

HERITAGE SCOPING REPORT

FOR THE PROPOSED VYGENHOEK MINE, MPUMALANGA PROVINCE.

Client:

EM Assistance

Client information:

Anandi Alers

E – Mail:

anandi.alers@emassistance.co.za



HCAC - Heritage Consultants

Private Bag X 1049

Suite 34

Modimolle

0510

Tel: 082 373 8491

Fax: 086 691 6461

E-Mail: jaco.heritage@gmail.com

Report Author:

Mr. J. van der Walt

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EXECUTIVE SUMMARY

HCAC was appointed to conduct a Heritage Scoping Assessment for the proposed Vygenhoek Mine located approximately 28 km north east of Roossenekal and 30 km west of Lydenburg in the Mpumalanga Province. This assessment is based on a desktop study of available data regarding cultural heritage resources of the area and no field verification was conducted by the author.

In anticipation of other mining activities in the greater study area, archaeologists have completed numerous heritage surveys (e.g., Huffman & Schoeman 2001, 2002 a and b; van Schalkwyk 2005; Roodt 2003a, 2003b, 2003c, 2005, 2008a, 2008b; Van der Walt & Fourie 2006; Van der Walt & Celliers 2009; Van der Walt 2009; 2016 and Pistorius 2007, 2010, 2011) for various Environmental Impact Assessment Reports (EIAs) and Environmental Management Programmes (EMPs). These studies provide a good understanding of the archaeology of the area and use of the wider landscape. Since 2001, heritage surveys have recorded more than 240 sites in the greater study area, ranging from the Middle Stone Age to recent households of farm labourers and tenants. A Heritage assessment by Du Piesanie and Higgitt (2012) recorded 50 features in the Vygenhoek project area. Based on these studies it is clear that the area under investigation has a wealth of heritage sites and a cultural layering dating to the following periods:

- Stone Age sites;
- Iron Age sites;
- Historical features and;
- Graves and burial sites can be expected anywhere on the landscape.

The study area is of low and insignificant paleontological sensitivity according to the SAHRIS palaeontological sensitivity map and no further studies are required in this regard.

Based on the current mine layout several of the known heritage sites will be impacted on and will require mitigation. either through conservation or phase 2 excavation. It is therefore recommended that a field-based impact assessment should be conducted of the mine layout. During this study known sites of archaeological, historical or places of cultural interest must be verified, recorded, photographed and described. The extent of the sites determined and mitigation proposed should any significant sites be impacted upon, ensuring that all the requirements of the SAHRA are met.

Contents

Indemnity and Conditions Relating to this Report	3
EXECUTIVE SUMMARY	4
ABBREVIATIONS	7
GLOSSARY	7
1. INTRODUCTION	8
1.1 Terms of Reference	12
1.2 Nature of the development	13
1.3 The receiving environment	13
2. APPROACH AND METHODOLOGY	13
2.1 Literature review	14
2.2. Public consultation.....	14
2.3. Google Earth and mapping survey.....	14
2.4. Genealogical Society of South Africa	14
3. LEGISLATION	14
3.1 Heritage Site Significance and Mitigation Measures	15
4. REGIONAL OVERVIEW	16
4.1 Literature review	16
4.2. Public consultation.....	16
4.3. Google Earth and Mapping survey.....	17
4.4. Genealogical Society of South Africa	17
5. ARCHAEOLOGICAL AND HISTORICAL INFORMATION AVAILABLE ON THE STUDY AREA..	18
5.1 Stone Age	18
5.2. The Iron Age	18
5.3. Historical Information	19
5.4. Anglo-Boer War Sites	19
5.5. Cultural Landscape.....	19
5.6. Built Environment	19
5.7. Graves and Burial Sites	19
5.8. Known Battles in relation to the study area	19
5.9. Paleontological Significance.....	20
6. PROBABILITY OF OCCURRENCE OF SITES	21
7. ASSUMPTIONS AND LIMITATIONS	22
8. FINDINGS	22
9. POTENTIAL SIGNIFICANCE OF HERITAGE RESOURCES	29
10. CONCLUSIONS AND RECOMMENDATIONS	30
10.1. PLAN OF STUDY	32
12. LIST OF PREPARERS	33
13. STATEMENT OF COMPETENCY.....	33
14. STATEMENT OF INDEPENDENCE	33
15. REFERENCES	34

Figures

Figure 1. Regional setting of the project area (1:250 000 Topographical map).	9
Figure 2. Local setting of the project area (1:50 000 Topographical map).	10

Figure 3. Aerial image of the study area.	11
Figure 4. Landscape setting of the study area.	17
Figure 5. Paleontological Sensitivity of the study area (green placeholder) is indicated as insignificant and low.	20
Figure 6. Site distribution	25
Figure 7: Known sites in relation to the project layout.	26
Figure 8. Known sites in relation to project infrastructure.	27
Figure 9. Known sites in relation to the proposed infrastructure.	28
Figure 10. Known sites in relation to project infrastructure.	29
Tables	
Table 1: Heritage Reports conducted close to the study area.	16
Table 2. Features recorded in the study area.	22
Table 3: Know sites that could be impacted on by the current layout.	31

ABBREVIATIONS

AIA: Archaeological Impact Assessment
ASAPA: Association of South African Professional Archaeologists
BIA: Basic Impact Assessment
CRM: Cultural Resource Management
EAP: Environmental Assessment Practitioner
ECO: Environmental Control Officer
EIA: Environmental Impact Assessment*
EIA: Early Iron Age*
EMP: Environmental Management Plan
ESA: Early Stone Age
GPS: Global Positioning System
HIA: Heritage Impact Assessment
LIA: Late Iron Age
LSA: Late Stone Age
MEC: Member of the Executive Council
MIA: Middle Iron Age
MPRDA: Mineral and Petroleum Resources Development Act
MSA: Middle Stone Age
NEMA: National Environmental Management Act
PRHA: Provincial Heritage Resource Agency
SADC: Southern African Development Community
SAHRA: South African Heritage Resources Agency
SAHRIS: South African Heritage Resources Information System

**Although EIA refers to both Environmental Impact Assessment and the Early Iron Age both are internationally accepted abbreviations and must be read and interpreted in the context it is used.*

GLOSSARY

Archaeological site (remains of human activity over 100 years old)

Early Stone Age (2 million to 300 000 years ago)

Middle Stone Age (300 000 to 30 000 years ago)

Late Stone Age (30 000 years ago until recent)

Historic (approximately AD 1840 to 1950)

Historic building (over 60 years old)

Lithics: Stone Age artefacts

1. INTRODUCTION

HCAC was contracted by EMA to conduct a heritage scoping study for the Vygenhoek Mine. The project is situated approximately 28 km north east of Roossenekal and 30 km west of Lydenburg in the Mpumalanga Province (Figure 1 – 3). The heritage scoping report forms part of the Environmental Impact Assessment process for the project and should be followed by a Heritage Impact Assessment report.

The aim of the scoping report is to conduct a desktop study to identify possible heritage resources within the project site. The study furthermore aims to assess the impact of the proposed project on non - renewable heritage resources and to submit appropriate recommendations with regards to the responsible cultural resources management measures that might be required to assist the developer in managing the discovered heritage resources in a responsible manner, in order to protect, preserve and develop them within the framework provided by Heritage legislation.

This report outlines the approach and methodology utilised for the scoping phase of the project. The report includes information collected from various sources and consultations. Possible impacts are identified and mitigation measures are proposed in the following report. It is important to note that no field work was conducted as part of the scoping phase.

