ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED RELOCATION OF DWELLERS AT INGULA PUMPED STORAGE SCHEME

DEVELOPED FOR

MYEZO ENVIRONMENTAL MANAGEMENT SERVICES

Environmental Stewardship

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AUTHOR'S CREDENTIALS

The report was authored by Mr. Roy Muroyi (Archaeologist) Mr. Muroyi is a holder of an Masters CDS (with specialisation in Archaeology) from the University of Witwatersrand. A holder of an Honors Degree, Archaeology, Cultural Heritage and Museum Studies (Midlands State University), he attended further training as a Laboratory Specialist for Human anatomy and human skeletal analysis through the University of Cape-Town human biology department in-conjunction with Cape Archaeological Surveys. Mr Muroyi has over six years industry experience , after leaving the Department of National Museums and Monuments of Botswana where he worked as an Archaeological Impact assessments adjudicating officer Mr . Muroyi then moved to South Africa where has been involved in a range of Cultural Resources Management (CRM) companies before starting Tsimba Archaeological Footprints. He has so far exhumed over 500 historical burials as a professional archaeologist and carried out close to a 100 Heritage Impact Assessments.

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Jean Beater **Reviewer**	MA (Heritage Studies) MSc (Environmental Management)	Member of Association of South African Professional Archaeologists (No. 349) Member of IAIAsa (No. 1538)
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DOCUMENT INFORMATION

DOCUMENT INFORMATION ITEM	DESCRIPTION
Proposed development and location	The proposed project is located under the jurisdiction of Phumelela and Maluti A Phofung Local Municipalities, within the Thabo Mofutsanya District Municipality.
Purpose of the study	To carry out an Archaeological Impact Assessment to determine the presence/absence of archaeological assess their archaeological significance in terms of the NHRA of 1999 and SHARA guidelines.
Topography	The site sits on rolling terrain
Coordinates	*26°16'58.83"S 28°23'57.08"E*
Municipalities	Phumelela and Maluti A Phofung Local Municipalities, within the Thabo Mofutsanya District Municipality
Predominant land use of surrounding area	Nature Reserve / Conservation area
Applicant	Eskom Holdings SOC Limited (Esckom)
Client Details	Myezo Environmental Management services (Pty) Ltd Postnet Suite B 165, Private Bag X18, Lynnwood Ridge, 0040, Pretoria
Heritage Consultant	Tsimba Archaeological Footprints (Pty) Ltd 24 Lawson Mansions 74Loveday Street, Johannesburg, CBD Gauteng, 2000 E-mail:info@tsimba-arch.co.za / rmuroyi23@gmail.com Phone : (+27) 813 717 993 / (+27) 619 12 5118
Author (s)	Mr. Roy Muroyi (Archaeology and Heritage Specialist)

EXECUTIVE SUMMARY

The Applicant Eskom Holdings SOC Limited (Eskom) proposes to embark on a relocation programme for six families at Ingula Pumped Storage Scheme, within the Ingula Nature Reserve. The Ingula Pumped Storage scheme is located in the Free State Province in the Thabo Mofutsanyana District and Phumelela Local Municipality (FS195). The site is located approximately 10 kilometres north of the Ingula Pumped Storage Scheme, about 42 kilometres north-east-east of Harrismith, 26 kilometres north-east of Van Reenen and 4.5 kilometres from the Little Drakensberg escarpment. This forms the border between the Free State and Kwa Zulu-Natal Provinces and on the north-western boundary of the Ingula Nature Reserve, in the Free State Province.

The review of a range of cultural heritage information was undertaken. This included national heritage databases, lists and registers, other documented information (including heritage impact assessment reports and a range of ethno-historic and archaeological sources at both local and regional levels) were also consulted for information regarding other heritage resources within the vicinity of Ingula Nature Reserve

From this it is clear that the Ingula Nature reserve area contains a rich and varied cultural landscape that is of particular significance to the local communities these include mainly archaeological sites and ancestral burial grounds and san rock art shelters and paintings. The cultural signature of this landscape has expression in two separate but intrinsically linked spheres: that relating to traditional and spiritual association; and that resulting from the everyday use and occupation of that landscape. The field survey noted the existence of marked and a possibility of unmarked graves within the proposed development area. These graves fall within the eastern side and the western boundary of the proposed development footprint.

The scope of work for this Archaeological Impact Assessment was to assess the footprint of the proposed development footprint as well as asses the site for cultural heritage significance and architectural significance. The proposed development area exceeds 5000m^2 therefore it triggers section *38(1) (a) of the the National Heritage Resources Act (NHRA- Act No. 25 of 1999) (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—any development or other activity which will change the character of a site—(i) exceeding 5 000 m2 in extent.*

The objective of the report is to fulfil the requirements of SAHRA who requested that an Archaeological Impact assessment be carried out before the commencement of the proposed project as outlined in the in terms of Section38(1) (Explained above) and Section 34 (4) of the NHRA (National Heritage Resources Act) No. 25 of 1999 --*No person may, without a permit issued by the responsible heritage resources authority— (a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite.*

Conclusions

- *This report is an independent view and makes recommendations to The SAHRA based on its findings. The authority will consider the recommendations and make a decision based on conservation principles.*

It is the reasoned opinion of the author of this report that SAHRA should exercise its discretion and offer the proposed development a conditional approval. This is based on the fact that no other heritage resources were noted in the proposed development footprint apart from the graves falling within the proposed development. Below are the recommendations that the developer would have to stick to when developing;

Recommendations

1. No significant Stone Age material or ceramics occurs in the study area. There is however a stone wall structure attributed to the Iron Age recorded within the study area. No further mitigation is recommended in terms of the archaeological component for Section 35 for the proposed development to proceed.
    - Regular Archaeological Watching Briefs are recommended during the construction phase of the proposed development
    - Due to the subsurface nature of archaeological remains in the Nature reserve and the fact that graves can occur anywhere on the landscape, it is recommended that a chance find procedure is implemented for the project as part of the EMPr as detailed below (see Appendix E).
2. In terms of the built environment of the area (Section 34), no standing structures older than 60 years occur within the study area.
3. In terms of Section 36 of the National Heritage Resources Act, the eastern side of the site contains a significant number of burial sites while two more sites occur on the western boundary of the site. Ideally the graves should be preserved in-situ or alternatively relocated according to existing legislation.
    a. If the developer chooses to preserve them in future;
        - If the developer chooses to preserve the graves, they should be fenced off and a small access gate put in order to allow relatives of the deceased access to the graves.
        - The development should observe a 50 metre buffer around the graves in order to avoid disturbing them
    b. If the developer chooses to relocate the graves, the following should be observed;
        - A qualified archaeologist should be contracted to apply for a human burial exhumation permit from SAHRA.
        - The relocation procedure will then be guided by the conditions of the SAHRA permit.

