PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT

for

Eco Elementum (Pty) Ltd

for

the proposed expansion of the Moeijelyk Chrome Mine on the remaining extent of the Farm Moeijelijk 412 KS, Sekhukhune, Limpopo

Author ©:

Tobias Coetzee, MA (Archaeology) (UP)

November 2017

Phase 1 Archaeological Impact Assessment for Eco Elementum (Pty) Ltd for the proposed expansion of the Moeijelyk Chrome Mine on the remaining extent of the Farm Moeijelijk 412 KS, Sekhukhune, Limpopo

For: Eco Elementum (Pty) Ltd
The Willows Office Park
559 Farm Road
Die Wilgers
Pretoria
0084

Report No: Moeijelyk 17-328-HIA-PRP

Email: tobias.coetzee@gmail.com

I, Tobias Coetzee, declare that –

- I act as the independent specialist;
- I am conducting any work and activity relating to the proposed expansion of the Moeijelyk Chrome Mine in an objective manner, even if this results in views and findings that are not favourable to the client;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have the required expertise in conducting the specialist report and I will comply with legislation, regulations and any guidelines that have relevance to the proposed activity;
- I have not, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this declaration are true and correct.

Date: 14 November 2017

Executive Summary

The author was appointed by Eco Elementum (Pty) Ltd to undertake an Archaeological Phase 1 study for Bauba A Hlabirwa Mining Investments (Pty) Ltd on the demarcated portions on the remaining extent of the farm Moeijelijk 412 KS, Sekhukhune, Limpopo. The study area is located about 50km north-northwest of Steelpoort and Burgersfort and 65km southeast of Polokwane. Tsibeng is the closest village and borders the study area to the north. The aim of the study is to determine the scope of archaeological resources that could be impacted on by the proposed expansion of the Moeijelyk Chrome Mine.

During the pedestrian survey on the demarcated portions, eight sites were observed. These are: four recent sites falling within the boundary of the proposed New Opencast LG2 area, one stone tool within the boundary of the proposed Dry Tails Area, one stone tool close to the proposed road, two sites dating to historical times falling outside of the areas demarcated for development and Iron Age Farmer Period pottery fragments on the proposed ROM Extension and Wet Tail Area. The pottery fragments and stone tools appear to be out of context as these artefacts are associated with disturbed areas.

The significance of the larger historical and pre-historical landscape must be stressed as the Steelpoort area is well known for numerous and significant Iron Age Farmer remains as well as sites dating to the Historical Period. Several studies done in the area recorded remains dating to these time periods and the remaining extent of the farm Moeijelijk 412 KS is no exception.

Areas demarcated for the expansion of the Moeijelyk Chrome Mine on the Farm Moeijelijk 412 KS, Sekhukhune, Limpopo

The pottery fragment's and stone tools observed within the demarcated boundaries of the proposed development appear to be disturbed by either roads or river courses. This, together with the fact that only a few artefacts were observed indicate a low significance. The recording done during the survey are therefore considered adequate. The recent remains located on the New Opencast LG2 area are of low significance and the recording done during the survey will suffice. Although site MX1 is located outside of the area demarcated for development, it is recommended that this site be recorded via drawings and photographs and a destruction permit be obtained from SAHRA should the need exist to demolish this site.

Subject to adherence of the recommendations and approval by SAHRA the expansion of the mining activities may continue on the demarcated portions. Should skeletal remains be exposed during development and construction phases, all activities must be suspended and the relevant heritage resources authority contacted (See National Heritage and Resources Act, 25 of 1999 section 36 (6)). Also, should culturally significant material be discovered during the course of the said expansion, all activities must be suspended pending further investigation by a qualified archaeologist.