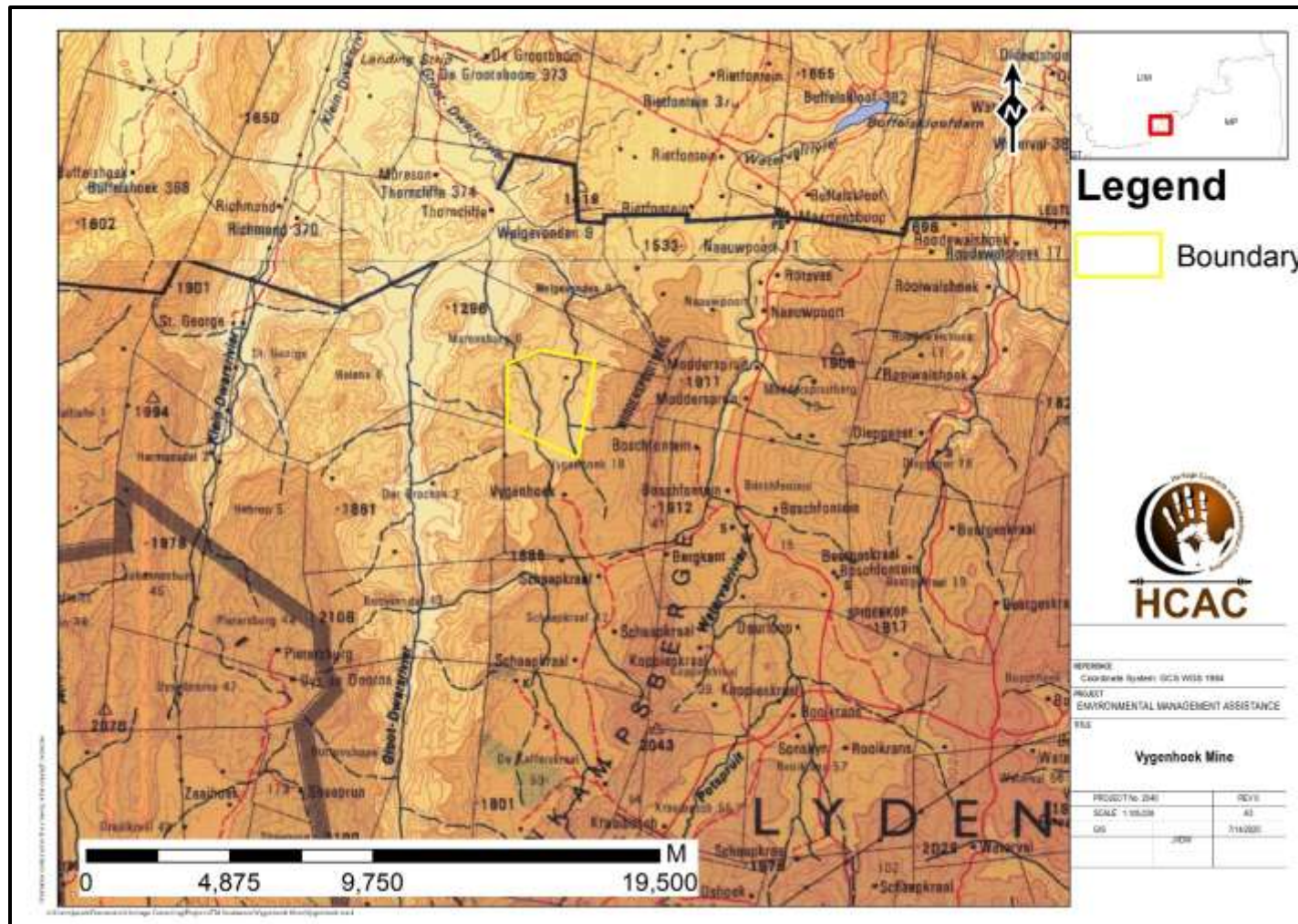


Figure 1. Regional setting of the project area (1:250 000 Topographical map).

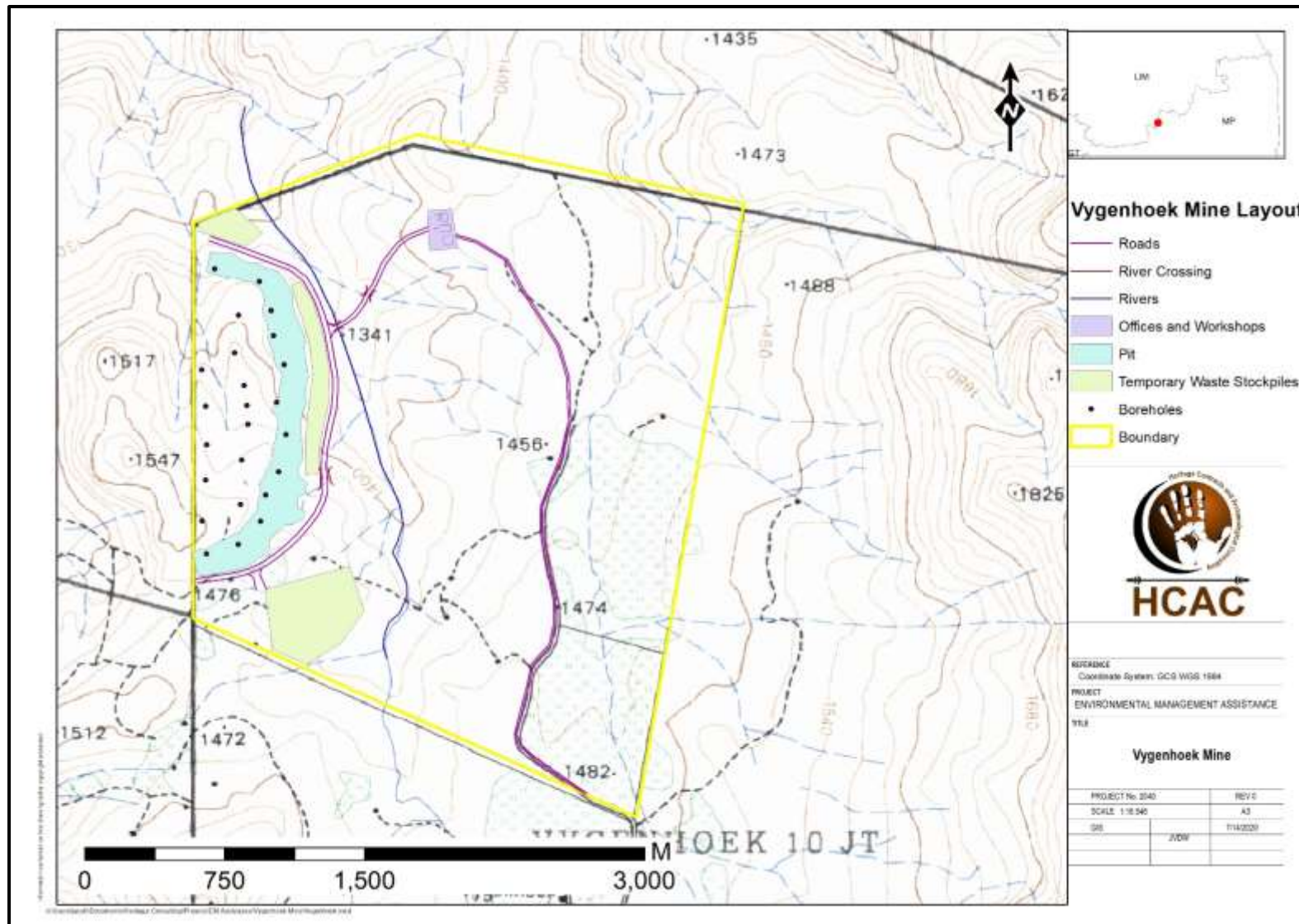


Figure 2. Local setting of the project area (1:50 000 Topographical map).

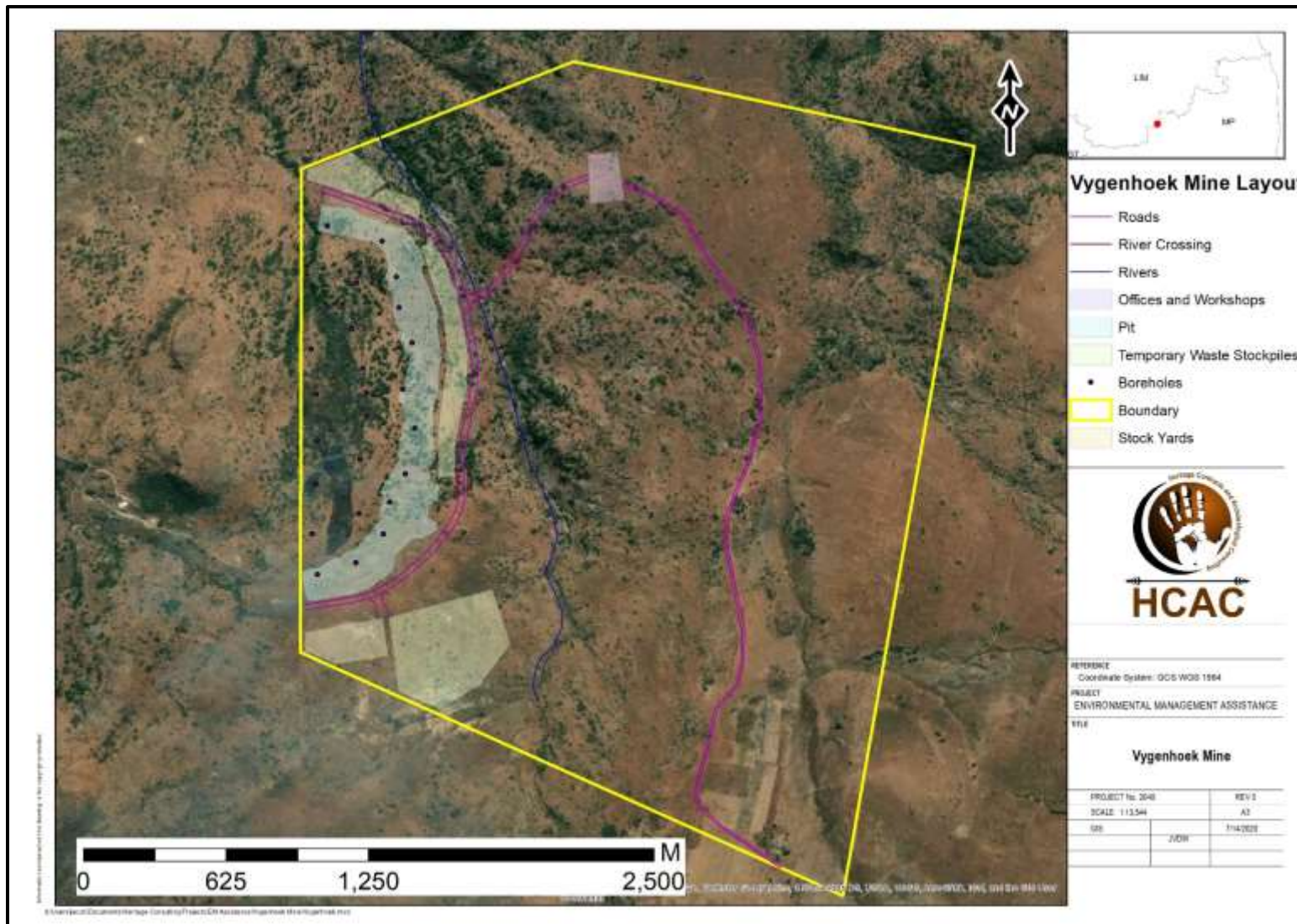


Figure 3. Aerial image of the study area.

