



Permit application

for

**Mitigation of heritage resources to be impacted by the Makhado Colliery,
Vhembe District Municipality, Limpopo Province**



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TECHNICAL SUMMARY

Property details	
Province	Limpopo
Magisterial District	Musina
Topo-cadastral map	2229 DD
Coordinates	S 22°.49'27.02" E 29°.55'.03.06
Closest town	Makhado
Farm name	Windhoek 649 MS & Tanga 648 MS

Development criteria in terms of Section 38(1) of the NHR Act	Yes	No
Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length		
Construction of bridge or similar structure exceeding 50m in length		
Development exceeding 5000 sq m	Yes	
Development involving three or more existing erven or subdivisions	Yes	
Development involving three or more erven or divisions that have been consolidated within past five years		
Rezoning of site exceeding 10 000 sq m		
Any other development category, public open space, squares, parks, recreation grounds		

Development	
Description of development	Mining – confirmatory drilling and associated mining infrastructure
Project name	Makhado Colliery
Developer	MCM Mining
Heritage consultant	Millennium Heritage (Pty) Ltd
Purpose of the study	Permit Application to mitigate archaeological sites to be impacted by the proposed development.

Land use	
Previous land use	Agriculture
Current land use	Proposed coal mining, nature reserve

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1. INTRODUCTION: RESCUE EXCAVATION AND MITIGATION IN ARCHAEOLOGY

'What should interest us, however, is how proper academic standards, including research relevance, are ensured...' (Kristiansen 2009: 644)

MCM Mining seeks to establish Makhado Colliery on the foot of the Soutpansberg mountains about 30 kilometres north of Makhado (Louis Trichard), Limpopo Province. In conformity with legal requirements, MCM appointed specialists to assess the impact of the proposed project on the receiving environment. The Environmental Impact Assessment was duly approved (see Appendix 1). A heritage impact assessment was performed and approved as part of the bigger EIA process (Roodt 2012). MCM Mining has decided to roll out the development. However, as a firm believer in sound heritage and environmental stewardship, MCM Mining commissioned Millennium Heritage (Pty) Ltd to perform a confirmatory study to identify and assess the impact of the proposed development on identified heritage resources (Chirikure and Mathoho 2018) (Appendix 2). Chirikure and Mathoho performed a detailed desktop study of known heritage resources in the area including CRM reports and academic papers, followed by ground truthing. The confirmatory study also included a field based palaeontological impact assessment performed by Dr Francois Durand (Durand 2018) (Appendix 3). The identified and confirmed heritage resources were plotted in relation to development plans. The HIA (Roodt 2012) and associated authorization recommended the mitigation of sites to be affected by the consolidation of existing activities because of their lowly Grade III significance. Based on the provisions of the NHRA Act, a permit is therefore required to comply with the recommendations of the HIA.

