema District Municipality
Topo-cadastral map	2625BC and 2625AD
Co-ordinates	**BP 1**: S26°.28. 359 “& E 25°.27. 268"). **BP2:** S26°.28. 762 “& E 25°.26. 706"). **BP3:** S26°.26. 032 “& E 25°.32. 019").
Closest town	Sannieshof
Farm name	Kunana Location 4 IQ

Development criteria in terms of Section 38 (1) of the NHR Act 25 of 1999	**Yes**	**No**
Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length	yes	
Construction of bridge or similar structure exceeding 50m in length		No
Development exceeding 5000 sqm	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 sqm		No
Any other development category, public open space, squares, parks, recreation grounds		No

Development	
Description of development	Three borrow pits associated with gravel road upgrade
Project name	Mining permits and environmental authorization for three Borrow pits on farm Kunana location 4 IQ
Developer	Department
Heritage Consultant	Mr. Ndivhuho Eric Mathoho, Millennium Heritage Pty Ltd

Purpose of the study	Heritage Impact Assessment to identity and assess significance of sites (if any) to be impacted by the proposed gravel extraction activities on three existing borrow pits area.

Land use	
Previous land use	Farm land
Current land use	Borrow pits

ii. EXECUTIVE SUMMARY

Plantago Lanceolata Consultants (Pty) Ltd requested Millennium Heritage Group (Pty) Ltd, an independent heritage consulting company to assess the heritage sensitivity of the three existing borrow pits situated on farm Kunana Location 4 IQ within the Tswaing Local Municipality of the Ngaka Modiri Molema District, North West Province. These borrow pits have been earmarked for the extraction and supply of gravel materials for the proposed road upgrade from gravel to tar. A multi-stepped methodology was used to address the terms of reference. The proposed activities trigger Environmental Impact Assessment (EIA) Regulation GNR 327(Listing Notice 1) and GNR 324 (Listing Notice 3). This study is part of a Basic Assessment (BA) process undertaken to obtain Mining Permit and Environmental Authorization.

To begin with, a desktop study was carried out to identify any known heritage sites and their significance. This involved consulting contract archaeology reports filed on SAHRIS, research reports and academic publications. Finally, the study was guided by the National Heritage Resources Act of 1999 and SAHRA Minimum Standards for Impact Assessment. The desktop study was followed by fieldwork.

The study reached the following conclusions and recommendations:

- Desktop surveys indicated the presence of historical farm homesteads that form part of the historical period of the region. Most of these sites area generally indicated by the presence of *Eucalyptus* trees.

- The proposed gravel material extraction process is scheduled to take place on an area (s) previously disturbed by gravel extraction process for road re- gravelling, however the edges of the borrow pits are still covered by natural grass cover and bushes.
- Ground truthing of the proposed borrow pits found no archaeological materials or heritage remains.

- Although no archaeological remains were found, it is possible that some significant features may be buried beneath the ground. Should buried archaeological materials and burials be encountered during the process of development, the following must apply:
- Work must stop immediately

A professional archaeologist or nearest heritage authority must be contacted.

Based on this assessment which found no archaeological resources in the area, we recommend that the heritage authorities approve the project as planned.

iii. ACKNOWLEDGEMENTS:

CLIENT NAME: Plantago Lanceolata (PTY)LTD

Contact person: Thabelo Munyai

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Declaration of Independence and CV

I Eric Mathoho declare that I am an independent consultant and have no business, financial, personal or other interest in the proposed development, application or appeal in respect of which I am appointed other than fair remuneration for work performed about the activity, application or appeal. There are no circumstances that compromise the objectivity of me performing such work.