Table of Contents

List of Figures

List of Tables

Appendices

List of Figures in Appendix A

1. Project Background

1.1 Introduction

Eco Elementum (Pty) Ltd appointed the author to undertake an Archaeological Phase 1 study for Bauba A Hlabirwa Mining Investments (Pty) Ltd for the expansion of the Moeijelyk Chrome Mine on a portion of the remaining extent of the farm Moeijelijk 412 KS, Sekhukhune, Limpopo Province (**Figures 1 & 2**). The purpose of this study is to examine the demarcated portions in order to determine if any archaeological resources of heritage value will be impacted on by the proposed expansion of mining activities, as well as to archaeologically contextualise the general study area. The aim of this report is to provide the developer with information regarding the location of heritage resources on the portions demarcated for development.

In the following report, I discuss the implication for the expansion of mining activities on the demarcated portions of the remaining extent of the farm Moeijelijk 412 KS with regard to heritage resources. The legislation section included serves as a guide towards the effective identification and protection of heritage resources and will apply to any such material unearthed during development and construction phases on the demarcated study areas.

1.2 Legislation

The South African Heritage Resources Agency (SAHRA) aims to conserve and control the management, research, alteration and destruction of cultural resources of South Africa and to prosecute if necessary. It is therefore crucially important to adhere to heritage resource legislation contained in the Government Gazette of the Republic of South Africa (Act No.25 of 1999), as many heritage sites are threatened daily by development. Conservation legislation requires an impact assessment report to be submitted for development authorisation that must include an AIA if triggered.

AIAs should be done by qualified professionals with adequate knowledge to (a) identify all heritage resources that might occur in areas of development and (b) make recommendations for protection or mitigation of the impact of the sites.

1.2.1 The EIA and AIA processes

Phase 1 Archaeological Impact Assessments generally involve the identification of sites during a field survey with assessment of their significance, the possible impact development might have and relevant recommendations.

All Archaeological Impact Assessment reports should include:

a. Location of the sites that are found;

b. Short descriptions of the characteristics of each site;

c. Short assessments of how important each site is, indicating which should be conserved and which mitigated;

d. Assessments of the potential impact of the development on the site(s);

e. In some cases a shovel test, to establish the extent of a site, or collection of material, to identify the associations of the site, may be necessary (a pre-arranged SAHRA permit is required); and

f. Recommendations for conservation or mitigation.

This AIA report is intended to inform the client about the legislative protection of heritage resources and their significance and make appropriate recommendations. It is essential to also provide the heritage authority with sufficient information about the sites to enable the authority to assess with confidence:

a. Whether or not it has objections to a development;

b. What the conditions are upon which such development might proceed;

c. Which sites require permits for mitigation or destruction;

d. Which sites require mitigation and what this should comprise;

e. Whether sites must be conserved and what alternatives can be proposed to relocate the development in such a way as to conserve other sites; and

f. What measures should or could be put in place to protect the sites which should be conserved.

When a Phase 1 AIA is part of an EIA, wider issues such as public consultation and assessment of the spatial and visual impacts of the development may be undertaken as part of the general study and may not be required from the archaeologist. If, however, the Phase 1 project forms a major component of an AIA it will be necessary to ensure that the study addresses such issues and complies with Section 38 of the National Heritage Resources Act.

1.2.2 Legislation regarding archaeology and heritage sites

National Heritage Resource Act No.25 of April 1999

Buildings are among the most enduring features of human occupation, and this definition therefore includes all buildings older than 60 years, modern architecture as well as ruins, fortifications and Farming Community settlements. The Act identifies heritage objects as:

- objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects, meteorites and rare geological specimens;
- visual art objects;
- military objects;
- numismatic objects;
- objects of cultural and historical significance;
- objects to which oral traditions are attached and which are associated with living heritage;
- objects of scientific or technological interest;
- books, records, documents, photographic positives and negatives, graphic material, film or video or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996), or in a provincial law pertaining to records or archives;
- any other prescribed category.