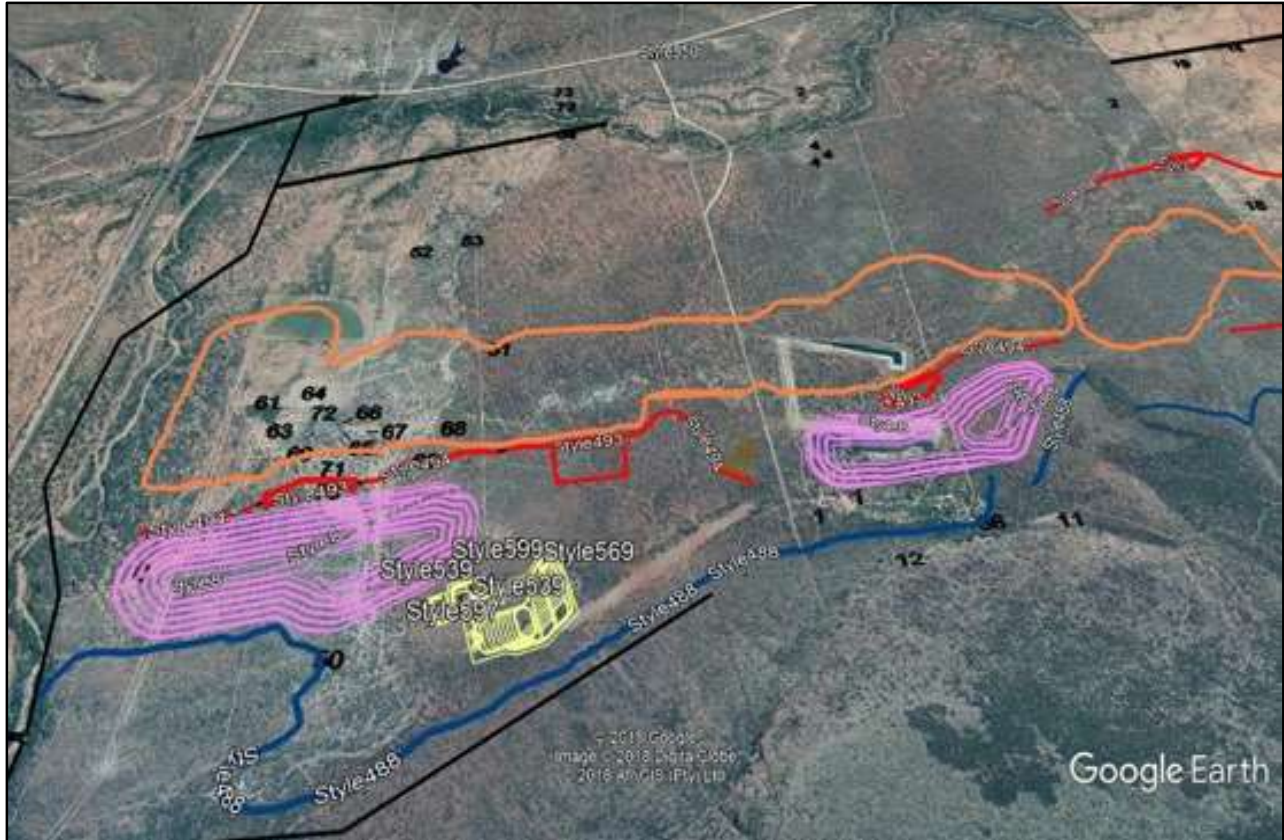


Figure 1: Google Map of the project plan and some of the sites to be affected by the development

The National Heritage Resources Act (Act 25 of 1999) makes it explicit that as preservation by record, mitigation is an essential component for preserving the national estate. In fact, mitigation is preservation by record. However, Kristiansen (2009) has argued that compliance only oriented mitigation is narrow and less useful because the need to create and disseminate new knowledge carries equal weight with the need to preserve the past. Therefore, mitigation outcomes must be interpreted and published according to current research standards, and thus contribute to the production of new archaeological knowledge. In this way mitigation automatically becomes integrated into the archaeological research environment. It therefore follows that proper excavation and documentation methods are only an instrument, but not the goal of mitigation, as they follow from

the research priorities made. Having said that, the documents and objects from excavation must be optimally curated to create a usable record for the future. This proposal takes inspiration from this international imperative to create a comprehensive written, drawn and photographic archive of mitigation of sites proposed for development that fulfills research needs as well as preserving the past by record. In the process, it fulfils the requirements of both national and international standards of best practice.

2. HERITAGE RESOURCES OF THE RECEIVING AREA

2.1. The fossil record

South Africa is richly endowed with palaeontological heritage which has illuminated in varying ways biological evolution in the entire world (Durand 2018). Geological, the rocks of the study area belongs to the older Soutpansberg Group (Mokolian) which is overlain by rock formation of the younger Karoo Supergroup (Permian to Jurassic). Existing work shows that the Soutpansberg rocks have a low fossil sensitivity. It is the coal seam rock of the Karoo Supergroup (Madzaringwe and Mikambeni Formation consist of up to 200m alternating sandstone, siltstone and shale containing thin coal seam while the Mikambeni formation is comprised of Mudstromne, shale and laminated sandstone reaching up to 150 in thickness. In general, the lowveld areas of South Africa with a Karoo Geology are known to host fossils of plants and animals. While the coal bearing Madzaringwe and Mikambeni Formations, are known to host fossils, a detailed field walking by Dr Francois Durand failed to find any palaeontological heritage. As part of a heritage management programme, it is proposed that monitoring be implemented when rocks from such formations are exposed. A chance discovery procedure will be developed as part of the same programme.