1.1 Terms of Reference

The main aim of this scoping report is to determine if any known heritage resources occur within the project site. The objectives of the scoping report were to:

- » Conduct a desktop study:
 - * Review available literature, previous heritage studies and other relevant information sources to obtain a thorough understanding of the archaeological and cultural heritage conditions of the area;
 - * Identify known and recorded archaeological and cultural sites; and
 - * Determine whether the area is renowned for any cultural and heritage resources, such as Stone Age sites, Iron Age sites, informal graveyards or historical homesteads.
- » Compile a specialist Heritage Scoping Report in line with the requirements of the EIA Regulations, 2014, as amended on 07 April 2017.

The reporting of the scoping component is based on the results and findings of a desktop study, wherein potential issues associated with the proposed project will be identified, and those issues requiring further investigation through the IA Phase highlighted. During this phase, the following terms apply:

Field study

Conduct a field study to: (a) locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources affected by the proposed development

Reporting

Report on the identification of anticipated and cumulative impacts the operational units of the proposed project activity may have on the identified heritage resources for all 3 phases of the project; i.e., construction, operation and decommissioning phases. Consider alternatives, should any significant sites be impacted adversely by the proposed project. Ensure that all studies and results comply with the relevant legislation, SAHRA minimum standards and the code of ethics and guidelines of ASAPA.

To assist the developer in managing the discovered heritage resources in a responsible manner, and to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999).

1.2 Nature of the development

The project comprises opencast mining that will produce iron ore that will be sold to one of the existing processing plants. The Vygenhoek project footprint is small as it will not support the construction of a processing plant however it will require some support facilities and infrastructure in order to operate (Figure 2 & 3). The other associated infrastructure requirements are:

- waste management: temporary handling and storage of general and hazardous waste, on-site change houses/ablution facilities with sewage treatment plant, possible incinerator for treating sewage screenings;
- surface water management: water supply dams, mine residue facility return water dams, pollution control dams, clean and dirty storm water controls, river crossings;
- storage and handling of hazardous substances: fuel, lubricants, various process input chemicals, raw material stockpiles/bunkers, gas, burning oils, explosives;
- security and access control;
- lay down and storage yard areas;
- workshops and wash bays;
- offices;
- contractor camps; and
- medical station.
- Diesel Generator

1.3 The receiving environment

The study area forms part of the Dwarsrivier Valley part of the Bushveld Igneous Complex. Impacts present in the area include previous agricultural activities as well as exploration roads used for monitoring and exploration purposes. In terms of vegetation, the study area falls within the Savannah Biome, which covers approximately 32.8% of South Africa (Mucina & Rutherford 2006) and locally the Sekhukhune Montane Grassland Vegetation type which is considered vulnerable and vast sections are mined for vanadium using strip mining. The majority of this vegetation type is associated with a very low erosion rate (Mucina & Rutherford 2006).

Topographically, the area is mountainous with stretches of more dense vegetation (*Dichrostachys* shrubs) and a number of large hills and valleys. Several streams and tributaries run through the study area that could have been the water source for communities living in the area in antiquity. The project is located on undulating hills on top of an escarpment that descends into a hilled area.

2. APPROACH AND METHODOLOGY

To comply with Heritage legislation the assessment is to be undertaken in two phases, a desktop study (scoping phase) and an HIA (Heritage Impact Assessment). This report concerns the scoping phase. The aim of the scoping phase is to cover available data regarding archaeological and cultural heritage to compile a background history of the study area in order to identify possible heritage issues or fatal flaws that could possibly be associated with the project and should be avoided during development.

This was accomplished by means of the following phases (the results are represented in section 4 of this report):

2.1 Literature review

A review was conducted utilising data for information gathering from a range of sources on the archaeology and history of the area. The aim of this is to extract data and information on the area in question, looking at archaeological sites, historical sites and graves of the area. The South African Heritage Resources Information System (SAHRIS) was consulted to further collect data from CRM practitioners who undertook work in the area to provide the most comprehensive account of the history of the area where possible. In addition, the archaeological database housed at the University of the Witwatersrand was consulted.

2.2. Public consultation

No public consultation was conducted during this phase by the author, as it is handled by EMA.

2.3. Google Earth and mapping survey

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where archaeological sites might be located.

2.4. Genealogical Society of South Africa

The database of the genealogical society was consulted to collect data on any known graves in the area.

3. LEGISLATION

- For this project, the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) is of importance and the following sites and features are protected:
 - a. Archaeological artefacts, structures and sites older than 100 years;
 - b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography;
 - c. Objects of decorative and visual arts;
 - d. Military objects, structures and sites older than 75 years;
 - e. Historical objects, structures and sites older than 60 years;
 - f. Proclaimed heritage sites;
 - g. Grave yards and graves older than 60 years;
 - h. Meteorites and fossils; and
 - i. Objects, structures and sites of scientific or technological value.

The national estate includes the following:

- a. Places, buildings, structures and equipment of cultural significance;
- b. Places to which oral traditions are attached or which are associated with living heritage;
- c. Historical settlements and townscapes;
- d. Landscapes and features of cultural significance;
- e. Geological sites of scientific or cultural importance;
- f. Archaeological and palaeontological importance;
- g. Graves and burial grounds;
- h. Sites of significance relating to the history of slavery; and
- i. Movable objects (e.g. archaeological, palaeontological, meteorites, geological specimens, military, ethnographic, books etc.).

Section 34 of the NHRA deal with structures that are older than 60 years. Section 35(4) of the NHRA deals with archaeology, palaeontology and meteorites. Section 36 of the NHRA, deal with human remains older than 60 years. Unidentified/unknown graves are also handled as older than 60 years until proven otherwise.

3.1 Heritage Site Significance and Mitigation Measures

The presence and distribution of heritage resources define a Heritage Landscape. In this landscape, every site is relevant. In addition, because heritage resources are non-renewable, heritage surveys need to investigate an entire project area. In all initial investigations, however, the specialists are responsible only for the identification of resources visible on the surface.

This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. National and Provincial Monuments are recognised for conservation purposes. The following interrelated criteria were used to establish site significance:

- » The unique nature of a site;
- » The integrity of the archaeological/cultural heritage deposit;
- » The wider historic, archaeological and geographic context of the site;
- » The location of the site in relation to other similar sites or features;
- » The depth of the archaeological deposit (when it can be determined or is known);
- » The preservation condition of the site; and
- » Potential to answer present research questions.

The criteria above will be used to place identified sites within the South African Heritage Resources Agency's (SAHRA's) (2006) system of grading of places and objects that form part of the national estate. This system is approved by the Association of South African Professional Archaeologists (ASAPA) for the Southern African Development Community (SADC) region. The recommendations for each site should be read in conjunction with Section 10 of this report.

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)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP. B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction

4. REGIONAL OVERVIEW

4.1 Literature review

In anticipation of other mining activities in the greater study area, archaeologists have completed numerous heritage surveys including Huffman & Schoeman 2001, 2002 a and b; van Schalkwyk 2005; Roodt 2003a, 2003b, 2003c, 2005, 2008a, 2008b; Van der Walt & Fourie 2006; Van der Walt & Celliers 2009; Van der Walt 2009; 2016 and Pistorius 2007, 2010, 2011 for various Environmental Impact Assessment Reports (EIAs) and Environmental Management Programmes (EMPs). These studies provide a good understanding of the archaeology of the area and use of the wider landscape. Since 2001, heritage surveys have recorded more than 240 sites in the greater study area, ranging from the Middle Stone Age to the recent households of farm labourers. The following CRM studies (Table 1) were conducted in the immediate area and were consulted for this report:

Table 1: Heritage Reports conducted close to the study area.