Signed:

Eric N. Mathoho, BA (Hons) in archaeology (Univen) MPhil. In Archaeology (UCT) PhD Candidate (UCT), ASAPA Member, Archaeologist and Heritage Expert

REPORT AUTHOR: Mr. Mathoho Ndivhuho Eric

TABLE OF CONTENTS

CONTENT **PAGE**

Table of figures

1. INTRODUCTION

The South African Road Agency (SANRAL) in collaboration with the North-West Province, Department of Public Works and Roads commissioned studies for the three existing borrow pits to be used for the extraction of gravel material for the proposed road (D402) upgrade from gravel to tar. The proposed D402 is an arterial road that connects commercial farms and residential areas nearby and transverse 23 kilometers through Manamolela, Deelpan and Kopela, within the jurisdiction of Tswaing Local municipality of the Ngaka Molema Modiri District, North West. The area lies further 23 kilometers west of Sannieshof Central Business District. 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, North-West Province, Department of Public Works and Roads appointed Plantago Lanceolata Environmental Consultants as an Independent Environmental Assessment Practitioner, who then appointed Millennium Heritage Group (PTY) LTD to undertake archaeological impact assessment of the proposed project.

The development triggers listed activities under the National Environmental Management Act (107 of 1998) (NEMA) EIA Regulations of 2014 (as amended in April 2017). Thus, North-West Province Department of Public Works and Roads requires environmental Authorization from the Department of Mineral Resource (DMR) and is required to undertake a Basic Assessment(BA)study before the commissioning of the proposed project. This proposal triggered listed activity, Activity 21 of listing Notice 1 of GNR 327(Mining Permit). To comply with relevant legislations, the applicant (North-West Province Department of Public Works and Roads) requires information on the heritage resources that occur within or near the proposed borrow pits sites and their heritage

significance. The objective of the study is to document the presence of archaeological and historical sites of significance to inform and provide guidance on the proposed development. Apart from contributing towards the preservation of the heritage resources, the studies provide information and awareness of the types of archaeological and heritage sites that occur within the proposed study area. The document enables the developer to align their functions and responsibilities to advance project activities and at the same time minimizing potential impact on archaeological and heritage sites. 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. In addition to heritage legislations, the South African Heritage Resources Agency (SAHRA) has developed minimum standards used in impact assessment, while these local standards, are operational they area strengthened by the International Council of Monuments and Sites (ICOMOS) published guideline for assessing impacts. The Burra Charter of 1999, requires a cautious approach to the management of sites; it sets out firmly that the cultural significance of heritage places must guide all decisions.

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 materials (Section 35) and graves and burial sites (Section, 36). To comply with the legislation, the applicant requires information on the heritage resources, that occur in the area proposed for development and their significance. 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 purposes of this study in as far as they contain provisions for the protection of tangible and intangible heritage resources including burials and burial grounds.

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

This Act established the South African Heritage Resource Agency (SAHRA) as the prime custodian 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 discovers archaeological and paleontological materials and meteorites during development or agricultural activity must immediately report the find to the responsible heritage resource authority or the nearest local authority or museum.

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 obtaining information on whether 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 weeks 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 during 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 obtaining information on whether 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 decide 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 a Heritage Impact Assessment for the proposed existing three borrow pits 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 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 soon, qualify as heritage resources.

It is not always possible, based on the observation alone, to distinguish 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 plan (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 distiqiushed graves and cemeteries as well as ideologically significant features such as holy mountains, initiation sites or other sacred places. Graves 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 regarding their ancestors. These values should 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 refer to survey using various sources of data to establish the presence of all possible types of heritage resources in each area.

Phase II studies include 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

i. Desktop studies

A desktop study was performed to gain information on the heritage resources in the area. The earliest recorded evidence is that of the San who left their remarkable art throughout the province. Some of these sites were identified by early traveler such as Emile Halub who visited the Province in 1872-1875, removed roughly 200 rock art slab from various rock art sites. This was followed by the presence of Korana/ Sotho-Tswana settlement dating back to 15th century AD in the Province. Late Iron Age sites occur across the entire

region (Breutz 1953; Boeyens 1998, 2000, 2003; Boeyens & Hall 2009). Early travelers such as Lichtenstein and Burchell, and missionaries, for instance John Campbell and Stephen Kay, provided valuable records of settlement layout and the spatial arrangement of houses.