With regards to activities and work on archaeological and heritage sites this Act states that:

"No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority." (34. [1] 1999:58)

and

"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 in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites."(35. [4] 1999:58)

and

"No person may, without a permit issued by SAHRA or a provincial heritage resources authority:

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) 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;

(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) and excavation equipment, or any equipment which assists in the detection or recovery of metals." (36. [3] 1999:60)

On the development of any area the gazette states that:

"…any person who intends to undertake a development categorised as:

(a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50m in length;

(c) any development or other activity which will change the character of a site-

i. exceeding 5000m² in extent; or

ii. involving three or more existing erven or subdivisions thereof; or

iii. involving three or more erven or divisions thereof which have been consolidated within the past five years; or

iv. the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10000m² in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development." (38. [1] 1999:62-64)

and

"The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

(a) The identification and mapping of all heritage resources in the area affected;

(b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;

(c) an assessment of the impact of the development on such heritage resources;

(d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;

(e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;

(f) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and

(g) plans for mitigation of any adverse effects during and after the completion of the proposed development." (38. [3] 1999:64)

Human Tissue Act and Ordinance 7 of 1925

The Human Tissues Act (65 of 1983) and Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925) 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 re-burial must be obtained from the relevant Provincial MEC as well as the relevant Local Authorities. Graves 60 years or older fall under the jurisdiction of the National Heritage Resources Act as well as the Human Tissues Act, 1983.

2. Study Area and Project Description

2.1 Location & Physical environment

The study area is located in the Limpopo Province and lies between Polokwane and Steelpoort within the Sekhukhune District Municipality and Fetakgomo Local Municipality. Polokwane is located roughly 65km northwest of the study area and Burgersfort and Steelpoort 50km to the south-southeast. Tzaneen lies about 56km to the north-northeast. In terms of vegetation, the study area falls within the Savannah Biome, which covers approximately 32.8% of South Africa (Mucina & Rutherfords 2006). The northern section and majority of the study area falls within the Sekhukhune Plains Vegetation type. This type of vegetation generally occurs between

altitudes of 700 and 1100 metres above sea level and stretches from the lowlands surrounding Burgersfort and Steelpoort towards Legwareng. It also continues up the Olifants River basin to Tswaing. The Sekhukhune Plains Vegetation type is considered vulnerable and sections are threatened by Chrome and Platinum mining activities, as well as urbanisation. Erosion is high within this vegetation type and donga's often occur (Mucina & Rutherfords 2006).

A section along the southern boundary of the study area falls within the Sekhukhune Mountain Bushveld vegetation type. This type of vegetation is associated with mountains and undulating hills above the Sekhukhune Plains Vegetation type, as well as steeper slopes of certain mountains in the area. The altitude at which this vegetation type occurs is between 900 and 1600 metres above sea level. Sekhukhune Mountain Bushveld is considered to be least threatened, although roughly 15% consists of transformed cultivation and urban built-up. Mining activities also play an increasing role in the transformation of this vegetation type. Erosion range between moderate and high levels and donga's occur in some places (Mucina & Rutherfords 2006). Previous classifications (Acocks 1953) identified this vegetation type as Mixed Bushveld with Sourish Mixed Bushveld along the upper slopes.

Soils in the study area vary between shallow and very shallow course sandy lithosoils. The associated soil types are: Ae 229 and Ae 225 (EMP, Eco Elementum (Pty) Ltd 2015).

The study area falls within the summer rainfall region while the rainy season generally stretches from October to April. Annual rainfall is about 559 mm and generally in the form of thundershowers from the southwest, but light precipitation is often blown in from the east. Frost is not associated with the area. The annual average temperatures may vary between a maximum of 27.1 ºC and a minimum of 12.2 ºC. The study area also forms part of the Lulu Mountains and is associated with a northeast breeze. This effect limits extreme temperatures (EMP, Eco Elementum (Pty) Ltd 2015).

In terms of topography, the general study area falls on the base of a curvilinear chain of mountains of which the elevation ranges between 820m in the valley bottoms and 1399.5 metres above sea level on summits (EMP, Eco Elementum (Pty) Ltd 2015). The elevation of the project area varies between 822 and 1233 metres above sea level.