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ABBREVIATIONS

Acronyms	Description
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management
DEA	Department of Environmental Affairs
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GIS	Geographic Information System
GPS	Global Positioning System
HIA	Heritage Impact Assessment
LSA	Late Stone Age
LIA	Late Iron Age
MIA	Middle Iron Age
MSA	Middle Stone Age
SAHRA	South African Heritage Resources Agency

1.0 INTRODUCTION

1.1 Project Background

Tsimba Archaeological Footprints (Pty) Ltd was requested by Myezo Environmental services to conduct an Archaeological impact assessment (AIA) for the area proposed for relocation for six families at Ingula Pumped Storage Scheme, within the Ingula Nature Reserve. The Ingula Pumped Storage scheme is located in the Free State Province in the Thabo Mofutsanyana District and Phumelela Local Municipality (FS195). An archaeological impact assessment is required where potential impacts to archaeological resources are identified in the overview study. The impact assessment is designed to gain the fullest possible understanding of archaeological resources which would be affected by the project.

The Terms of Reference for this AIA study are:

- Review existing theories and models of archaeological interpretation and how to develop effective methods of archaeological interpretation for future generations to assist and assist SAHRA in their deliberations;
- Clarify the extent and ways in which current site context archaeological findings may affect the interpretation of cultural sites for present and future generations;
- Shed light on the potential challenges and opportunities brought about by the existence of archaeological sites and other conflicting views of the values of a site;
- Set out the ethical considerations on the interpretation and preservation of archaeological findings given the varied range of approaches available;
- Explain that the issue of archaeological preservation and conservation as relevant not only National Heritage or Provincial Heritage properties, but also for any significant cultural site;
- Focus on best practice of interpretation and preservation of archaeological findings.

The aim: - There are two interlinked aims for this AIA. The first is to identify and document archaeological sites, cultural resources, sites associated with oral histories (intangible heritage), graves, cultural landscapes, and any structures of historical significance (tangible heritage) that may be affected within the development footprint. The second aim of this AIA is to assess the archaeological significance of the findings and make recommendations based on the best archaeological practice of interpretation and preservation of archaeological findings

The findings: - The findings of this report have been informed by desktop data review, field survey and impact assessment reporting which include recommendations to guide heritage authorities in making decisions with regards to the proposed project. This study was conducted before any activities took place on the proposed development area. The impact assessment study also includes detailed recommendations on how to mitigate and manage negative impacts while enhancing positive effects on the project area.

1.3 Need and Desirability of the Project

Eskom holdings purchased over 8000 hectares of land around the Ingula Pumped Storage Scheme, which was commissioned in 2016. As part of compensating for residual impacts on wetlands, ecosystems, which were lost during the construction of the Pumped storage scheme and as a condition of the Environmental Authorisation, Eskom was required to purchase farms comprising of key wetlands and grasslands and then ensure that these farms are proclaimed as a nature reserve to provide long term protection to these ecosystems, which provide habitat to species of global importance.

Some of the above purchased land falls outside the footprint of the power station and could be considered for the resettlement purposes. Most of the previous land owners choose not to redeploy their farm workers elsewhere. After the development progressed and Ingula area was ultimately proclaimed as a nature reserve, Eskom engaged all the landowners whose land was within the sensitive wetland ecosystems, which are characteristic of the Ingula Nature Reserve and ultimately purchased these farms. Negotiations with the last six households have been concluded and they opted to stay on the property, on a less sensitive area on the Wilger farm during the latter half of 2016, Wilger farm was identified as an idea area to relocate the remaining dwellers.

1.4 Scope of works

The Proposed project scope of the activities is given below;

The current dwellings are homesteads that consist of mud structures. The villagers practice subsistence stock farming and have garden for crop production. The new homesteads will be made of cement brick structures with adequate sanitation, utilizing conservancy tanks, solar energy, and borehole water supply. The families will be provided with land crop production and grazing through various options which entail:

- ***Option 1:*** Placing all homesteads within a centralised location and providing a shared grazing land.
- ***Option 2:*** Providing each homestead with a plot that would accommodate the homestead crop garden and grazing land.

2.0 DESCRIPTION OF THE RECEIVING ENVIRONMENT

2.1 Location

The project is located in the Free State Province in the Thabo Mofutsanyana District and Phumelela Local Municipality (FS195). The site is located approximately 10 kilometres north of the Ingula Pumped Storage Scheme, about 42 kilometres north-east-east of Harrismith, 26 kilometres north-east of Van Reenen and 4.5 kilometres from the Little Drakensberg escarpment. This forms the border between the Free State and Kwa Zulu-Natal Provinces and on the north-western boundary of the Ingula Nature Reserve, in the Free State Province.