ii. Field surveys

To identify sites on the ground and to assess their significance, a dedicated field visit was performed to the site of the proposed development. The fieldwork was performed on the 29 August 2019 by Mr. Mathoho Eric and Divhani Mulaudzi. The fieldwork followed systematic inspections of predetermined linear transects which resulted in the maximum coverage of the entire site. The sampling method selected was the stratified random technique. The proposed sites for development were taken as strata with random field walking around them. Standard archaeological observation practices were followed; visual inspection was supplemented by relevant written source, and oral communications with local communities from the surrounding area. Identified sites were recorded by hand held GPS and plotted on 1:50 000 topographical maps. 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 each 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 was determined 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 guidelines 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 in determining the site significance for this report.

The classification index is represented in the Table below that show grading and rating systems of heritage resources in South Africa.

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

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 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 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 an 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 because 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 fact. Substantial supportive data exist to verify the assessment.

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

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

UNSURE: Less than 40% sure of a 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. Data sources and methodology

According to the South African Heritage Resources Agency Minimum Standards for Specialist heritage studies: *"HIA reports must identify, assess and record current conditions and locations of all heritage resources in the area proposed for development and impact zone, the impact of the development on the identified heritage resources or landscapes and make recommendations for protection or mitigation to reduce the impact*

on the resources". The approach and methodology adopted in this report was meant to achieve this.

7.1 Literature review: Background to the heritage resources of the of the research area

North west is marked by outstretch of plains, rocky outcrops, grassland and Thornveld with strong trees growth along major rivers. Most of the Rivers, springs and fountains are surrounded by evidence of Stone Age occupations. Evidence of Stone Age within the study area dates to 500 000 years ago, this 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 to

produce 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 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 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, per 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 et al, 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 province 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 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 et al, 2008). This period is associated with the last 500 years when European settlers and colonialism entered 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. The earliest recorded settlement is that of the San who left their remarkable art throughout the province. Some of these sites were identified by early explores such as Emile Halub who visited the province in 1872-1875, removed roughly 200 rock art slab from various rock art sites. 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 region responded to whites' invasion. Records shows that they armed themselves and resisted against white's inventions. However, the San lost their land in this conflict as well 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 et al, 2008).

By 1840s and 1850s Dutch had reached parts of the study area resulting in the establishment of the ZAR Republic. The expansion of the Voortrekkers and the establishment of the ZAR resulted in a division of the Mahikeng district into separate areas

to be occupied by the Barolong and the Europeans respectively (http://www.sahistory.org.za/places/mafikeng). While the earliest settlement of Sotho-Tswana speakers has been recorded for the 15th century AD in the Province. Late Iron Age sites occur across the entire province (Breutz 1953; Boeyens 1998, 2000, 2003; Boeyens & Hall 2009). Early travelers such as Lichtenstein and Burchell, and missionaries, for instance John Campbell and Stephen Kay, provided valuable records of settlement layout and the spatial arrangement of houses. Other documents suggested that the Tswana groups of the Barolong first moved into this region during the late 1700s/early 1800s. Mahikeng was intensively settled by sections of the Barolong, part of the western cluster of the Sotho group, and the Tshidi (Matthews 1940, 1945).

8. SITE LOCATION AND PROJECT DESCRIPTION

The proposed 15 Kilometers, Delareyville-Deelpan gravel road D402 to D170 is located roughly 23 Km West of Sannieshof Central Business District (CBD), within Ngaka Modiri Molema of the Tswaing Municipality, District, North West Province. Three existing borrow pits sites were identified covering roughly (5) five hectares each, where gravel materials will be sourced for the construction of road foundation within the farm Kunana Location 4 IQ. Both three borrow pits are located on the outskirts of the village one situated to the north and two located to the west of the village residential sites.