The study area falls within the Quaternary catchment B71B. The closest perennial river to the study area is the Olifants River, which flows roughly 8.5km to the north. It should be noted that several non-perennial streams exist in the vicinity of the study area.

The residents of Tsibeng currently utilise parts of the study area as grazing/agricultural fields. At present, only

the mining area is fenced-off.

2.2 Project description

According to Red Kite Environmental Solutions (2017) Bauba A Hlabirwa Mining Investments (Pty) Ltd is busy opencast mining the LG6 chromite package of the Moeijelyk Chrome Mine. Bauba plans to expand these mining activities on the mining right area according to the demarcations indicated by **Figure 4** and **Table 1** in order to access additional ore deposits. A wash plant, with its associated residue stockpiles will be established. Residue material from the wash plant will be dried and stockpiled, therefore cancelling the need for the construction of a tailings dam. Bauba proposes the following activities:

- Extension of the existing opencast pit across various watercourses to allow access to the remainder of the LG6
- Mining of all UG on the slope above the current opencast pit
- Development of a new opencast pit across various watercourses to access the LG2 and LG3 areas
- Extension of the ROM stockpile
- Construction of a river crossing (culvert)
- Construction of a wash plant
- Construction of residue drying and stockpiling facilities.

The location of each proposed area is described below:

The Soft Overburden Dump is about 1.85 ha, almost completely forms part of the existing mining activities and is therefore disturbed (**Appendix A: Figure 2**)

Opencast Extension South is located on the southern boundary of the property, is 3.4 ha in size and is almost completely disturbed by current mining activities (**Appendix A: Figure 1**).

Opencast Extension West, located along the western boundary of the property, is 6.62 ha in extent. A larger section of this portion seems to be unaffected by current mining activities according to **Figure 4**. However, the aerial imagery appears to be outdated as the majority of this section has already been affected by mining activities. Steeper slopes and loose rock material characterise this area (**Appendix A: Figure 5**)

The Plant Area, Dry- and Wet Tails areas are located to the north of the current mining activities and are located on undisturbed areas. Open veld and dry watercourses are associated with these areas. The Dry Tails Area (**Appendix A: Figure 12**) is 1.12 ha, the Wet Tails Area (**Appendix A: Figure 14**) 0.27 ha and the Plant Area (**Appendix A: Figure 13**) 0.88 ha in extent.

The ROM Extension is located between New Opencast LG2 and New Opencast LG3 and is 2.12 ha in extent. This rea is relatively flat with a dry watercourse transecting this portion in a NW-SE direction (**Appendix A: Figure 6**).

New Opencast LG2 is associated with several agricultural/grazing fields demarcated by thorn bush boundaries. Several dry watercourses were also observed. The eastern section of this portion is characterised by dense vegetation that hampered movement. New Opencast LG2 is 11.3 ha in extent and runs parallel to current mining activities, but further to the north (**Appendix A: Figure 11**).

A significant section of the New Opencast LG3 area has already been disturbed by current mining activities. The unaffected areas are characterised by dense vegetation and agricultural/grazing fields. The extent for this area is 12 ha and runs parallel to the current mining activities (**Appendix A: Figures 3 – 4**).

New Opencast UG1 & UG2 are located near the top of the mountain, against steep slopes and in the corner of the property. The two sections run parallel to the current mining area, but have been disturbed by illegal mining activities and roads. New Opencast UG1 (**Appendix A: Figures 8 – 9**) is 1.54 ha in extent and New Opencast UG2 (**Appendix A: Figure 10**) 0.98 ha.

The proposed road to be constructed starts at Opencast Extension South and zigzags upslope towards the direction of New Opencast UG1 & UG2. The length of the road is 2.33 km and subject to dense vegetation and very steep slopes (**Appendix A: Figure 7**).