Author	Year	Project	Findings
Huffman, T. N. and Schoeman, A.	2002	Archaeological Assessment Of The Der Brochen Project, Mpumalanga	25 sites or occurrences, ranging from the Middle Stone Age to the Iron Age and Historic Pedi.
Roodt, F.	2003	Phase 1 Heritage Impact Assessment Der Brochen Tailings Dams Farms: Helena And St. George Mpumalanga Province	39 sites were recorded ranging from the Iron age to burial sites.
Van der Walt, J. and Fourie, W.	2007	Mining development for Mareesburg 8JT Mpumalanga, Archaeological Impact Assessment	3 Iron Age sites
Matoho, E.	2012	Preliminary Report Of The Investigation Of The Late Iron Age Stone Wall Enclosure Site Identified On The Farm Schaapkraal 42jt, Mpumalanga Province	Iron Age features and burial sites.
Du Piesanie, J and Higgitt, N.	2012	Heritage Impact Assessment for the Everest North Mining 2530 AA, Vygenhoek 10JT, Mpumalanga.	50 Sites recorded ranging from Stone Age, Iron Age and burial sites as well as historical features.
Coetzee, T.	2018	Phase 1 Archaeological Impact Assessment For Environmental Assurance (Pty) Ltd for the Construction of the Mareesburg Haul Road near Boschfontein, Mpumalanga	Seven historical sites consisting of angular stone walling, as well as buildings constructed from bricks and cement; 10 LIA / Farmer sites consisting of linear stone walling and stone-walled enclosures; six stone cairns that might be grave sites; two formal graveyards and two modern sites.

The study conducted by Du Piesanie and Higgitt in the project footprint area recorded 50 heritage features ranging from Stone Age artefacts to historical Trig beacons (Du Piesanie and Higgitt 2012).

4.2. Public consultation

No public consultation was conducted by the heritage consultant during the scoping phase.

4.3. Google Earth and Mapping survey

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where archaeological sites might be located. The study area is located on a higher lying area (Figure 4) that was conducive to human settlement in antiquity as during the 19th Century, farmers lived around the edge of high meadows as a measure of protection. A few Middle Iron Age Eiland sites were also cited in this plateau environment (Van der Walt 2016).

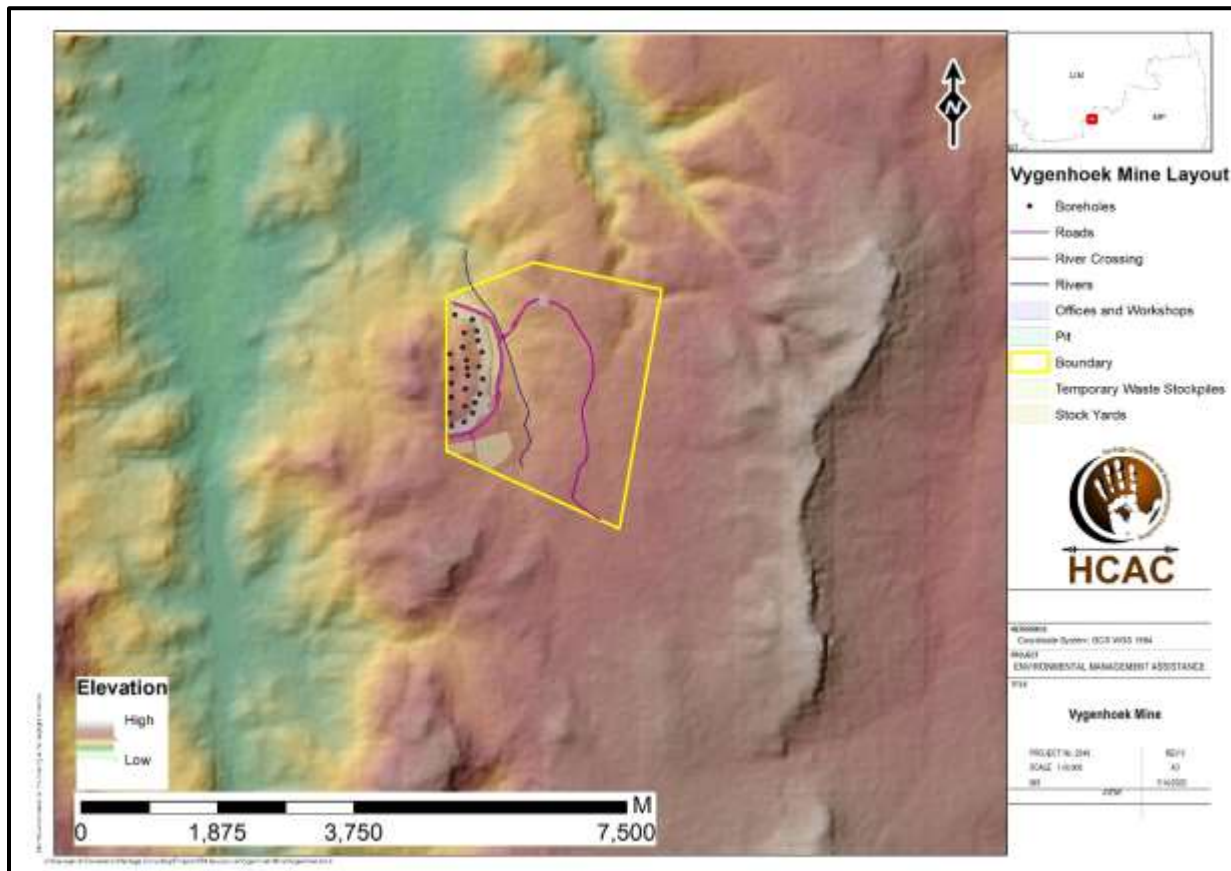


Figure 4. Landscape setting of the study area.

4.4. Genealogical Society of South Africa

No grave sites are on record for the study area based on the GSSA.

5. ARCHAEOLOGICAL AND HISTORICAL INFORMATION AVAILABLE ON THE STUDY AREA

5.1 Stone Age

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age and the Earlier Stone Age. Each of these phases contains sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges. For Cultural Resources Management (CRM) purposes it is often only expected/ possible to identify the presence of the three main phases.

Yet sometimes the recognition of cultural groups, affinities or trends in technology and/or subsistence practices, as represented by the sub-phases or industrial complexes, is achievable (Lombard 2012). The three main phases can be divided as follows:

- Later Stone Age: associated with Khoi and San societies and their immediate predecessors. Recently to ~30 thousand years ago
- Middle Stone Age: associated with Homo sapiens and archaic modern humans. 30-300 thousand years ago.
- Earlier Stone Age: associated with early Homo groups such as Homo habilis and Homo erectus. 400 000-> 2 million years ago.

Middle Stone Age isolated artefacts are known to occur in the general area. Finds typically include radial cores, triangular points and flakes. These artefacts are usually scattered too sparsely to be of any significance (Van der Walt 2016).

5.2. The Iron Age

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the pre-Historic and Historic periods. It can be divided into three distinct periods:

- The Early Iron Age: Most of the first millennium AD.
- The Middle Iron Age: 10th to 13th centuries AD
- The Late Iron Age: 14th century to colonial period.

The Iron Age is characterised by the ability of these early people to manipulate and work Iron ore into implements that assisted them in creating a favourable environment to make a better living. Most of the decorated pottery found in the study area belongs to the stylistic facies known as *Eiland*. This style dates to between 1550 AD and 1750 AD and was made by Sotho-Tswana people (Huffman 2007: 186-189). These Middle Iron Age Sites do not have any stone walling associated with them and is found close to cultivatable soil. Some stylistic *Marateng* pottery were also recorded presumably in association with Late Iron Age stone walled settlements. *Marateng* pottery dates to between 1650 AD and 1840 AD (Huffman 2007: 207).

5.3. Historical Information

European occupation began in 1845 when trekkers established Ohrigstad and then Lydenburg a few years later. Originally, the trekkers were interested in ivory, but they also needed land and labour for agriculture. Tensions with African communities over these needs rose to such a point that the Trekkers attacked the Pedi capital in 1852. They failed, however, to destroy Pedi authority. Somewhat later, they negotiated a peace with Sekwati and traded cattle for land. Boers then started to establish farms in the region. GS Maree, for example, settled on Mareesburg in 1871. Tensions over land and labour increased again until the ZAR attacked the Pedi capital in 1876: this battle also failed to break Pedi resistance.

This brief historical outline helps to date some other sites in the study area. In particular, a number of settlements located around high meadows probably date from 1860 to 1880, when tensions were high but before major European occupation of local farms.

5.4. Anglo-Boer War Sites

The Anglo-Boer War was the greatest conflict that had taken place in South Africa up to date. No sites relating to the war are known to occur in the study area.