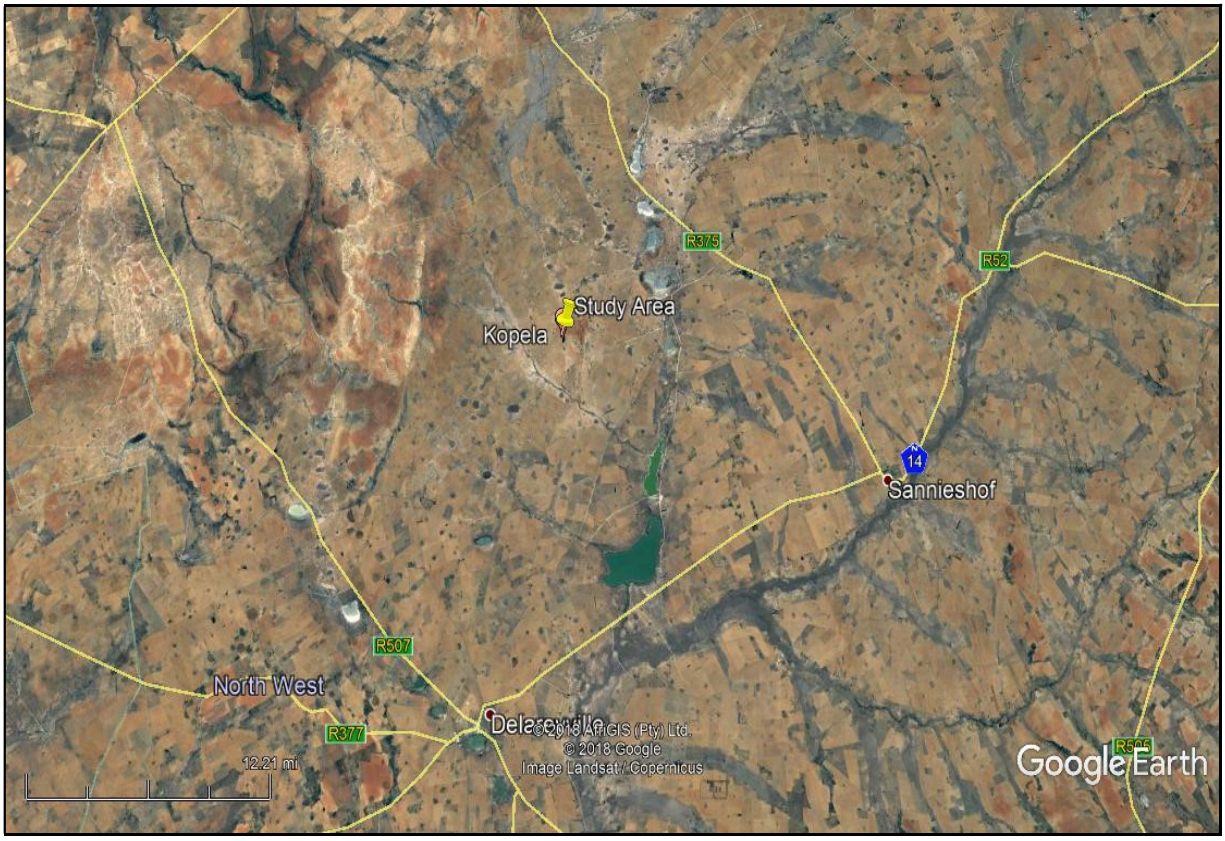

Figure 1: View of the study area

The landscape feature of the area is slightly flat to gently undulating plains with short, dry grassland with pockets of scattered bushes and trees, most of the tallest trees could be seen from a distance dominated by *Eucalyptus* trees. The presence of *Eucalyptus* trees represents areas where farm homesteads are located some of these homesteads are represented by old structures with gable and scotched roof buildings. The land can support a strand of short to medium, grass species utilized by domestic livestock. Some of the graminoids identified on site includes *Themeda triandra, sporobolus africanus*,*Elionusrus muticus,Eragrostis chloromelas, E curvula and racemosa* etc. While the overall bushes area dominated by *Ziziphus Mucronata and Acacia* species (Acocks 1975; Mucina & Rutherford, 2006). The general geology and soils of the study area is dominated by shallow sand soils underlain by hardpan ferecrete.