Table 1: Development name & coordinates

Development	Property	Portion	Map Reference (1:50 000)	Coordinates
Soft overburden dump	Moeijelijk 412 KS	A portion of the R/E	2429BD	S: -24.304878 E: 29.964810
ROM extension	Moeijelijk 412 KS	A portion of the R/E	2429BD	S: -24.300309 E: 29.962145
Road	Moeijelijk 412 KS	A portion of the R/E	2429BD	S: -24.304059 E: 29.955787
Dry tails area	Moeijelijk 412 KS	A portion of the R/E	2429BD	S: -24.297834 E: 29.962602
Wet tails area	Moeijelijk 412 KS	A portion of the R/E	2429BD	S: -24.297701 E: 29.964544
Plant area	Moeijelijk 412 KS	A portion of the R/E	2429BD	S: -24.297149 E: 29.963972
Opencast extension west	Moeijelijk 412 KS	A portion of the R/E	2429BD	S: -24.297873 E: 29.952418
Opencast extension south	Moeijelijk 412 KS	A portion of the R/E	2429BD	S: -24.305087 E: 29.961384
New opencast UG1	Moeijelijk 412 KS	A portion of the R/E	2429BD	S: -24.305601 E: 29.951466
New opencast UG2	Moeijelijk 412 KS	A portion of the R/E	2429BD	S: -24.306229 E: 29.950895
New opencast LG2	Moeijelijk 412 KS	A portion of the R/E	2429BD	S: -24.300138 E: 29.963687
New opencast LG3	Moeijelijk 412 KS	A portion of the R/E	2429BD	S: -24.301242 E: 29.961859