5.5. Cultural Landscape

The cultural landscape is characterised by an area that has been extensively disturbed by mining activities and in the past by agricultural activities. Interestingly historical and archaeological land use as indicated by the distribution of recorded sites on the landscape show different land use patterns. Many agriculturally-orientated societies (making Eiland, Leolo and Marateng pottery) built their villages in the valleys near cultivatable alluvium. Others (probably Ndebele) built terraced-settlements on basal slopes of the valley edge, while farm labourers usually lived in the valleys as well.

During the 19th Century, farmers lived around the edge of high meadows as a measure of protection. A few Middle Iron Age Eiland sites were also cited in this plateau environment. Grave sites can be expected anywhere on the landscape.

5.6. Built Environment

No structures occur in the development footprint, and no further mitigation is required in terms of Section 34 of the NHRA.

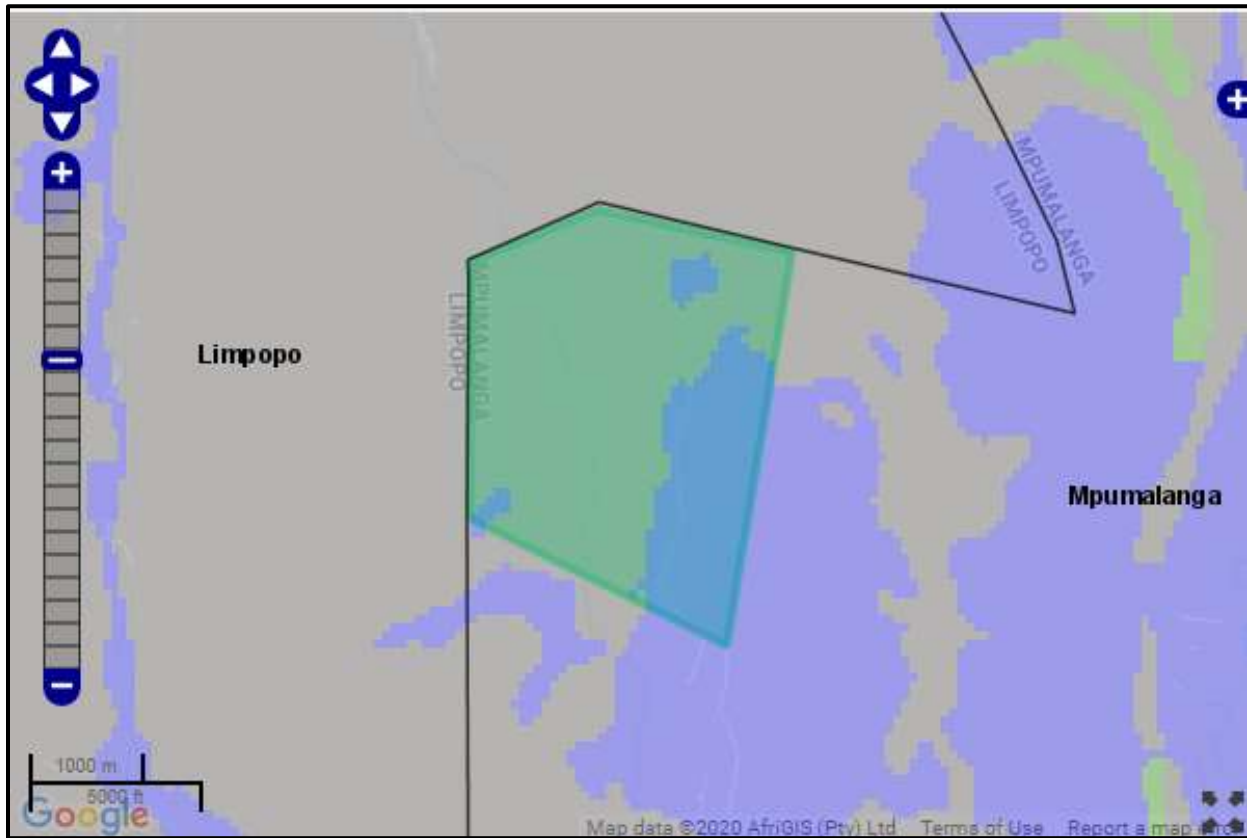
5.7. Graves and Burial Sites

Graves and cemeteries are widely distributed across the landscape and can be expected anywhere.

5.8. Known Battles in relation to the study area

No battles took place in the study area.

5.9. Paleontological Significance



Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	Desktop study is required
BLUE	LOW	No paleontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	No palaeontological studies are required
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

Figure 5. Paleontological Sensitivity of the study area (green placeholder) is indicated as insignificant and low.

A Palaeontological Desktop Study for the area was conducted by Karodia (2012) who recommended a fossil chance find procedure. The main bedrock units to be impacted by the proposed mine are the Bushveld Complex, the Dwars River Layered Sub-Suite, the Vlaktefontein Layered Sub-Suite and Kolobeng Norite. Overall, the geological layers have a low sensitivity for palaeontological heritage resources.

6. PROBABILITY OF OCCURRENCE OF SITES

Based on the above information, it is possible to determine the probability of finding archaeological and cultural heritage sites within the study area to a certain degree. For the purposes of this section of the report the following terms are used – low, medium and high probability. Low probability indicates that no known occurrences of sites have been found previously in the general study area. Medium probability indicates some known occurrences in the general study area are documented and can therefore be expected in the study area. A high probability indicates that occurrences have been documented close to or in the study area and that the environment of the study area has a high degree of probability for the occurrence of sites.

» Archaeological and Cultural Heritage Landscape

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 can be expected within the study areas:

- » Stone Age finds
 - ESA: *Low Probability*
 - MSA: *High Probability*
 - LSA: *Medium Probability*
 - LSA –Herder: *Low Probability*
 - Shell Middens – *No Probability.*
- » Iron Age finds
 - EIA: *Medium Probability*
 - MIA: *Medium to high Probability*
 - LIA: *High Probability*
- » Historical finds
 - Historical period: *High Probability*
 - Historical dumps: *Low-Medium Probability*
 - Structural remains: *High Probability*
- » Living Heritage
 - For example, rainmaking sites: *Low Probability*
- » Burial/Cemeteries
 - Burials over 100 years: *High Probability*
 - Burials younger than 60 years: *High Probability*

Subsurface excavations including ground levelling, landscaping, and foundation preparation can impact any number of these resources.

7. ASSUMPTIONS AND LIMITATIONS

This study did not assess the impact on intangible resources of the project. Based on available data and resources as outlined in the report additional information that becomes available at a later stage might change the outcome of assessment. It is assumed that information obtained for the wider area is applicable to the study area. It is assumed that the EAP will upload all relevant documents to the SAHRIS.

8. FINDINGS

The study area was subjected to a Heritage Impact Assessment in 2012 (Du Piesanie and Higgitt 2012) that recorded the features listed in Table 2 in the proposed project area (Figure 6). Several of these recorded sites will be directly impacted on by the proposed mine layout (Figure 7 -10).

Table 2. Features recorded in the study area.

Number	Longitude	Latitude	Source	Description
DW001	30.164024	25.057954	Du Piesanie and Higgitt 2012	Extensive stone walled site, with terraced walling. Possibly Badfontein type walling with communal grinding area. Decorated potsherds found scattered between walling. Located next to current homestead and road.
DW002	30.163958	25.056234	Du Piesanie and Higgitt 2012	Stone feature, possibly from clearing.
DW003	30.163738	25.055906	Du Piesanie and Higgitt 2012	Stone walling on rise along road. Used natural boulders in the walling. Potsherds were noted on the site, decorated and undecorated.
DW004	30.164651	25.05525	Du Piesanie and Higgitt 2012	Stone walling on rise, some terraced walling. Associated communal grinding area to the south of the stone walls. Close to site DW003.
DW005	30.164266	25.055054	Du Piesanie and Higgitt 2012	Stone walling on rise, some terraced walling. Associated communal grinding area to the south of the stone walls. Close to site DW003.
DW006	30.165661	25.053150	Du Piesanie and Higgitt 2012	Stone features, including walling, circles and mounds. Potsherds noted at site.
DW007	30.166990	25.053150	Du Piesanie and Higgitt 2012	Stone walling associated with a rise, located along a road. Undecorated potsherds were noted at the site.
DW008	30.165346	25.052193	Du Piesanie and Higgitt 2012	Stone Walled site with a communal grinding area (DW009). Natural boulders were used for the construction of the walling.
DW009	30.165081	25.051430	Du Piesanie and Higgitt 2012	Stone Walled site with a communal grinding area (DW009). Natural boulders were used for the construction of the walling.
DW010	30.167163	25.051430	Du Piesanie and Higgitt 2012	Stone walling at the base of a rise. Some terracing. Potsherds and an upper grind stone noted at the site.
DW011	30.165325	25.048595	Du Piesanie and Higgitt 2012	Some walling, some terracing on the northern side. Possible communal grinding area associated with stone walling.
DW012	30.164567	25.048521	Du Piesanie and Higgitt 2012	Single burial. Name on headstone: Moraka Phillimon Lekgeu. Rising sun image on headstone.
DW013	30.165876	25.048023	Du Piesanie and Higgitt 2012	Stone Walling with possible communal grinding area in close proximity.
DW014	30.165699	25.046040	Du Piesanie and Higgitt 2012	Stone walling around natural boulders. Walls are large and well preserved, with an enclosure approximately 15 m in diameter.