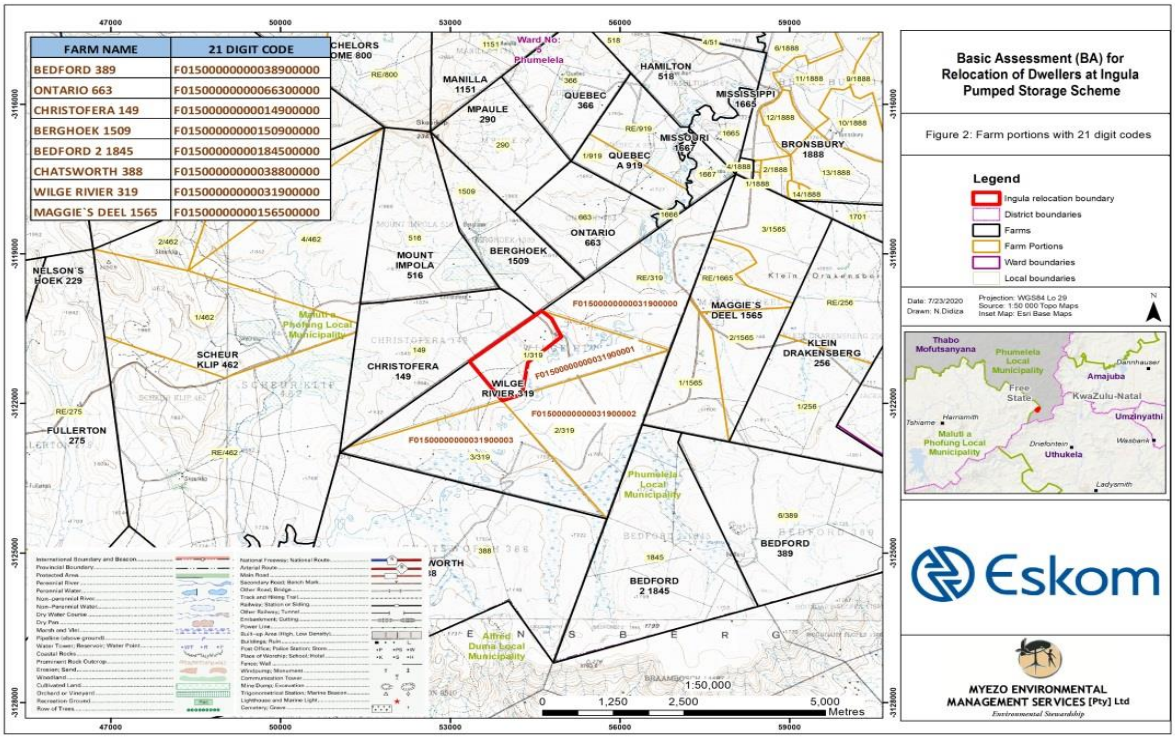


Figure 1: Regional context locality map (developed by Myezo)

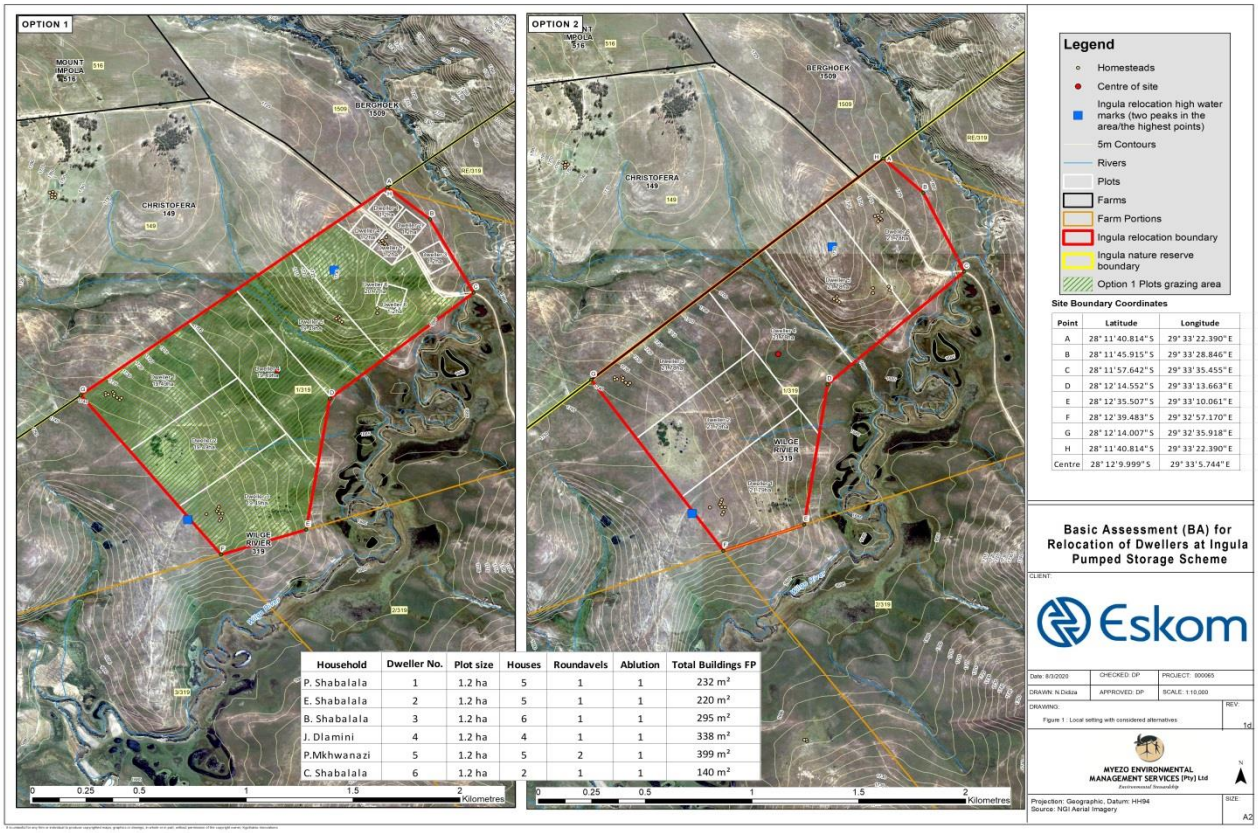


Figure 2: Map showing the development options (Developed by Myezo)

2.2 Environmental Context

This area, located in the Free State is of significant value as a source of water for the Highveld and serves as a habitat for a variety of plants, birds and animals. In addition to the wetlands, there are a variety of habitats on the property, including grassland slopes and mountain forests, with large numbers of plant species.

Figure 3: Google Image showing the immediate context of the proposed development site

3.0 METHODOLOGY

3.1 Literature review

The methodology used in this AIA is based on a comprehensive understanding of the current or baseline situation; the type, distribution and significance of heritage resources as revealed through desk-based study and additional data acquisition, such as archaeological investigations, built heritage surveys, and recording of crafts, skills and intangible heritage. This is systematically integrated by the use of matrices with information on the nature and extent of the proposed engineering and other works to identify potential. The following tasks were also undertaken in relation to the cultural heritage and are described in this report:

The background information search of the proposed development area was conducted following the site maps from the client. Sources used in this study included:

- Published academic papers and AIA and PIA studies conducted in and around the region where the proposed infrastructure development will take place;
- Available archaeological literature on the Ingula Nature reserve was consulted;

- The SAHRIS website and the National Data Base were consulted to obtain background information on previous heritage surveys and assessments in the area; and other planning documents.
- Map Archives - Historical maps of the proposed area of development and its surrounds were assessed to aid information gathering of the proposed area of development and its surrounds.

3.2 Field Survey / Ground Truthing

Tsimba Archaeological Footprints heritage specialists attended to the site on the 27th of November 2020 as agreed to by the client. The survey was conducted on foot and driving a systemic survey of the area as indicated by Burke and Smith (2004) resulted in the maximum coverage of the site *(See GPS Route Tracking –Appendix F)*.

The survey investigated the cultural resources onsite using the best possible technologies for archaeological field surveys. A Samsung GPS Logger (2018) was used to find co-ordinates and a Nikon W300 Camera (with built in GPS) was used to document the resources as well as the receiving environment.

3.3 Public Participation Process

Article 12 of the Burra Charter states the conservation, interpretation and management of a heritage resource should provide for the participation of people for whom the place has significant associations and meanings, or who have social, spiritual or other cultural responsibilities for the place.