The proposed project entails the following:

- Construction of road D402 from gravel to tar surface
- Gravel material shall be extracted from the proposed three borrow pit for the construction of road foundation.

8.1. Proposed borrow pit site 1.

The proposed borrow pit is an existing borrow pit where the surface of the area has been previously disturbed by gravel extraction materials. The borrow pit is located alongside gravel road D 402, roughly 9.8 KM south west of borrow pit no three (3). The area is situated at the following global positioning system co-ordinates (**GPS S26º.28.359' and E 25º.27.268")**. There is occurrence of sparsely distribution of bushes dominated by *Ziziphus mucronate* and short grass. Previous excavations exposed shallow soil underlain by ferecrete layer.

8.2. Proposed borrow pit site 2.

The proposed existing borrow pit is located roughly 1.3 kilometers from borrow pit no 1, situated on the right-hand side of gravel road D402. The study area is situated at the following global positioning system co-ordinates (**GPS S26º.28.762' and E 25º.26.706")**. Isolated *Ziziphus mucronata* has been noted.

8.3. Proposed borrow pit site 3.

The proposed existing borrow pit three (3) is situated north of Kopela Village, the area lies 18.2 kilometers from Sannieshof CBD. The borrow pit is situated at a Y gravel road

intersection. The area is situated at the following global positioning system co-ordinates (**GPS S26º.26.032' and E 25º.32. 019")**. The area is characterized by surface disturbances where gravel materials have been extracted evident from current open ditches. The edges of the existing pit are covered by scattered *Ziziphus mucronata*, *Acacia* and *cactus* plants.

Figure 2: Borrow pit 1, dominated by dwarf grass cover and isolated bushes

Figure 3: Borrow pit 1

Figure 4: View of borrow pit 2 towards the north

Figure 5: View of the excavated section note isolated bushes on the edges of the pit

Figure 6: Some of the trucks and excavating machines busy extracting gravel materials at Borrow pit 3

Figure 7: Some of the existing plant taxa dominated by *Ziziphus Mucronata*, *Acacia sp* and Cactus plants

9. ASSESSMENT OF SITES AND FINDS

This section contains the results of the heritage sites/finds 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 Mining permits for the proposed three existing borrow pits.

There are no primary or secondary effect at all that are important to scientist or the public that will be impacted by the proposed project activities.

Heritage Significance:	No significance
Impact:	Negative
Impact Significance:	High
Certainty:	Probable
Duration:	Permanent
Mitigation:	A

10. CONCLUSION AND RECOMMENDATIONS

The study reached the following conclusions and recommendations:

- Desktop surveys indicated the presence of historical farm homesteads that form part of the historical structures of the region. Most of these sites area generally indicated by the presence of *Eucalyptus* trees.
- The proposed gravel material extraction process is scheduled to take place on an area (s) previously disturbed by gravel extraction process for road re gravelling, however the edges of the borrow pits are still covered by natural grass cover and bushes.
- Ground truthing of the proposed borrow pits found no archaeological materials or heritage remains.
- Although no archaeological remains were found, it is possible that some significant features may be buried beneath the ground. Should buried archaeological materials and burials be encountered during the process of development, the following must apply:
- Work must stop immediately

  A professional archaeologist or nearest heritage authority must be contacted.

Based on this assessment which found no archaeological resources in the area, we recommend that the heritage authorities approve the project as planned.