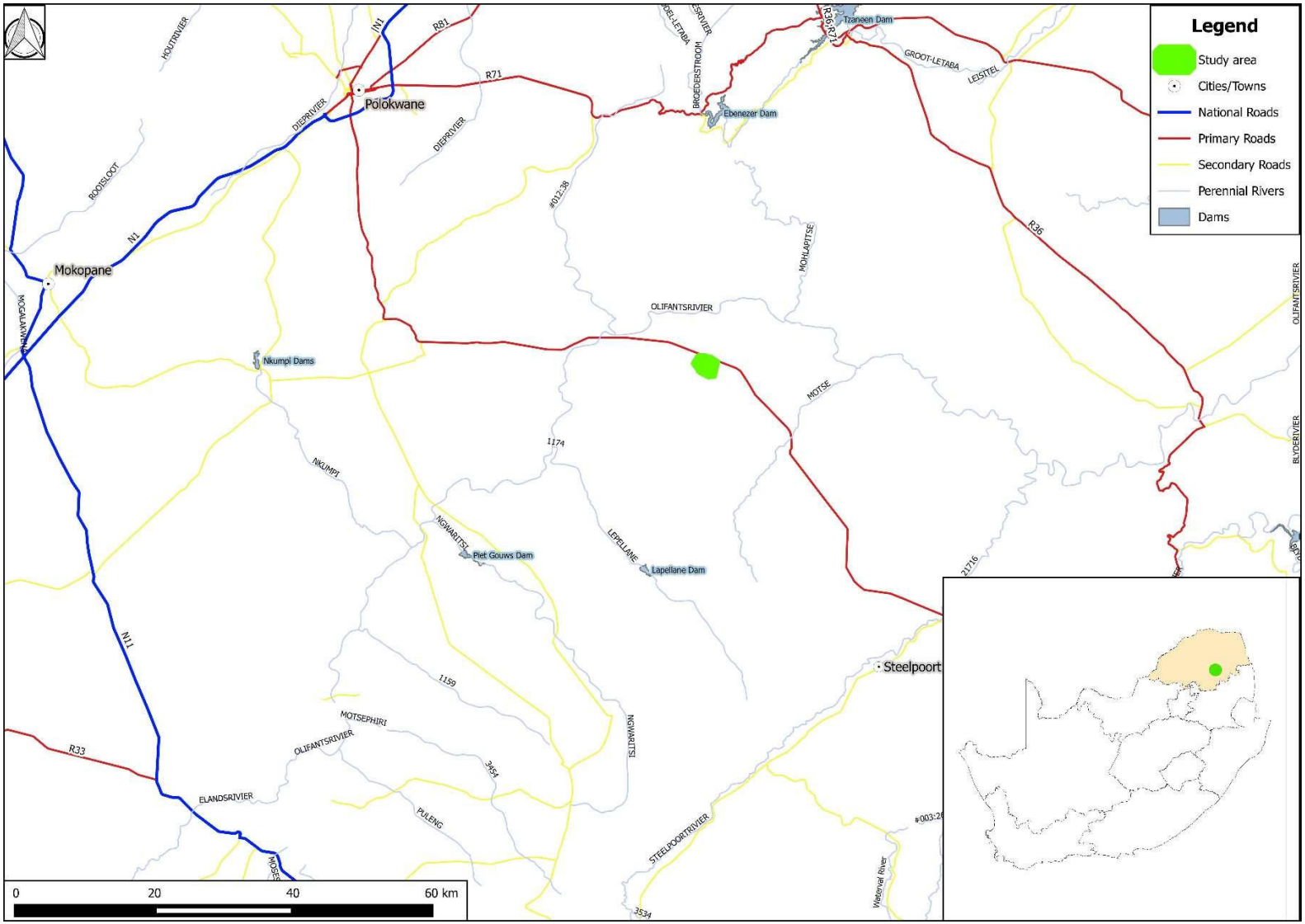

Figure 1: Regional and Provincial location of the study area.