A comprehensive public participation process was carried out by Myezo Environmental Management Services as in terms of the EIA Regulations (2014), and has ensured that the public participation principles are upheld. A successful Public Participation Programme (PPP) is one that is inclusive, actively engages the public and provides ample opportunity for the public to participate in the process.

The purpose of the PPP is to ensure that the issues, inputs and concerns of Interested and Affected Parties (I&APs) are taken into account during the decision-making process. This requires the identification of I&APs (including authorities, technical specialists and the public), communication of the process and findings to these I&APs and the facilitation of their input and comment on the process and environmental impacts, including issues and alternatives that are to be investigated.

4.0 LEGISLATIVE FRAMEWORK

This HIA is informed and conducted to fulfil the requirements of the National Heritage Resources Act (No 25 of 1999) *38(1) (a) of the National Heritage Resources Act (NHRA- Act No. 25 of 1999) Section 38(1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as— any development or other activity which will change the character of a site—(i) exceeding 5 000 m2 in extent;*

and 34 (4) No person may, without a permit issued by the responsible heritage resources authority— (a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite.

4.1 Legislative Frame works used

- The Australia ICOMOS charter for places of cultural significance (the Burra Charter).
- The Principles for the analysis, conservation and structural restoration of architectural heritage (2003)
- The National Heritage and Resources Act of South Africa No.25 of 1999
- The Athens Charter, the Restoration of Historic Monuments (1931)
  The International Council on Monuments and Sites (1965)
- The World Heritage Convention(1972)
- The Washington Charter (1987)
- The International Charter for the Conservation and Restoration of Monuments and sites (the Venice charter 2006).
- The Organisation of World Heritage Cities (1993).

4.2 Scope of the Phase 1 AIA

A Phase 1 AIA is a pre-requisite for development in South Africa as prescribed by SAHRA and stipulated by legislation. The overall purpose of heritage specialist input is to:

- Identify any heritage resources, which may be affected;
- Assess the nature and degree of significance of such resources;
- Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;
- Assess the negative and positive impact of the development on these resources; and
- Make recommendations for the appropriate heritage management of these impacts.

4.3 Archaeological Resources Management Policy Objectives

a. To preserve representative samples of the National archaeological resources for the scientific and educational benefit of present and future generations;
b. To ensure that development proponents consider archaeological resource values and concerns in the course of project planning; and
c. To ensure where decisions are made to develop land, the proponents adopt one of the following actions:
    - avoid archaeological sites wherever possible;
    - implement measures which will mitigate project impacts on archaeological sites; or
    - compensate the local communities for unavoidable losses of significant archaeological value

5.0 ARCHEOLOGICAL BACKGROUND

According to historical records and few available archival documents, the area now known as Ingula Nature reserve was 'Braamhoek'. This name was to be officially changed to 'Ingula' in March 2007. The name 'Ingula' alludes to the creamy contents at the top of a milk calabash. Its strong association with the local people is therefore paramount to this archaeological assessment. The use of the name Ingula was as a result to find an appropriate name for Ingula Power Station was inspired by the mountains and foamy river-waters, and the rich cultural symbols and traditions of the indigenous people on both sides of the border[1].

Deacon and Deacon (1999) observed that the Stone Age prehistory of South Africa is important to humanity as a whole, since South African sites record the broad sweep of human evolution, from the appearance of the australopithecines before three million years ago to the origins of fully modern humans within the last 250 000 years. From 1924 until 1959, the australopithecines were known only from South Africa, and even now, the australopithecine sample from Taung, Makapansgat, and the famous Krugersdorp caves outnumbers the better publicised sample from sites associated with the East African Rift Valley. The South African sample also underscores the growing realisation that the australopithecines-some of which survived to between two million and 1.5 million years ago-were essentially bipedal apes, who barely used technology and who depended heavily on trees for refuge or feeding (Deacon and Deacon, 1999 p. 149)

South Africa by 115 000 years ago, and their emergence may coincide with the transition from the Acheulean (Early Stone Age) to the Middle Stone Age (MSA) roughly 250 000 years ago. MSA sites differ from Acheulean ones most obviously in the absence of hand-axes and other large bifacial stone tools, but together MSA and Acheulean sites differ from LSA ones in the rarity or absence of formal bone artefacts and art objects, and MSA faunal remains suggest that compared to LSA people, MSA hunter-gatherers obtained fish and dangerous terrestrial game like buffaloes much more rarely and that MSA human populations were much less dense. Based on similarities in MSA and LSA site locations, in the structure and positioning of fire places. Archaeologists believe that MSA and LSA people were fundamentally similar in behaviour (Deacon and Deacon, 1999 p. 150). The archaeological excavation report by Anderson and Anderson (2006) conducted for Ingula showed that the Ingula nature reserve area has a very high frequency of stone instruments in all the units, especially formal tools. These tools were also found around a few shelters in the Thukela River Valley and Mhlatuzana Shelter (approximately 40 km inland from Durban): these are not all of the area's excavated sites, but the most prominent and documented ones.

[1] Eskom (2016) Ingula Pumped Storage Scheme: Accessed November 27, 2020 https://www.eskom.co.za/Whatweredoing/NewBuild/IngulaPumpedStorage/Pages/Ingula_Pumped_Storage_Scheme.aspx

The report further noted that for Rose Cottage Cave, the stone tool assemblages have not yet been published. With the exception of Mhlatuzana Shelter, the stone tool frequency of stone tools around the Ingula Nature reserve is unlike that of the other sites in terms of deposit depth. There is a far higher frequency of stone instruments in the Mhlatuzana Shelter, but a much lower percentage of formal instruments. In addition, all of the squares down to 2.5m are in Mhlatuzana Shelter, whereas Ingula Nature reserve has only 4 squares at a similar depth.

A more thorough analysis of raw materials and formal tool types and other categories of tools is needed. There are equal numbers of stone instruments at KwaThwaleyakhe Shelter (although a higher density of artefacts) The proportion of formal instruments for Ingula Nature reserve is three to four times higher than that of the other locations. This is important as the Pleistocene and early Holocene layers are rare in the area, and tend not to have high percentages of formal tools (see Wadley 2000). It also provides data about scraper types. At BS2, several scraper types have been noted, and these will be contrasted with other sites. The standard, or the more frequently occurring scraper type, is end scrapers. The tiny, medium and large scrapers have a temporal connotation: over time, scrapers get smaller (see Mazel 1989; Anderson 1996).