DW015	30.166371	25.042680	Du Piesanie and Higgit 2012	Stone walling associated with a rise. Communal grinding area in close proximity. Potsherds.
DW016	30.165876	25.041617	Du Piesanie and Higgit 2012	Single findspot of MSA flake and potsherd on open, exposed rock surface.
DW017	30.166058	25.041541	Du Piesanie and Higgit 2012	Grinding surface area. Single MSA faceted quartzite flake identified.
DW018	30.166973	25.042140	Du Piesanie and Higgit 2012	Stone Walling - natural boulders packed with stone. Not substantial.
DW019	30.166055	25.040141	Du Piesanie and Higgit 2012	Substantial stone walling, large and well preserved. Enclosure of approximately 15 m diameter with a clearly defined entrance.
DW020	30.167313	25.039673	Du Piesanie and Higgit 2012	Stone walling. Not extensive.
DW021	30.170636	25.039384	Du Piesanie and Higgit 2012	Stone walling. Not extensive and not well preserved.
DW022	30.168057	25.037975	Du Piesanie and Higgit 2012	Stone walling - double walling, straight and approximately 10 m long.
DW023	30.167733	25.037968	Du Piesanie and Higgit 2012	Burial site. 5 graves with no formal headstones. Site lies directly next to D022. Graves have stone surface and are well tended.
DW024	30.165903	25.037968	Du Piesanie and Higgit 2012	Stone walling - enclosure approximately 5 m in diameter.
DW025	30.165837	25.037831	Du Piesanie and Higgit 2012	Burial site. 8 graves with formal headstones and grave dressing. Surface grave goods associated with the graves.
DW026	30.166388	25.037972	Du Piesanie and Higgit 2012	Stone walling, collapsed and not extensive or well preserved.
DW027	30.166986	25.038111	Du Piesanie and Higgit 2012	Stone walling. Straight and approximately 20 m long. Enclosure with entrance. Next to communal grinding area.
DW028	30.167338	25.038549	Du Piesanie and Higgit 2012	Stone walling. Straight and approximately 20 m long. Enclosure with entrance. Next to communal grinding area.
DW029	30.162264	25.033053	Du Piesanie and Higgit 2012	Recent homestead - old fencing found. Cleared area and tomato plants growing. No other physical structures identified.
DW030	30.155789	25.058287	Du Piesanie and Higgit 2012	Stone foundations
DW031	30.156233	25.054522	Du Piesanie and Higgit 2012	Grinding surface area.
DW032	30.155610	25.053214	Du Piesanie and Higgit 2012	Stone walling. Single stone wall. Possibly for erosion gully.
DW033	30.153780	25.053214	Du Piesanie and Higgit 2012	Findspot in erosion gully. MSA and LSA tools identified. Single potsherd with notch identified.
DW034	30.153147	25.052452	Du Piesanie and Higgit 2012	Stone walling. Stone enclosures, one approximately 15 m in diameter. Possibly associated with Choma Village to the north.
DW035	30.152708	25.051990	Du Piesanie and Higgit 2012	Stone walling. Stone enclosures, one approximately 15 m in diameter. Possibly associated with Choma Village to the north.
DW036	30.152679	25.050468	Du Piesanie and Higgit 2012	Stone walling. Stone wall foundations with communal grinding area. Rectangular in shape.
DW037	30.152018	25.049819	Du Piesanie and Higgit 2012	Stone walling - scatter of small stone walls in front of Choma village. Lower grindstone and potsherds found in wash around stone walls. Associated with larger Choma Village.
DW038	30.150404	25.049223	Du Piesanie and Higgit 2012	Stone Walling - rectangular walling. Porcelain found amongst walling. Potsherds also found. Associated with Choma Village.

DW039	30.149830	25.049115	Du Piesanie and Higgit 2012	Stone walling. Large, well preserved circular stone walling. Lower grind stone identified.
DW040	30.157619	25.050016	Du Piesanie and Higgit 2012	Stone walling - Large, well preserved circular stone enclosure approximately 3 m in diameter on the slope of a rise at the bottom of Choma Village.
DW041	30.165339	25.039962	Du Piesanie and Higgit 2012	Ginding surface with 6 large, well defined grinding stone.
DW042	30.164363	25.038591	Du Piesanie and Higgit 2012	Burial site. Area is fenced off and untended. 5 identified graves with headstones and formal grave dressing, the remainder with stone dressing.
DW043	30.163836	25.038433	Du Piesanie and Higgit 2012	Burial site. Area is fenced off and also had large stone walling at its entrance. It is tended. 12 grave sites were identified, 7 with headstones and formal dressing. The remainder with stone dressing. 1 Lower grind stone identified.
DW044	30.163710	25.038350	Du Piesanie and Higgit 2012	Burial site. Area is fenced off and also had large stone walling at its entrance. It is tended. 12 grave sites were identified, 7 with headstones and formal dressing. The remainder with stone dressing. 1 Lower grind stone identified.
DW045	30.164514	25.038680	Du Piesanie and Higgit 2012	Single findspot. Large lower grind stone.
DW046	30.164840	25.052530	Du Piesanie and Higgit 2012	Lower grinding stone.
DW047	30.165536	25.051657	Du Piesanie and Higgit 2012	Single monolith. Possible headstone. No other feature identified.
DW048	30.165573	25.041986	Du Piesanie and Higgit 2012	Possible single burial site.
DW049	30.167576	25.037139	Du Piesanie and Higgit 2012	Stone walling. Single L-shaped wall.
DW050	30.149122	25.039427	Du Piesanie and Higgit 2012	Historic - Trig Beacon
Choma Village	30.150950	25.049600	Pistorius 2006	Historical settlement complex. Several stone walled circles in primary context. Potsherds scattered throughout settlement, several lower grind stones.
C004	30.150950	25.049600	Pistorius 2006	Burial site located within the Choma Village Complex. Surrounded by stone wall enclosure, large and intact.