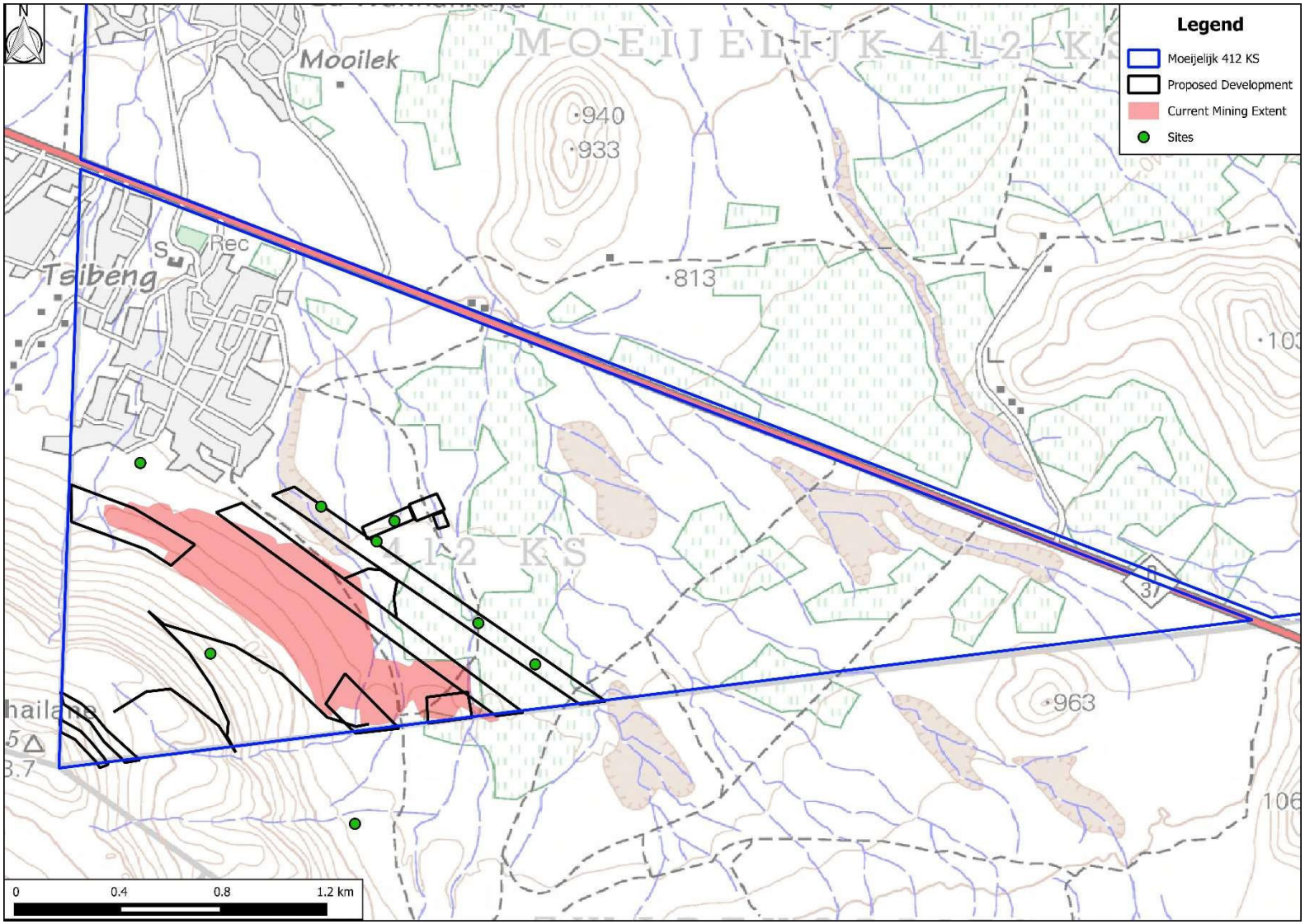

Figure 2: Segment of SA 1: 50 000 2429 BD indicating the study area.

3. Archaeological Background

Southern African archaeology is broadly divided into the Early, Middle and Later Stone Ages; Early, Middle and Late Iron Ages; and Historical or Colonial Periods. This section of the report provides a general background to archaeology in South Africa and also focuses on more site specific elements where relevant.

3.1 The Stone Age

The earliest stone tool industry, the Oldowan, was developed by early human ancestors which were the earliest members of the genus *Homo,* such as *Homo habilis*, around 2.6 million years ago. It comprises tools such as cobble cores and pebble choppers (Toth & Schick 2007). Archaeologists suggest these stone tools are the earliest direct evidence for culture in southern Africa (Clarke & Kuman 2000). The advent of culture indicates the advent of more cognitively modern hominins (Mitchell 2002: 56, 57)

The Acheulean industry completely replaced the Oldowan industry. The Acheulian industry was first developed by *Homo ergaster* between 1.8 to 1.65 million years ago and lasted until around 300 000 years ago. Archaeological evidence from this period is also found at Swartkrans, Kromdraai and Sterkfontein. The most typical tools of the ESA are handaxes, cleavers, choppers and spheroids. Although hominins seemingly used handaxes often, scholars disagree about their use. There are no indications of hafting, and some artefacts are far too large for it. Hominins likely used choppers and scrapers for skinning and butchering scavenged animals and often obtained sharp ended sticks for digging up edible roots. Presumably, early humans used wooden spears as early as 5 million years ago to hunt small animals.

Middle Stone Age artefacts started appearing about 250 000 years ago and replaced the larger Early Stone Age bifaces, handaxes and cleavers with smaller flake industries consisting of scrapers, points and blades. These artefacts roughly fall in the 40-100 mm size range and were, in some cases, attached to handles, indicating a significant technical advance. The first *Homo sapiens* species also emerged during this period. Associated sites are Klasies River Mouth, Blombos Cave and Border Cave (Deacon & Deacon 1999).

Although the transition from the Middle Stone Age to the Later Stone Age did not occur simultaneously across the whole of southern Africa, the Later Stone Age ranges from about 20 000 to 2000 years ago. Stone tools from this period are generally smaller, but were used to do the same job as those from previous periods; only in a different, more efficient way. The Later Stone Age is associated with: rock art, smaller stone tools (microliths), bows and arrows, bored stones, grooved stones, polished bone tools, earthenware pottery and beads. Examples of Later Stone Age sites are Nelson Bay Cave, Rose Cottage Cave and Boomplaas Cave (Deacon & Deacon 1999).