The area around Ingula is also famous for San rock paintings as it falls under the Drakensburg escarpment. Frans Prins (2009: 192) notes that the persistence of indigenous beliefs relating to the rock art came as a surprise to Patricia Vinnicombe who has done a lot of work on the Drakensburg escarpment rock art. Her own research on the southern Drakensberg rock art had been heavily influenced by the premise of an extinct Drakensberg San. The perceived absence of a vibrant Drakensberg San ethnography necessitated her to engage with the ethnographies of San groups (such as the /Xam and !Kung) removed in space and time from the prehistoric rock artists of the Drakensberg. In this approach she was not alone, as the skilful and selective use of diverse San ethnographies has become the dominant trend in southern African rock art research (p.192)

6.0 DISCUSSION OF THE FINDINGS

This field visit, completed by a qualified archaeologist, assessed the entire area that could be impacted during construction. The assessment included visual inspection to identify features with predictable archaeological potential, surface inspection of areas with exposed sediments for cultural materials, subsurface testing of terrain features exhibiting archaeological potential, and ground conditions .After the field study has been completed, a report including associated findings was prepared based on the results of the field survey.

Figure 4: Vegetation cover within the proposed development footprint

Figure 5: View of some of the excavated areas that were inspected for possible archaeological artefacts

Figure 6: Vie of some of the access roads within the site

Figure 7: View of some cow dung within the proposed site

6.1 Archaeological and Paleontological resources

- *Section 35 (4) of the National heritage resources act states that no person may, without a permit issued by the responsible heritage resources authority issued by SAHRA or a provincial Heritage Resources authority.*

During the survey, no Stone Age sites were recorded, this however does not rule out the possibility of any Stone Age findings during the construction phase. The dense vegetation cover made it almost impossible for smaller Stone Age artefacts and fragments to be discovered. However, a possible Later Iron Age Cattle Kraal was recorded during the field survey. No middens or any other associated Iron Age findings were made in association

with this kraal making its context very difficult to be known and its existence to be interpreted. This cattle kraal is given a **LOW** Significance rating.

Figure 8: View of the Later Iron age cattle kraal [GPS -28.200308, 29.554998]

6.2 Burial Grounds and Graves

- *Section 36(3) of the National Heritage Resources Act states that no person may, without a permit issued by SAHRA or a provincial Heritage Resources authority.*

The field survey noted the existence of marked and unmarked recent graves. Some of the graves are isolated and some are at clustered in one place.

Burial Site No1	
Coordinates : -28.198024 29.552555	
Number of Burials : 1	
Description: Marked grave The grave is a stand-alone grave on the western boundary of the proposed development site. The grave is marked by stones.	
Significance :High	

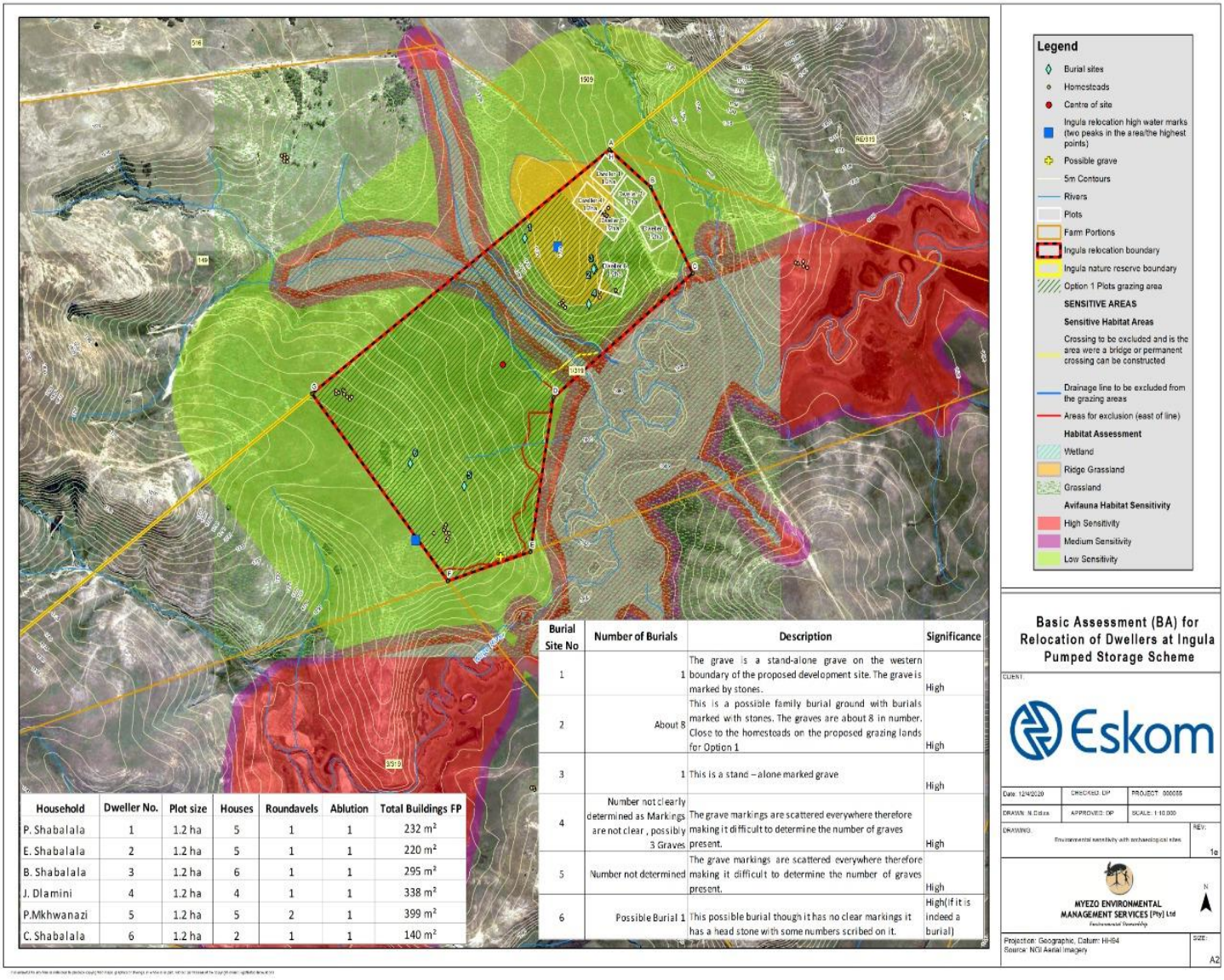
Burial Site No2	
Coordinates : -28.199188, 29.555609	
Number of Burials : About 8	
Description: Marked grave This is a possible family burial ground with burials marked with stones. The graves are about 8 in number. Close to the homesteads on the proposed grazing lands for Option 1	
Significance : High	

Burial Site No3	
Coordinates : -28.199184, 29.555546	
Number of Burials : 1	
Description: Marked grave This is a stand – alone marked grave	
Significance: High	