2.2. The Stone Age Period

Most of the research on the Stone Age in northern South Africa took place in the Mapungubwe National Park about 130km to the west of the proposed area. Nevertheless, a general account of the nature of the Stone Age can be provided. Conventionally speaking, the Stone Age period has been divided into the Early Stone Age (ESA) (3.5 million and 250 000 BP), the Middle Stone Age (MSA) (250 000 – 25000 BP) and the Later Stone Age (25000 – 2000 BP) (Phillipson 2005). Early Stone Age stone tool assemblages are made up of the earlier Oldowan and later Acheulian types. The Oldowan tools were very crude and were used for chopping and butchering. These were replaced by Acheulian ESA tools dominated by hand axes and cleavers which are remarkably standardized (Wadley, 2007; Sharon, 2009). Evidence presented from Sterkfontein, Swartkrans and Makapansgat caves shows 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 (Phillipson 2005; Esterhuysen, 2007). Both the Oldwan and Acheulian industries are well represented in the archaeology of northern South Africa as shown by studies in the Mapungubwe National Park (Kuman et al. 2005; Sumner and Kuman 2014).

The Middle Stone Age dates to between 250 000 ago and 25 000 years ago. In general, Middle Stone Age tools are characterized by a size reduction in tools such as hand axes, cleavers, and flake and blade industries. The period is marked by the emergence of modern humans and was accompanied by change in technology, behavior, physical appearance, art, and symbolism (Phillipson 2005). A variety of MSA tools includes blades, flakes, scrapers and pointed tools that may have been hafted onto shafts or handles and used as spear heads. Surface scatters of these flake and blade industries are widespread across southern Africa

(Klein 2000; Thompson & Marean, 2008). Residue analyses on some of the stone tools suggests that they were used as spear heads (Wadley, 2007). From about 25 000 BP, stone tool assemblages generally attributed to the Later Stone Age emerged. This period is marked by a reduction in stone tool sizes. Typical stone tools include microliths and bladelets. Later Stone Age stone tools were recovered in the Mapungubwe National Park area (Forsman 2011). This period is also associated with the development of rock art whose distribution is known across southern Africa (Deacon and Deacon 1999; Phillipson 2005).

2.3. Farming communities, recent histories and living heritage

Beginning in the early first millennium AD, farming communities who made a distinctive type of pottery, settled permanently in villages, and cultivated crops and raised animals appeared in southern Africa (Maggs, 1980; Loubser, 1988; Huffman 2007). Typical Early Iron Age sites are known along river banks and waterways. Sites dating to the Early Iron Age are known to occur to the west of the Nzhelele valley at Klein Africa and Happy Rest. These sites were first identified by De Vaal (1941) and were later excavated by Helgaard Prinsloo (1974). Around AD900, the Middle Iron Age developed and is well known from sites in the Middle Limpopo such as K2 and Mapungubwe. Middle Iron Age sites are known in and around Musina and near the Soutpansberg Range of Mountains. Some known sites include the sites of Mutamba, found along the Mutamba river (Antonites 2014). The Middle Iron Age was succeeded by the Late Iron Age after AD1300. Khami type sites are known in the study area and beyond. These are defined by the presence of characteristic band and panel pottery and drystone built terraces where houses were built. The Khami period is associated with the formation and development of a Venda identity (Loubser 1991). Khami type sites continued into the late 19th century and are associated with various Venda communities. Some of the most well-known Khami sites include Dzata located in

the Nzhelele Valley. The late 19th century saw the introduction of European colonialism. Over the course of the 20th century, local communities were resettled to give way to European farms as well as for state activities. Often, these forced removals were not accompanied by exhumations of burials and other sensitive cultural remains.

3. PROJECT DESCRIPTION

The Makhado Coal Mine will be an opencast mining operation, with an estimated 8.5-14 MT of ROM coal to be produced per year (Jacana 2012). The life of the mine is estimated to be 16 years. The first phase of the colliery will concentrate on the opencast pit known as the West Pit (located on Windhoek 649 MS and Tanga 648MS Farms). Data obtained from approved mining plans provides the extent of mining as follows:

- West Pit – 280 ha, maximum depth 120m.