11. GOOGLE EARTH MAPS OF THE THREE BORROWPITS

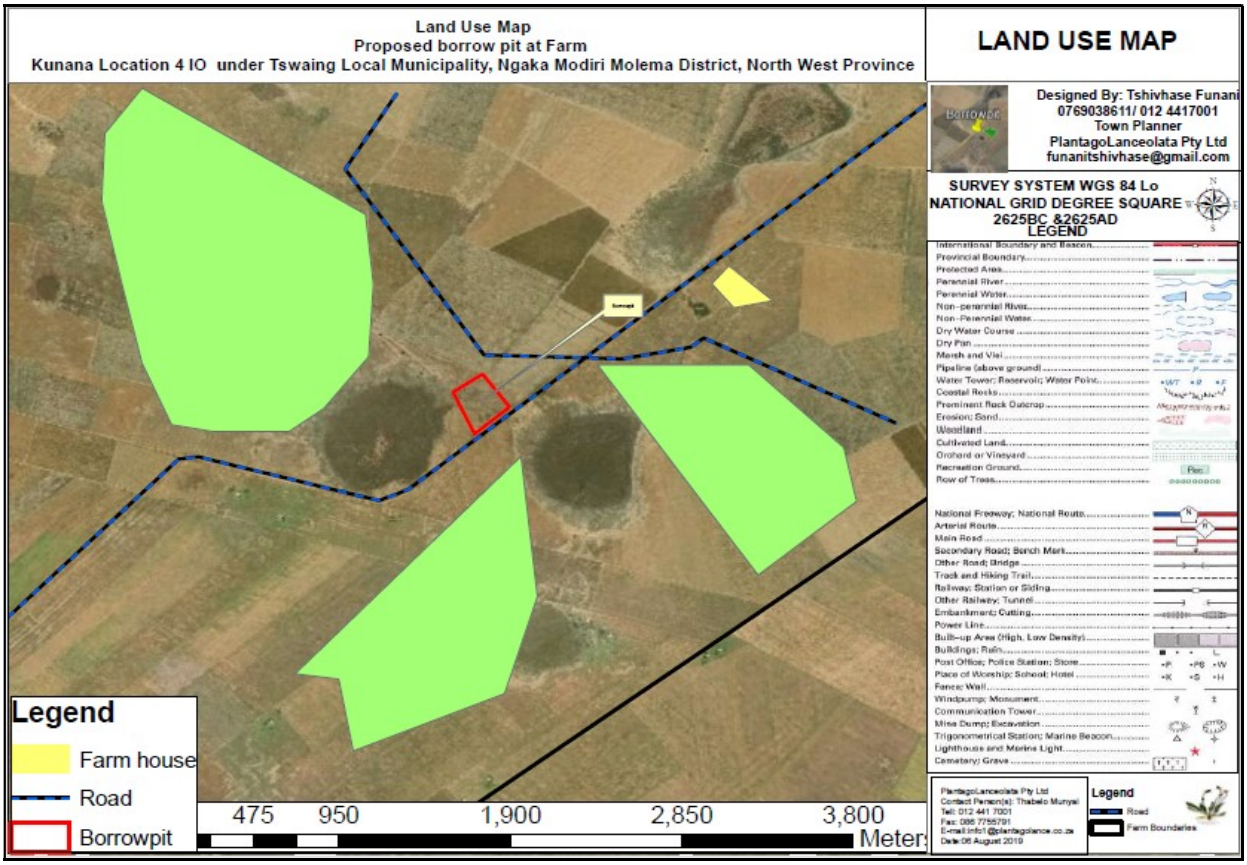

Figure 8: Borrow pit no 1

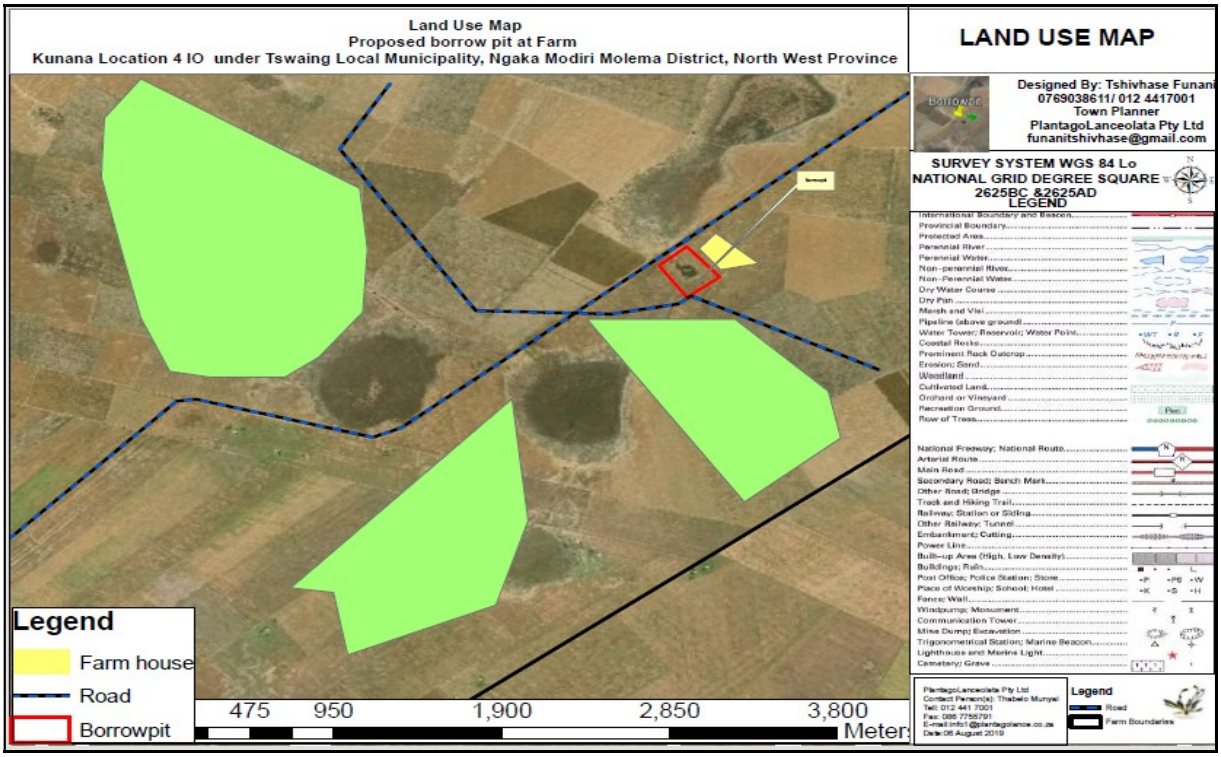

Figure 9: Borrow pit No 2

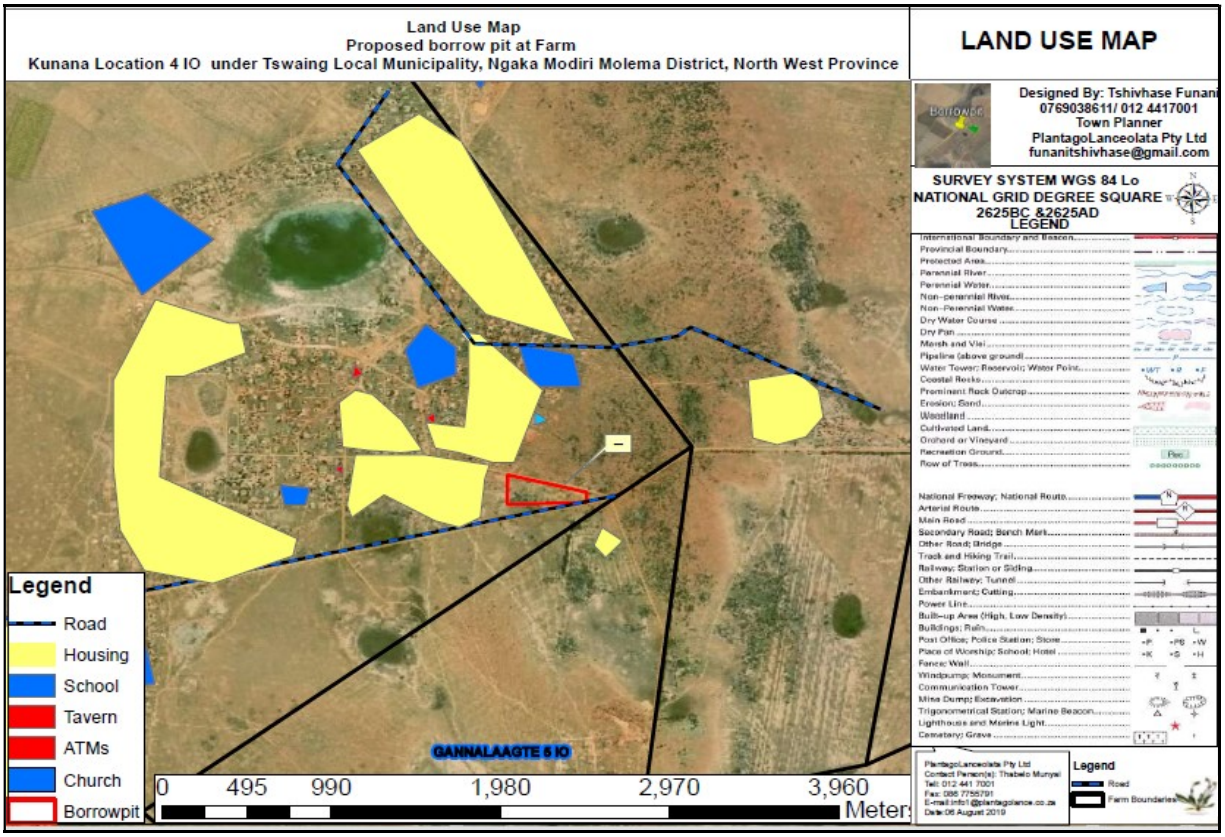

Figure 10: Borrow pit 3

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15

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Addendum 1: Definitions and Acronyms

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.

Acronyms:

AIA	Archaeological Impact Assesment

EIA	Environmental Impact Assesment
EIA	Early Iron Age
EMP	Environmental Management Plan
MHG	Millenium Heritage Group (PTY)LTD
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

ADDENDUM 2: Types and ranges as outlined by the National Heritage Resource Act (Act 25 of 1999)

The National Heritage Act (Act No 25 of 1999, Art 3) outlines the following types and ranges of the heritage resources that qualify as part of the national estate, namely:

(a) Places, buildings structures and equipment of cultural significance;

(b) Places to which oral tradition are attached or which are associated with living heritage;