Burial Site No4	
Coordinates : -28.200506, 29.555350	
Number of Burials: Number not clearly determined as markings are not clear, possibly 3 graves	
Description: Marked grave The grave markings are scattered everywhere therefore making it difficult to determine the number of graves present.	
Significance : High	

Burial Site No5	
Coordinates : -28.207381, 29.549929	
Number of Burials : Number not determined	
Description: Marked grave The grave markings are scattered everywhere therefore making it difficult to determine the number of graves present.	
Significance: High	

Burial Site No6	
Coordinates : -28.206528, 29.547589	
Number of Burials : Possible Burial (1)	
Description: Half marked possible grave This possible burial though it has no clear markings it has a head stone with some numbers scribed on it.	
Significance : High (if it is indeed a burial)	



Household	Dweller No.	Plot size	Houses	Roundavels	Ablution	Total Buildings FP
P. Shabalala	1	1.2 ha	5	1	1	232 m²
E. Shabalala	2	1.2 ha	5	1	1	220 m²
B. Shabalala	3	1.2 ha	6	1	1	295 m²
J. Dlamini	4	1.2 ha	4	1	1	338 m²
P.Mkhwanazi	5	1.2 ha	5	2	1	399 m²
C. Shabalala	6	1.2 ha	2	1	1	140 m²

Burial Site No	Number of Burials	Description	Significance
1	1	The grave is a stand-alone grave on the western boundary of the proposed development site. The grave is marked by stones.	High
2	About 8	This is a possible family burial ground with burials marked with stones. The graves are about 8 in number. Close to the homesteads on the proposed grazing lands for Option 1	High
3	1	This is a stand – alone marked grave	High
4	Number not clearly determined as Markings are not clear , possibly 3 Graves	The grave markings are scattered everywhere therefore making it difficult to determine the number of graves present.	High
5	Number not determined	The grave markings are scattered everywhere therefore making it difficult to determine the number of graves present.	High
6	Possible Burial 1	This possible burial though it has no clear markings it has a head stone with some numbers scribed on it.	High(if it is indeed a burial)

Figure 9: A map showing the positions of the discovered burial sites within the proposed development site boundaries (developed by Myezo)

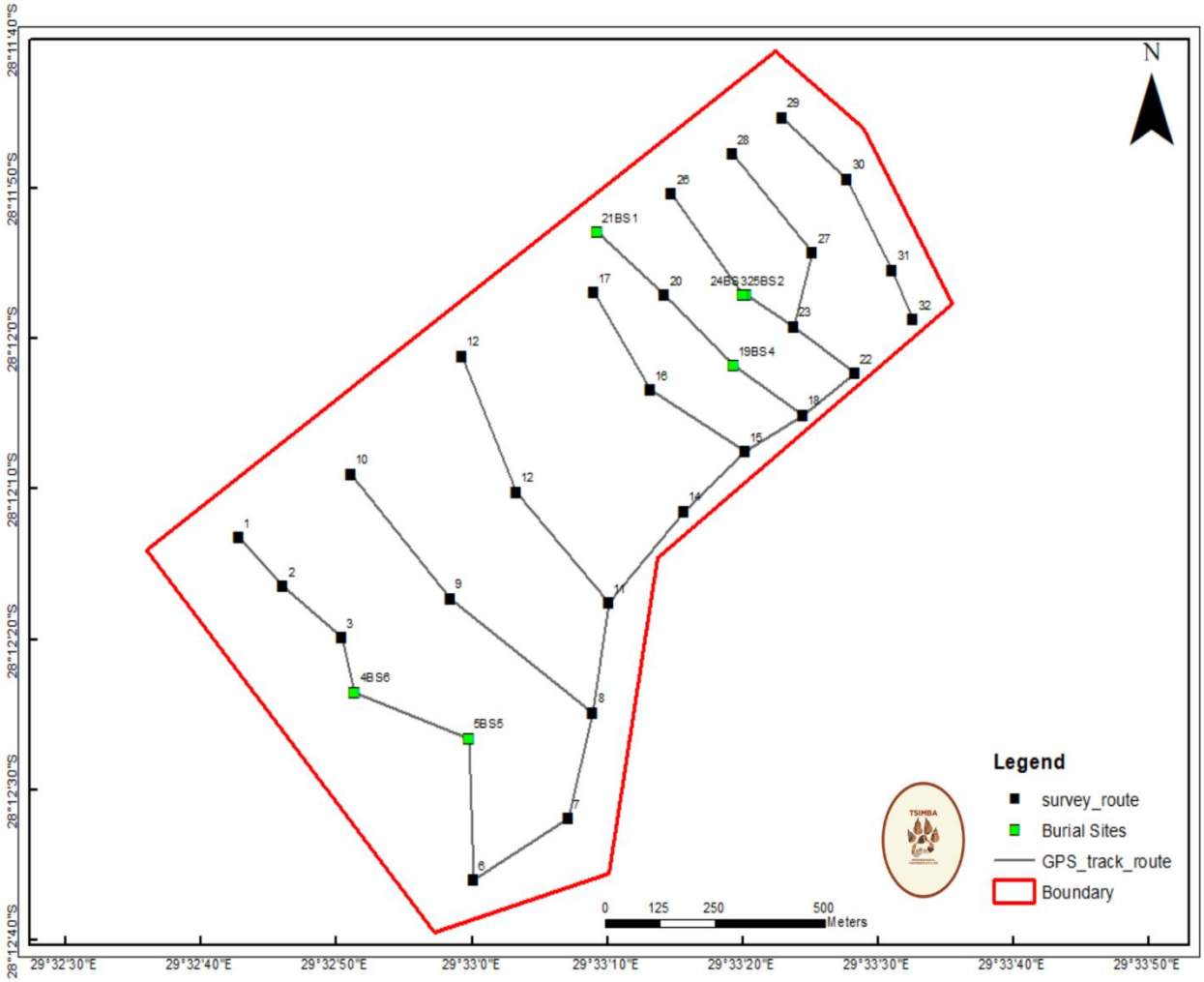


Figure 10: GPS- Tracking Route of the field survey.

7.0 HERITAGE ASSESSMENT OF SIGNIFICANCE

Site significance classification standards prescribed by SAHRA (2006), and acknowledged by ASAPA for the SADC region, were used for the purposes of this report.

- The main aim in assessing significance is to produce a succinct statement of significance, which summarises an item's heritage values. The statement is the basis for policies and management structures that will affect the item's future.

SAHRA's Site significance classification minimum standards			
Filed Rating	**Grade**	**Classification**	**Recommendation**
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)		High/ Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)		Medium Significance	Recording before destruction
Generally Protected C (GP.A)		Low Significance	Destruction

Site significance is calculated by combining the following concepts in a given formula.