In addition to the open pit, the colliery will consist of the following surface workings:

- Topsoil stockpiles;
- Overburden stockpiles (for start-up period until a wedge has been opened up in the pits so that the overburden can be used as fill);
- ROM coal storage area;
- Intermediate crusher/screening plant);
- Associated conveyors from intermediate crusher/screening plants to the processing plant;
- ROM coal processing plant (primary, secondary and tertiary crusher);
- Associated conveyors from the processing plant to the product storage areas;
- Product stockpile areas and overland conveyor to RLT on farm Tanga;
- Carbonaceous (discard) stockpile area;

- Haul roads and service roads, including a bridge over the Mutamba River;
- Earthmoving vehicle workshops;
- Clean and dirty water management infrastructure;
- Water storage structures and settling ponds;
- Water reticulation systems;
- Change houses and offices;
- Wastewater (sewage) treatment plant;
- Main entrance gate security and freight area;
- Bulk electricity supply infrastructure;
- Bulk water supply infrastructure (still to confirm);
- Bulk fuel storage facilities;
- Explosives magazine;
- Recruitment and training center;
- Product transport infrastructure (railway line);
- Security structures and fences.

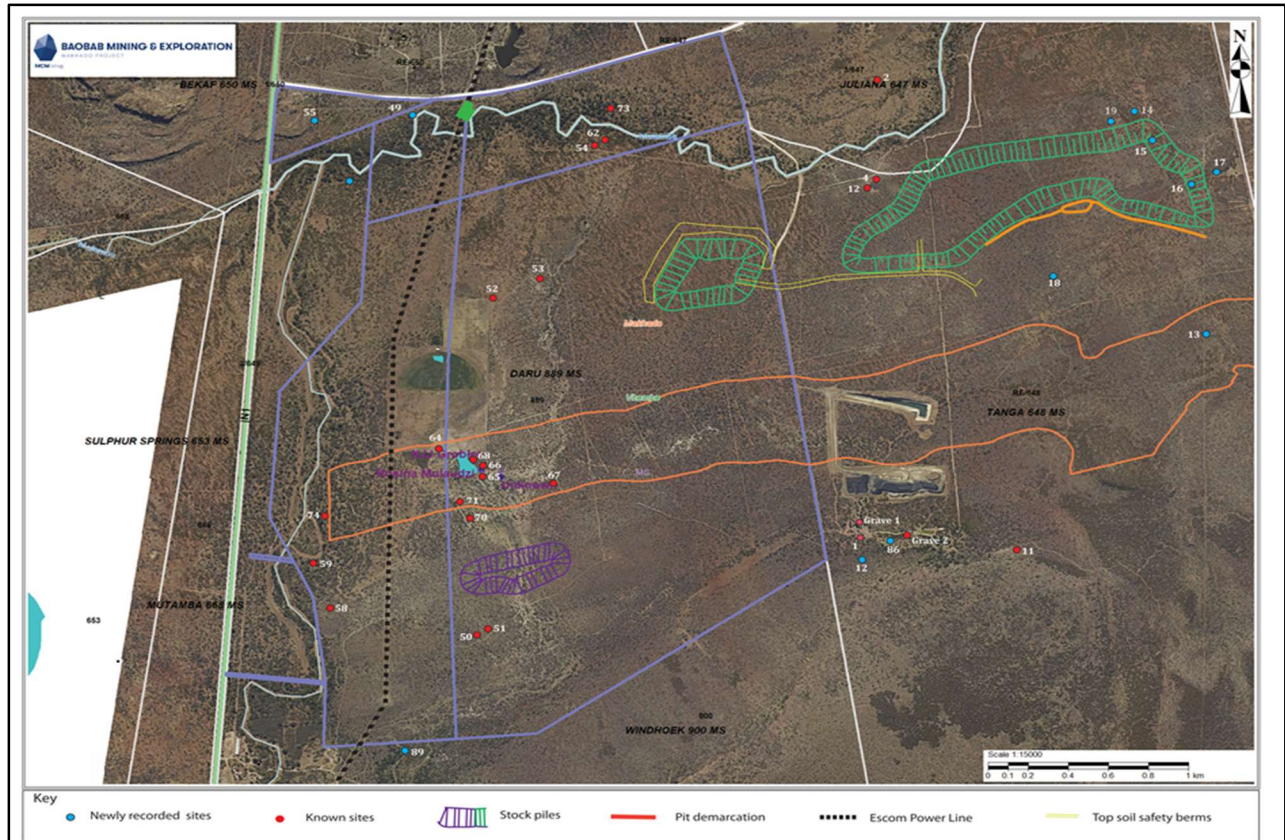


Figure 2: View of the affected farms, identified heritage resources in relation to the layout of proposed developments