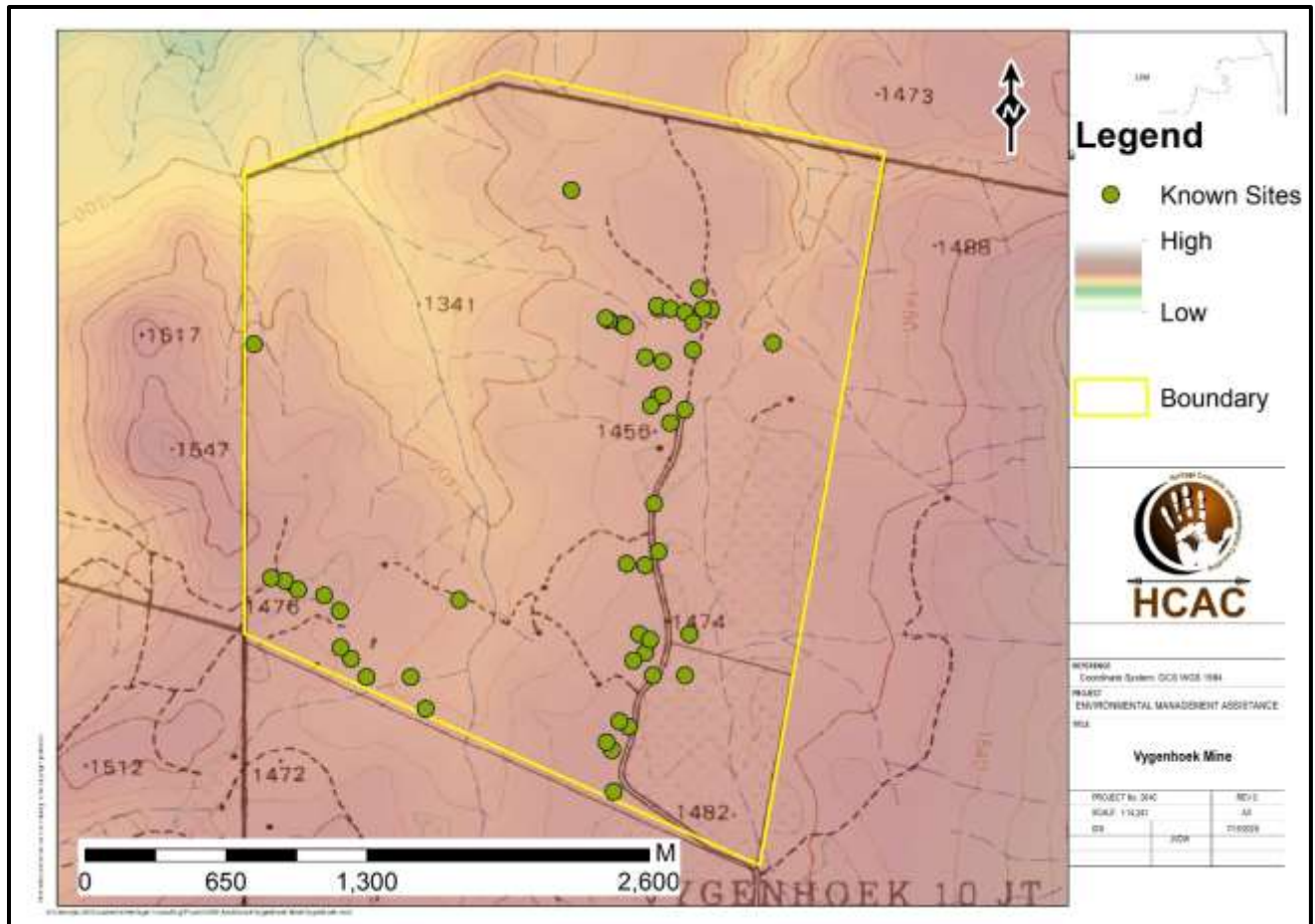


Figure 6. Site distribution

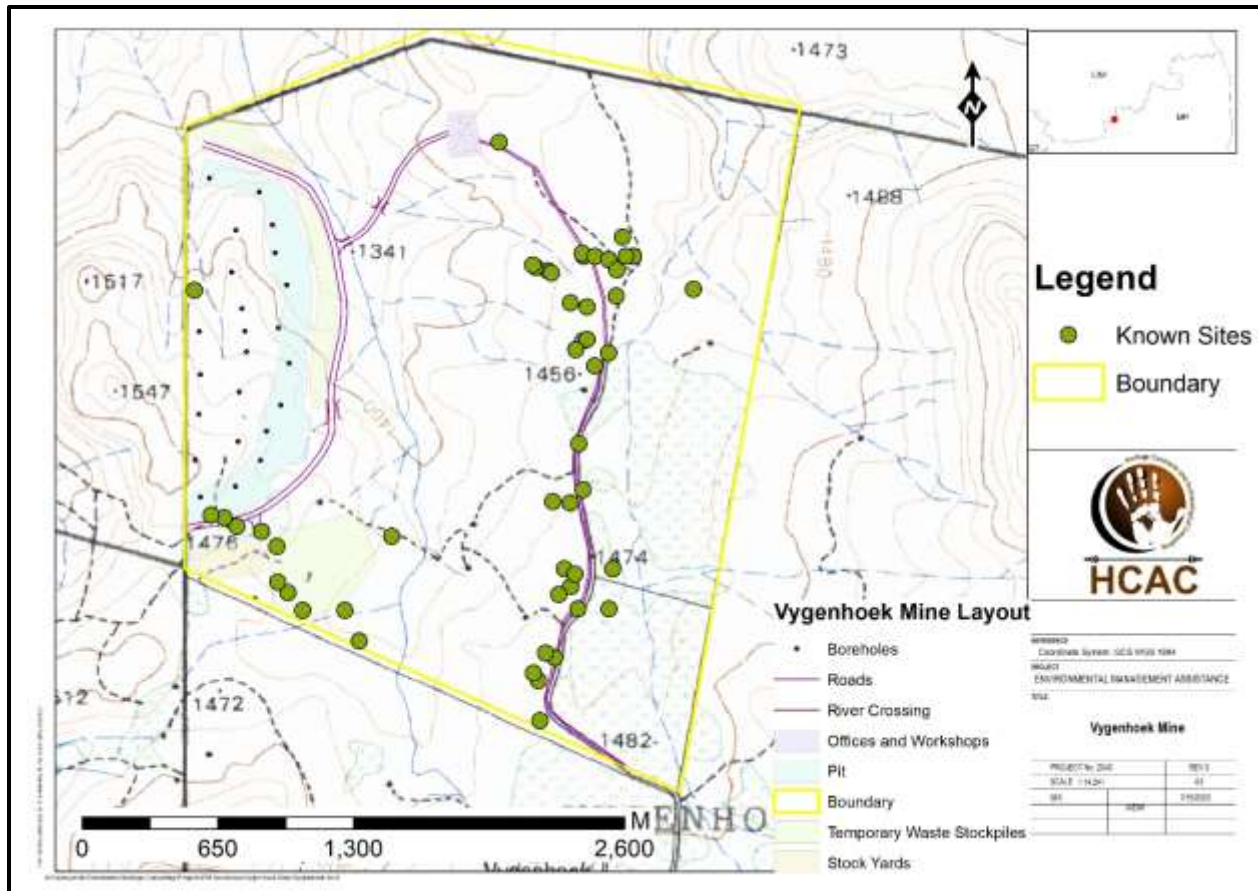


Figure 7: Known sites in relation to the project layout.

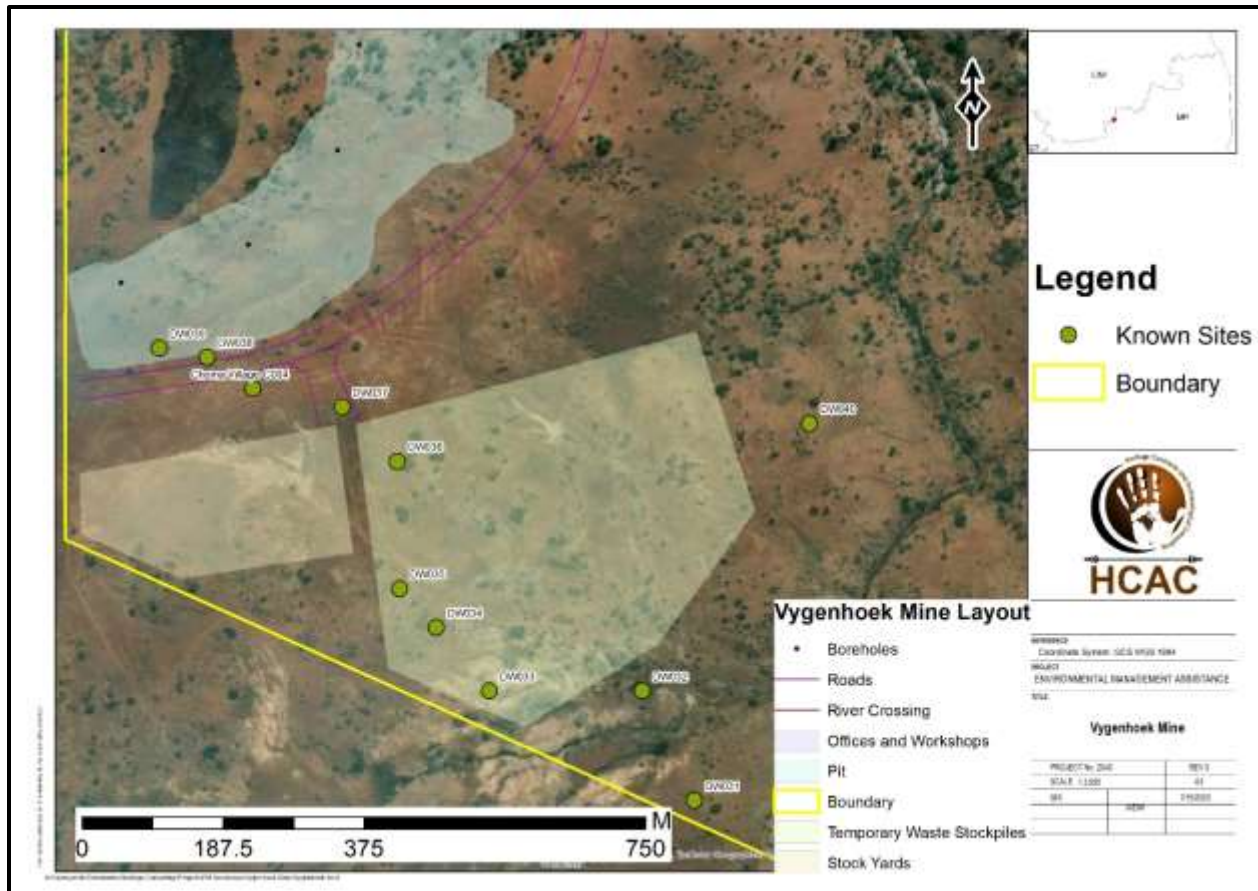
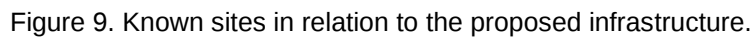


Figure 8. Known sites in relation to project infrastructure.