S= (E+D+M) P

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The significance weightings for each potential impact are as follows:

The significance weightings for each potential impact are as follows:

Aspect	Description	Weight
Probability	Improbable	1
	Probable	2
	Highly Probable	4
	Definite	5
Duration	Short term	1
	Medium term	3
	Long term	4
	Permanent	5
Scale	Local	1
	Site	2
	Regional	3
Magnitude/Severity	Low	2
	Medium	6
	High	8

Impact Significance		
It provides an indication of the importance of the impact in terms of both tangible and intangible characteristics. (S) is formulated by adding the sum of numbers assigned to Extent (E), Duration (D), and Intensity (I) and multiplying the sum by the Probability. S= (E+D+M) P		
<30	Low	Mitigation of impacts is easily achieved where this impact would not have a direct influence on the decision to develop in the area.
30-60	Medium	Mitigation of impact is both feasible and fairly easy. The impact could influence the decision to develop in the area unless it is effectively mitigated.
>60	High	Significant impacts where there is difficult. The impact must have an influence on the decision process to develop in the area.
Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological material or objects.		
	Without Mitigation	With Mitigation
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (2)	Low(2)
Probability	Not Probable (2)	Not probable (2)
Significance	Low (16)	Low (16)
Status	Negative	Negative
Reversibility	Not irreversible	Not irreversible
Irreversible loss of resources	No resources were recorded	No resources were recorded
Can impacts be mitigated?	Yes, a chance find procedure should be implemented.	Yes
Mitigation: Impacts are rated as 30- 60 (Medium). Mitigation of impact is both feasible and fairly easy.		

7.1 Conclusions

- *This report is an independent view and makes recommendations to SAHRA based on its findings. The authority will consider the recommendations and make a decision based on conservation principles.*

It is the reasoned opinion of the author of this report that SAHRA should exercise its discretion and offer the proposed development a conditional approval. This is based on the fact that no other significant heritage resources were noted in the proposed development footprint apart from the graves of the proposed development. Below are the recommendations that the developer would have to adhere to when developing;

7.2 Recommendations

1. No significant Stone Age material or ceramics occurs in the study area. There is however a stone wall structure attributed to the Iron Age recorded within the study area. No further mitigation is recommended in terms of the archaeological component for Section 35 for the proposed development to proceed.
    - Regular Archaeological Watching Briefs are recommended during the construction phase of the proposed development
    - Due to the subsurface nature of archaeological remains in the Nature reserve and the fact that graves can occur anywhere on the landscape, it is recommended that a chance find procedure is implemented for the project as part of the EMPr as detailed below (see Appendix E).
2. In terms of the built environment of the area (Section 34), no standing structures older than 60 years occur within the study area.
3. In terms of Section 36 of the National Heritage Resources Act, the eastern side of the site contains a significant number of burial sites while two more sites occur on the western boundary of the site. Ideally the graves should be preserved in-situ or alternatively relocated according to existing legislation.
    c. If the developer chooses to preserve them in future;
        - If the developer chooses to preserve the graves, they should be fenced off and a small access gate the put in order to allow relatives of the deceased access to the graves.
        - The development should observe a 50 metre buffer around the graves in order to avoid disturbing them
    d. If the developer chooses to relocate the graves, the following should be observed;
        - A qualified archaeologist should be contracted to apply for a human burial exhumation permit from SAHRA.
        - The relocation procedure will then be guided by the conditions of the SAHRA permit.

8.0 References

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APPENDIX A: DEFINITION OF TERMS ADOPTED IN THIS HIA

- **The terminology adopted in this document is mainly influenced by the NHRA of South Africa (1999) and the Burra Charter (1979).**

Adaptation: Changes made to a place so that it can have different but reconcilable uses.

Artefact: Cultural object (made by humans).

Buffer Zone: Means an area surrounding a cultural heritage which has restrictions placed on its use or where collaborative projects and programs are undertaken to afford additional protection to the site.

Co-management: Managing in such a way as to take into account the needs and desires of stakeholders, neighbours and partners, and incorporating these into decision making through, amongst others, the promulgation of a local board.

Conservation: In relation to heritage resources, includes protection, maintenance, preservation and sustainable use of places or objects so as to safeguard their cultural significance as defined. These processes include, but are not necessarily restricted to preservation, restoration, reconstruction and adaptation.

Contextual Paradigm: A scientific approach which places importance on the total context as catalyst for cultural change and which specifically studies the symbolic role of the individual and immediate historical context.

Cultural Resource: Any place or object of cultural significance

Cultural Significance: Means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance of a place or object for past, present and future generations.

Feature: A coincidental find of movable cultural objects.

Grading: The South African heritage resource management system is based on a grading system, which provides for assigning the appropriate level of management responsibility to a heritage resource.

Heritage Resources Management: The utilization of management techniques to protect and develop cultural resources so that these become long term cultural heritage which are of value to the general public.

Heritage Resources Management Paradigm:A scientific approach based on the Contextual paradigm, but placing the emphasis on the cultural importance of archaeological (and historical) sites for the community.

Heritage Site Management: The control of the elements that make up the physical and social environment of a site, its physical condition, land use, human visitors, interpretation etc. Management may be aimed at preservation or, if necessary at minimizing damage or destruction or at presentation of the site to the public.

Historic: Means significant in history, belonging to the past; of what is important or famous in the past.

Historical: Means belonging to the past, or relating to the study of history.

Maintenance: Means the continuous protective care of the fabric, contents and setting of a place. It does not involve physical alteration.

Object: Artefact (cultural object)

Paradigm: Theories, laws, models, analogies, metaphors and the epistimatological and methodological values used by researchers to solve a scientific problem.

Preservation: Refers to protecting and maintaining the fabric of a place in its existing state and retarding deterioration or change, and may include stabilization where necessary. Preservation is appropriate where the existing state of the fabric itself constitutes evidence of specific cultural significance, or where insufficient evidence is available to allow other conservation processes to be carried out.

Protection: With reference to cultural heritage resources this includes the conservation, maintenance, preservation and sustainable utilization of places or objects in order to maintain the cultural significance thereof.

Place : Means a geographically defined area. It may include elements, objects, spaces and views. Place may have tangible and intangible dimensions.

Reconstruction: To bring a place or object as close as possible to a specific known state by using old and new materials.

Rehabilitation: The repairing and/ or changing of a structure without necessarily taking the historical correctness thereof into account.

Restoration: To bring a place or object back as close as possible to a known state, without using any new materials.

Site: A large place with extensive structures and related cultural objects. It can also be a large assemblage of cultural artefacts, found on a single location.