4. LEGISLATION

Nationally, two sets of legislation are relevant for this study with regard to the protection of tangible and intangible heritage resources including graves. These are as follows:

4.1. THE NATIONAL HERITAGE RESOURCES ACT (25 OF 1999) (NHRA)

This act makes provision for the identification, protection and conservation of heritage in South Africa through various sections. As far as development is concerned, the NHRA mandates that predevelopment heritage resources impact assessments must be performed for various categories of development as enshrined in Section 38. Section 7 of the act further provides for the grading of

heritage resources based on values and significance. Grade 1 sites are National Heritage sites (national significance), while Grade II sites are provincial sites (provincial significance) with Grade III being mostly local (local significance). In terms of cumulative impact assessment, a higher concentration of Grade III resources may have huge significance when compared to individual sites.

In terms of the National Heritage Resources Act (1999) the following categories of the national estate are 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 heritage resources authority (national or provincial).

Archaeological remains

Section 35(3): Any discoveries of archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must be immediately reported to responsible heritage resources authorities.

Subsection 35(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;

(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;

(c) trade in, sell for private gain, export or attempt to export from the republic any category of archaeological or palaeontological material or object, or any meteorite; or

(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist with the detection or recovery of metals or archaeological material or objects or use such equipment for the recovery of meteorites.

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

(a) 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;

(b) carry out an investigation for the purpose of obtaining information on whether or not an archaeological or palaeontological site exists and whether mitigation is necessary;

(c) 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

(d) recover the costs of such investigation from the owner or occupier of the land on which it is believed an archaeological or palaeontological 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.

Burial grounds and graves

Subsection 36(3)

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

(c) 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

(d) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any

excavation equipment, or any equipment which assists in detection or recovery of metals.

Subsection 36(6) Subject to the provision of any law, any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in co-operation with the South African Police Service and in accordance with regulations of the responsible heritage resources authority-

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

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

The Human Tissues Act (65 of 1983)

This Act protects graves younger than 60 years. These fall under the jurisdiction of the National Department of Health and the Provincial Health Departments. Approval for the exhumation and reburial must be obtained from the relevant Provincial MEC as well as the relevant Local Authorities. Public consultation is essential in all this.

5. HERITAGE-SPECIFIC CONSULTATION

The area where the proposed development falls is historically associated with Venda communities. However, from the late 19th and early 20th centuries, European farms were established in the area thereby introducing people of western ancestry into this region. Burials and living heritage associated with these historical layers exist. A detailed heritage consultation programme was developed to identify living heritage sites and link burials to descendants. The consultation involved Local communities, headman and local chiefs, farm owners and farm labourers. The process fed into the broad environment impact assessment process. The Magosha family are the descendants of some of the homestead ruins that fall within the recent past. However this homestead will not be disturbed by the proposed development, while the Mulaudzi Family left one of their family member buried on the western part of the farm Windhoek, these families were also consulted for sites verification and historical background of the area. A separate permit application proposal for grave relocation has been developed and lodged with South African Heritage Resources Burial ground unit for grave relocation process permit.

6. RESEARCH AIMS AND METHODOLOGY

This proposal seeks to carry out a rescue excavation of sites to be affected by the proposed confirmatory drilling and subsequent mining by MCM and fit for purpose realignment of infrastructure, where appropriate. It seeks to achieve the following:

- To establish the site extent, integrity, approximate age and significance of sites identified during the Phase 1 AIA through various sampling techniques;
- To identify the spatial features and settlement layout of each site to better understand the distribution of activity areas at the sites
- To study the collected and excavated material culture to understand the broader chronological and cultural context of the sites
- To document the sites through mapping, survey and photo-recording to create an archive for heritage management and research purposes.
- To generate information on archaeological sites in the broader Soutpansberg area

This research-led rescue excavation will be carried out using standard archaeological methodologies for identification, recording and post-excavation treatment of collections. To begin with, detailed surveys will be carried out in and around the sites to understand their distribution and possible spatial relationships. The following methodology will be used in the proposed study:

1. Desktop studies including mapping
2. Intra and inter-site survey and mapping;
3. Detailed test excavations and sampling;
4. Artefact studies and documentation; and

5. Collections management.

During the fieldwork, the archaeological details will be recorded with an interpretation of their probable date, condition, nature and consequent importance. Strategic test pits will be placed at appropriate areas to establish the distribution of activity areas at the different sites and to gain chronological data. The finds will be housed at the University of Venda where where it will be studied.