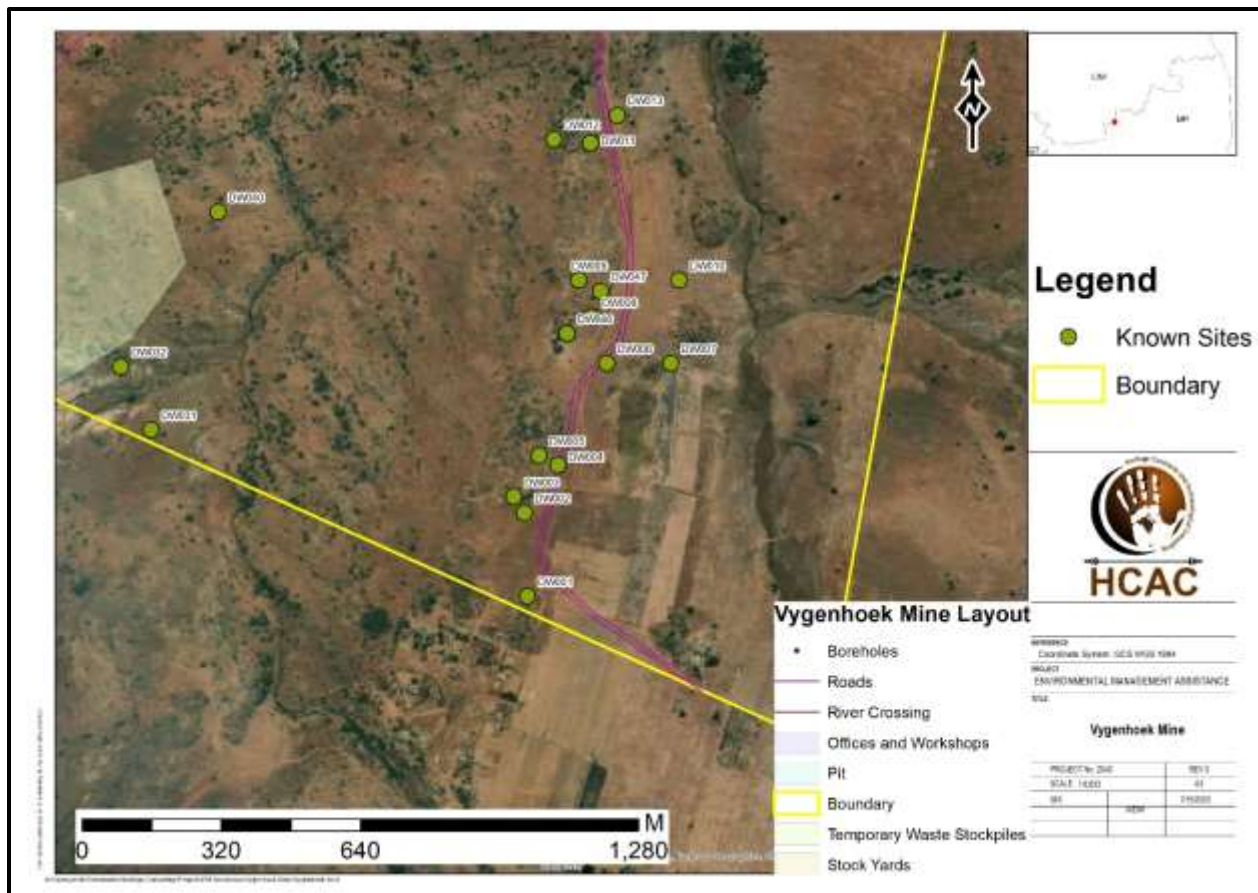


Figure 10. Known sites in relation to project infrastructure.

9. POTENTIAL SIGNIFICANCE OF HERITAGE RESOURCES

Heritage sites in the study area range from Stone Age finds to Iron Age sites, graves and historical features. Graves are of high social significance and are the most sensitive from a heritage perspective. The Dwars River Valley has been the location of numerous mining projects and the various projects have a cumulative negative and permanent impact on the heritage resources of the area. Based on the current information obtained for the area at a desktop level it is anticipated that any sites that occur within the proposed development area will have a Generally Protected B (GP.B) or lower field rating apart from graves that could have a Generally Protected A (GP.A) field rating.

10. CONCLUSIONS AND RECOMMENDATIONS

This brief background study indicates that the general area under investigation has a wealth of heritage sites and a cultural layering dating to the following periods:

- Stone Age artefacts;
- Iron Age Sites;
- Historical features and;
- Graves or cemeteries.

A Heritage Impact Assessment conducted by Du Piesanie and Higgitt (2012) in the project footprint area recorded 50 heritage features. SAHRA commented in 2013 on the project with the following recommendations:

- Avoidance of significant heritage resources (DW001, DW002, DW003, DW005 and DW006).
- The proposed lay out must be adjusted to avoid damage to heritage resources including the cemetery (C004), DW 038, DW039 and DW050.
- The burial grounds located at DW043, DW044 and DW048 must be preserved *in situ* and a Management Plan must be drafted for their conservation.
- The mine plan must be adjusted to exclude the Choma Village Complex from the mining area and a Management Plan must be drafted for its conservation.
- During the construction phase and the mining phase of the proposed development, all burial grounds and graves must be fenced a minimum of 5m away from the grave and a buffer zone of 15m from the fence must be enforced. The mine should also ensure that appropriate measures be implemented to safeguard graves and graveyards from rock fall of blasting activities, such as the implementation of satisfactory buffer zones.
- Further consultation with I&AP's is required in order to determine the precise location of the identified intangible resources. Consensus must be reached between the mine and I&AP's regarding the future of these intangible heritage resources.
- The recommended Fossil Finds Procedure included in the above HIA must be implemented

It is unclear if these recommendations were implemented. Depending the extent of the recorded features the current mine layout could directly impact on the following known sites (Table 3).

Table 3: Know sites that could be impacted on by the current layout.

Number	Longitude	Latitude	Source	Description
DW004	30.164651	25.05525	Du Piesanie and Higgit 2012	Stone walling on rise, some terraced walling. Associated communal grinding area to the south of the stone walls. Close to site DW003.
DW006	30.165661	25.053150	Du Piesanie and Higgit 2012	Stone features, including walling, circles and mounds. Potsherds noted at site.
DW011	30.165325	25.048595	Du Piesanie and Higgit 2012	Some walling, some terracing on the northern side. Possible communal grinding area associated with stone walling.
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DW014	30.165699	25.046040	Du Piesanie and Higgit 2012	Stone walling around natural boulders. Walls are large and well preserved, with an enclosure approximately 15 m in diameter.
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DW018	30.166973	25.042140	Du Piesanie and Higgit 2012	Stone Walling - natural boulders packed with stone. Not substantial.
DW024	30.165903	25.037968	Du Piesanie and Higgit 2012	Stone walling - enclosure approximately 5 m in diameter.
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DW050	30.149122	25.039427	Du Piesanie and Higgit 2012	Historic - Trig Beacon
Choma Village	30.150950	25.049600	Pistorius 2006	Historical settlement complex. Several stone walled circles in primary context. Potsherds scattered throughout settlement, several lower grind stones.
C004	30.150950	25.049600	Pistorius 2006	Burial site located within the Choma Village Complex. Surrounded by stone wall enclosure, large and intact.

10.1. PLAN OF STUDY

With cognisance of the recorded archaeological sites in the area and in order to comply with the National Heritage Resources Act (Act 25 of 1999) it is recommended that a field-based impact assessment should be conducted of the mine layout. During this study known sites of archaeological, historical or places of cultural interest must be verified, recorded, photographed and described. The extent of the sites determined and mitigation proposed should any significant sites be impacted upon, ensuring that all the requirements of the SAHRA are met.

11. REASONED OPINION

If the above recommendations are adhered to, HCAC is of the opinion that the impact of the development on heritage resources can be mitigated. This will be confirmed through the Heritage Impact Assessment to be undertaken. If during the pre-construction phase or during construction, any archaeological finds are made (e.g. graves, stone tools, and skeletal material), the operations must be stopped, and the archaeologist must be contacted for an assessment of the finds. Due to the subsurface nature of archaeological material and graves the possibility of the occurrence of unmarked or informal graves and subsurface finds cannot be excluded.

12. LIST OF PREPARERS

Jaco van der Walt (Archaeologist and project manager).

13. STATEMENT OF COMPETENCY

The author of the report is a member of the Association of Southern African Professional Archaeologists and is also accredited in the following fields of the Cultural Resource Management (CRM) Section, member number 159: Iron Age Archaeology, Colonial Period Archaeology, Stone Age Archaeology and Grave Relocation. Jaco is also an accredited CRM Archaeologist with SAHRA and AMAFA.

Jaco has been involved in research and contract work in South Africa, Botswana, Mozambique, Zimbabwe, Tanzania and the DRC and conducted well over 500 AIAs since he started his career in CRM in 2000. This involved several mining operations, Eskom transmission and distribution projects and infrastructure developments. The results of several of these projects were presented at international and local conferences.

14. STATEMENT OF INDEPENDENCE

I, Jaco van der Walt as duly authorised representative of Heritage Contracts and Archaeological Consulting CC, hereby confirm my independence as a specialist and declare that neither I nor the Heritage Contracts and Archaeological Consulting CC have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which the client was appointed as Environmental Assessment practitioner, other than fair remuneration for work performed on this project.



SIGNATURE:

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