Sustainable: Means the use of such resource in a way and at a rate that would not lead to its long-term decline, would not decrease its historical integrity or cultural significance and would ensure its continued use to meet the needs and aspirations of present and future generations of people.

APPENDIX B: ENVIRONMENTAL CONTEXT FOR HERITAGE SPECIALIST STUDIES IN SOUTHERN AFRICA

This is a categorized by a temporal layering including a substantial pre-colonial, early contact and early colonial history as distinct from other regions. The following table can be regarded as a useful categorization of these formative layers:

Indigenous:

Palaeontological and geological:

- Precambian (1.2 bya to late Pleistocene 20 000 ya)

Archaeological:

- Earlier Stone Age (3 mya to 300 00ya) (ESA)
- Middle Stone Age (c300 000 to 30 000 ya) (MSA)
- Later Stone Age (c 30 000 to 2000 ya) (LSA)
- Late Stone Age Herder period (after 2000 ya) (LSA - Herder period)
- Early contact (c 1500 - 1652)

Colonial:

- Dutch East India Company (1652 - 1795)
- Transition British and Dutch occupation (1796-1814)
- British colony (1814 -1910)
- Union of South Africa (1911-1961)
- Republic of South Africa (1962 – 1996)

APPENDIX C: DEFINITION OF VALUES

Value	Definition
Historic Value	Important in the community or pattern of history or has an association with the life or work of a person, group or organization of importance in history.
Scientific Value	Potential to yield information that will contribute to an understanding of natural or cultural history or is important in demonstrating a high degree of creative or technical achievement of a particular period
Aesthetic Value	Important in exhibiting particular aesthetic characteristics valued by a community or cultural group.
Social Value	Have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons
Rarity	Does it possess uncommon, rare or endangered aspects of natural or cultural heritage
Representivity	Important in demonstrating the principal characteristics of a particular class of natural or cultural places or object or a range of landscapes or environments characteristic of its class or of human activities (including way of life, philosophy, custom, process, land-use function, design or technique) in the environment of the nation, province region or locality.

APPENDIX D: RESOURCE LIKELY TO OCCUR WITHIN THESE CONTEXTS AND LIKELY SOURCES OF HERITAGE IMPACTS/ISSUES

HERITAGE CONTEXT	HERITAGE RESOURCES	SOURCES OF HERITAGE IMPACTS/ISSUES
A. PALAEONTOLOGICAL LANDSCAPE CONTEXT	Fossil remains. Such resources are typically found in specific geographical areas, e.g. the Karoo and are embedded in ancient rock and limestone/calcrete formations.	▯ Road cuttings ▯ Quarry excavation
B. ARCHAEOLOGICAL LANDSCAPE CONTEXT NOTE: Archaeology is the study of human material and remains (by definition) and is not restricted in any formal way as being below the ground surface.	Archaeological remains dating to the following periods: ▪ ESA ▪ MSA ▪ LSA ▪ LSA - Herder ▪ Historical ▪ Maritime history Types of sites that could occur include: ▪ Shell middens ▪ Historical dumps ▪ Structural remains	▪ Subsurface excavations including ground leveling, landscaping, foundation preparation. ▪ In the case of maritime resources, development including land reclamation, harbor/marina/water front developments, marine mining, engineering and salvaging.
C. HISTORICAL BUILT URBAN LANDSCAPE CONTEXT	▯ Historical townscapes/streetscapes. ▯ Historical structures; i.e. older than 60 years ▯ Formal public spaces. ▯ Formally declared urban conservation areas. ▯ Places associated with social identity/displacement.	A range of physical and land use changes within this context could result in the following heritage impacts/issues: ▯ Loss of historical fabric or layering related to demolition or alteration work. ▯ Loss of urban morphology related to changes in patterns of subdivision and incompatibility of the scale, massing and form of new development. ▯ Loss of social fabric related to processes of gentrification and urban renewal.

APPENDIX E: CHANCE FINDS PROCEDURE

What is a Chance Finds Procedure?

The purpose of Archaeological Chance Find Procedure (CFP) is to address the possibility of cultural heritage resources and archaeological deposits becoming exposed during ground altering activities within the project area and to provide protocols to follow in the case of a chance archaeological find to ensure that archaeological sites are documented and protected as required. A CFP is a tool for the protection of previously unidentified cultural heritage resources during construction period. The main purpose of a CFP is to raise awareness of all workers on site regarding the potential for accidental discovery of cultural heritage resources and establish a procedure for the protection of these resources.

Chance finds are defined as potential cultural heritage (or paleontological) objects, features, or sites that are identified outside of or after Heritage Impact studies, normally as a result of construction monitoring. Archaeological sites are protected by The National Heritage Resources Act of 1999. They are non-renewable, very susceptible to disturbance and are finite in number. Archaeological sites are an important resource that is protected for their historical, cultural, scientific and educational value to the general public, local communities.

What are the objectives of the CFP?

The objectives of this "Chance Find Procedure' are to promote preservation of archaeological data while minimizing disruption of construction scheduling It is recommended that due to thearchaeological potential of some areas within the project area, all on site personnel and contractors be informed of the Archaeological Chance Find Procedure and have access to a copy while on site.

Where is a CFP applicable?

Developments that involve excavation, movement, or disturbance of soils have the potential to impact archaeological materials, if present. Activities such as road construction, land clearing, and excavation are all examples of activities that may adversely affect archaeological deposits. Chance finds may be made by any member of the project team who may not necessarily be an archaeologist or even visitors. Appropriate application of a CFP on development projects has led to discovery of cultural heritage resources that were not identified during archaeological and heritage impact assessments. As such, it is considered to be a valuable instrument when properly implemented. For the CFP to be effective, the mine manager must ensure that all personnel on the proposed mine site understand the CFP and the importance of adhering to it if cultural heritage resources are encountered. In addition, training or induction on cultural heritage resources that might potentially

be found on site should be provided. In short, the Chance Find Procedure details the necessary steps to be taken if any culturally significant artefacts are found during mining or construction.

What is the CF Procedure?

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

- All construction activity in the vicinity of the accidental find/feature/site must cease immediately to avoid further damage to the site.
- Briefly note the type of archaeological materials you think you've encountered, its location, and if possible, the depth below surface of the find.
- Report your discovery to your supervisor or if they are unavailable, report to the project Environmental Control Officer (ECO) who will provide further instructions.
- If the supervisor is not available, notify the ECO immediately. The ECO will then report the find to the Manager who will promptly notify the project archaeologist and SAHRA.
- Delineate the discovered find/ feature/ site and provide a 25m buffer zone from all sides of the find.
- An archaeologist should immediately be called to attend to the site and give further recommendations