(c) Historical settlement and townscapes

(d) Landscape and natural features of cultural significance;

(e) Geological sites of scientific or cultural importance

(f) Archaeological and paleontological sites

(g) Graves and burial ground including-

(I) Ancestral graves

(II) Royal graves and graves of traditional leaders

(III) Graves of victim of conflict

(IV) Graves of individuals designated by the minister by notice in the gazette;

(V) Historical graves and cemeteries; and

(VI) Other human remains which are not covered by in terms of the Human Tissue Act,1983(Act No 65 of 1983)

(h) sites of significance relating to the history of slavery in South Africa;

(i) movable objects, including-

(I) object recovered from soil or waters of South Africa, including archaeological and paleontological objects and material, meteorites and rare geological specimens;

(II) objects to which oral traditions are attached or which are associated with living heritage

(III) ethnographic art and objects;

(IV) military objects;

(V) objects of decorative or fine art;

(VI) object of scientific or technological interest; and

(VII) books, records, documents, photographs, positive and negatives, graphic, film or video material or sound recording, excluding those that are public records as defined in section1(xiv) of the National Archives of South Africa Act,1996(Act No 43 of 1996).

The National Heritage Resource Act (Act No 25 of 1999,Art 3)also distinguishes nine criteria for places and objects to qualify as 'part of the national estate if they have cultural significance or other special value… these criteria are the following:

(a) its importance in the community, or pattern of South Africa's history;

(b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;

(c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;

(d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;

(e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;

(f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;

(g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons

(h) Its strong or special association with the life or work of a person, group or organization of importance in the history of South Africa

(i) Sites of significance relating to the history of slavery in South Africa.