7. DESPCRIPTIONS OF THE SITES TO BE MITIGATED

The survey for archaeological sites during the impact assessment process identified sites that fall within the development footprint. The significance assessment revealed that most of the sites are of low Grade 3 significance (Roodt 2012). This was also confirmed through a confirmatory study and HIA by Chirikure and Mathoho (2018). The map below shows the sites with respect to the development footprint.

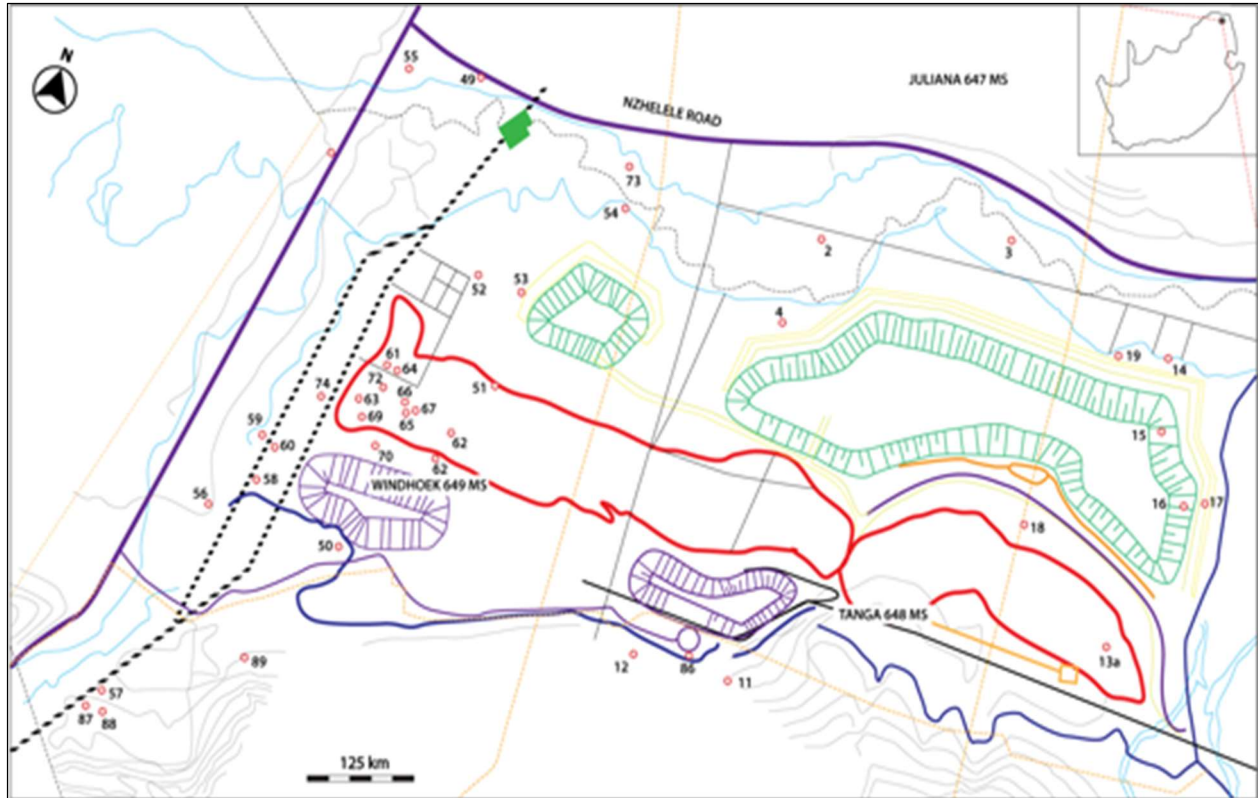


Figure 3: View of the identified sites in relation to the proposed west pit

The figure above shows that 15 sites will be directly affected by the proposed development. This includes three burials (sites 65, 66, 67). These cannot be saved and must be relocated following consultation as per the provisions of the National Heritage Resources Act. A separate application will be made to perform this work before development starts. There are sites (58, 60, and 74) that are situated alongside the Mutamba River bank that are currently not affected by the proposed open pit. However, the proposal to shift electricity pylons and supporting infrastructure such as gravel road that transverse under power lines will negatively affect these sites. Consequently, they require mitigation. A detailed description of the sites is provided below.

7.1. SITE LOCATION AND DESCRIPTION

7.1.1 Site 51. (GPS S 22°.49'44.08"and E 29°.53'.59.08")

The site is located on slightly undulating ground dominated by a concentration of loose stones between shrubs. The area is roughly 40 X 40M. Surface material culture is mostly comprised of undiagnostic ceramics with three stone foundation structures that could be grain bins. An old farm gravel road passes through the site, cutting it into two.



Figure 4: View of Site 51 showing stone concentration likely to be grain bin foundations



Figure 5: Some of the undiagnostic and diagnostic ceramics visible on the surface of the site.

7.1.2. Site 61. Farm Widhoek 649 MS (GPS S 22°.48'44.01" and E 29°.54'.01.04")

This site is located on an open flat section of land, located northeast of a current day Lucerne field. The area is situated below a rise with calcrete. Generally, the area is undulating. Material culture on the surface of this site is mostly comprised of low concentrations of ceramics with a few stone tools.



Figure 6: Shows site 61 which is an open and eroded space with low material culture concentration



Figure 7: Some of the material culture concentration on the surface of Site 61

7.1.3. Site 63. Farm Widhoek 649 MS (GPS S 22°.48'17.09"and E 29°.54'.22.06")

The site covers an area roughly 200m X 100m. It is situated on a slightly flat section of land, impacted by erosion. Site 63 is located northeast of a small farm dam. The dominant vegetation is mostly Mopane. Scatters of stone tools and ceramics are visible on eroded patches of the site. Some of the diagnostic ceramics on the surface resemble Gumanye phase ceramics (Huffman 2007).

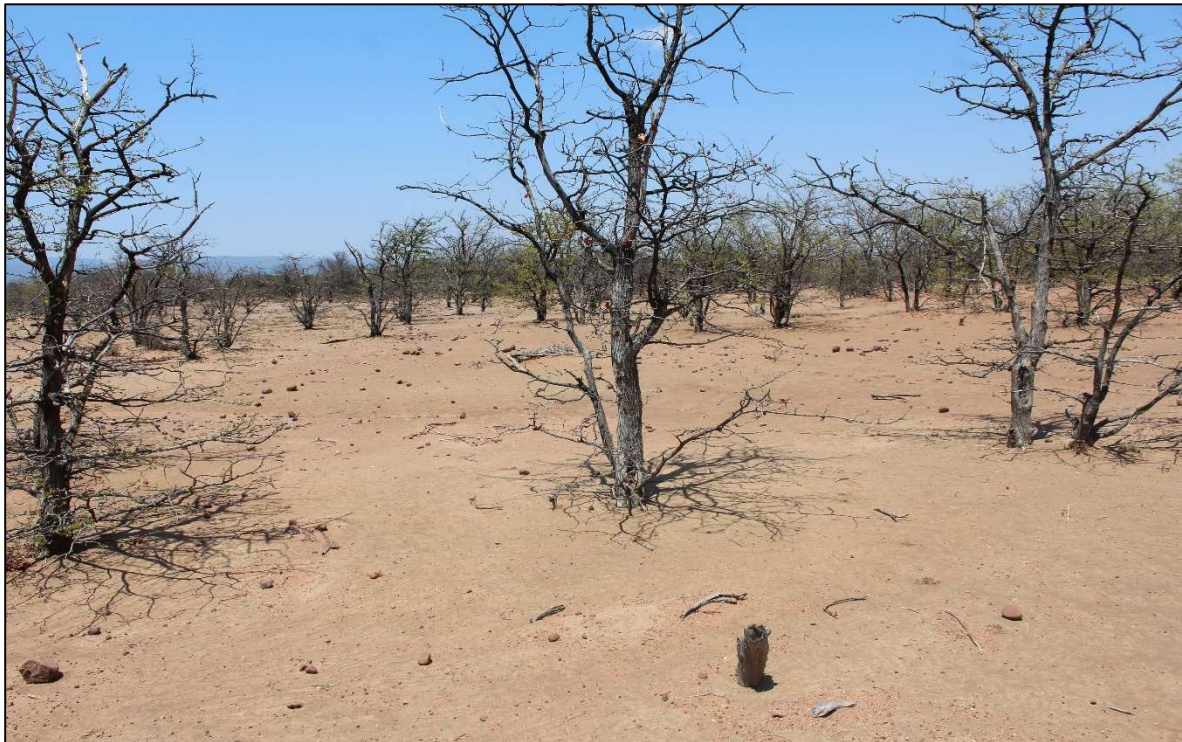


Figure 8:View of the site 63



Figure 9: Some of the identified ceramics and stone tools

7.1.4. Site 64. Farm Widhoek 649 MS (GPS S 22°.49'10.04"and E 29°.53'.51.00")

The site is located further north of Site 61 on an area that that used to be a field. It is located on a raised area dominated by calcrete stones. The site is characterized by low concentrations of undiagnostic ceramics.



Figure 10: View of the site dominated by calcrete rocks on a raised platform



Figure 11: Some of the ceramics noted on site

7.1.5. Site 68. Farm Widhoek 649 MS (GPS S 22°.49'13.02"and E 29°.53'.57.04")

Covering approximately 100 X 80M, Site 68 is located north of the dam. Most of the materials appear to be remnants from the recent past. These include burnt clay bricks, house foundations, concrete rubbles and associated remains of an ablution block with a French drain. Several finds of broken glass, bottles, porcelain, copper spoons and metal objects were recorded on the surface. According to Roodt (2013), some bottles on the surface date to circa 1910-1930. Three burials were recorded in close proximity to the site.



Figure 12: Rubble comprised of a mix of burnt clay bricks and concrete rubble



Figure 13: Remains of an ablution block with French drain at the back



Figure 14: Some of the cultural materials on the surface of the house midden including an old fanta bottle.

7.1.6. Site 58,60 and 74 Farm Widhoek 649 MS (GPS S 22°49'35.05"and E 29°53'.30.05" and GPS S 22°49'32.03"and E 29°53'.29.04) (GPS S 22°49'21.02"and E 29°53'.31.01" and GPS S 22°49'16.01"and E 29°53'.32.03)

These three sites are located west of the existing pylons and powerline service access road and east of the Mutamba River bank. It is possible that this could be one very large settlement situated on the Mutamba River flood plains. However, these sites have been impacted on by soil erosion, farm access roads and the construction of pit latrine toilet. The midden deposit and cultural material is comprised of a mixture of broken glasses. Mixed with these remains are several diagnostic sherds identified as Mutamba.



Figure 15: View of Site 74, an Iron Age site with recent material such as broken glass on the surface



Figure 16: Several diagnostic ceramics identified as Letaba, a metal adze and a copper ring were found on the surface.



Figure 17: View of the site 58 which extend to site 60. This could have been assigned one number since the area is characterized by low scattered ceramic concentration.



Figure 18: Some of the undiagnostic ceramics on the surface

8.CONCLUSION

In conclusion, mitigation is an important part of the archaeological process. It is preservation by record but it is also an opportunity to generate new information through research and publication. In the process of meeting compliance requirements for the proposed Makhado Colliery, the mitigation will generate new knowledge and material that will be exhibited in the community centre.

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APPENDIX 1

ENVIRONMENTAL IMPACT ASSESMENT APPROVAL

RECORD OF DECISION (ROD)

(ATTACHED SEPARATELY)

APPENDIX 2

**CONFIRMATORY STUDY TO IDENTIFY AND ASSESS THE IMPACT OF PROPOSED
DEVELOPMENT ON IDENTIFIED HERITAGE RESOURCES (HIA)**

(CHIRIKURE AND MATHOHO 2018)

(ATTACHED SEPARATELY)

APPENDIX 3

FIELD BASED PALAENTOLOGICAL IMPACT ASSESSMENT REPORT (PIA)

(DURAND 2018)

(ATTACHED SEPARATELY)