3.2 The Iron Age & Historical Period

The Early Iron Age marks the movement of farming communities into South Africa in the first millennium AD, or around 2500 years ago (Mitchell 2002:259, 260). These groups were agro-pastoralist communities that settled in the vicinity of water in order to provide subsistence for their cattle and crops. Archaeological evidence from Early Iron Age sites is mostly artefacts in the form of ceramic assemblages. The origins and archaeological identities of this period are largely based upon ceramic typologies. Some scholars classify Early Iron Age ceramic traditions into different "streams" or "trends" in pot types and decoration, which emerged over time in southern Africa. These "streams" are identified as the Kwale Branch (east), the Nkope Branch (central) and the Kalundu Branch (west). Early Iron Age ceramics typically display features such as large and prominent inverted rims, large neck areas and fine elaborate decorations. This period continued until the end of the first millennium AD (Mitchell 2002; Huffman 2007). Some well-known Early Iron Age sites include the Lydenburg Heads in Mpumalanga, Happy Rest in the Limpopo Province and Mzonjani in Kwa-Zulu Natal.

The Middle Iron Age roughly stretches from AD 900 to 1300 and marks the origins of the Zimbabwe culture. During this period cattle herding appeared to play an increasingly important role in society. However, it was proved that cattle remained an important source of wealth throughout the Iron Age. An important shift in the Iron Age of southern Africa took place in the Shashe-Limpopo basin during this period, namely the development of class distinction and sacred leadership. The Zimbabwe culture can be divided into three periods based on certain capitals. Mapungubwe, the first period, dates from AD 1220 to 1300, Great Zimbabwe from AD 1300 to 1450, and Khami from AD 1450 to 1820 (Huffman 2007: 361, 362).

The Late Iron Age roughly dates from AD 1300 to 1840. It is generally accepted that Great Zimbabwe replaced Mapungubwe. Some characteristics include a greater focus on economic growth and the increased importance of trade. Specialisation in terms of natural resources also started to play a role, as can be seen from the distribution of iron slag which tend to occur only in certain localities compared to a wide distribution during earlier times. It was also during the Late Iron Age that different areas of South Africa were populated, such as the interior of KwaZulu Natal, the Free State, the Gauteng Highveld and the Transkei. Another characteristic is the increased use of stone as building material. Some artefacts associated with this period are knife-blades, hoes, adzes, awls, other metal objects as well as bone tools and grinding stones.

The Historical period mainly deals with Europe's discovery, settlement and impact on southern Africa. Some topics covered by the Historical period include Dutch settlement in the Western Cape, early mission stations, Voortrekker routes and the Anglo Boer War. This time period also saw the compilation of early maps by missionaries, explorers, military personnel, etc.

3.3 Steelpoort Archaeo-History

The Steelpoort area has a rich history spanning from early to Historical times. Below is a brief account of earlier events in the Steelpoort area.

The general study area is associated with the Pedi, especially since Phiring, a Pedi town, is located roughly 50km the southwest of the study area.

Pedi origins are not clear-cut, but Van Warmelo (1935: 108-110) classified the Pedi under the Central Sotho living in Bopedi (Mönnig 1988: 11). Although oral histories differ, it is generally accepted that Thobele, also known as Lellelateng, is considered to be the founder of the Pedi. Accordingly they moved from the southwest in the vicinity of Pretoria, crossed the Leolo Mountains and settled at Mogokgomeng just south of the Steelpoort station around 1650 (Hunt 1931: 281). It should be noted, however, that when the Pedi first arrived in what later became known as Bopedi, several other groups were already established there. These include Kwena, Roka and Koni groups, of which all recognised the superiority of the first arrivals in the area, the Mongatane (Kwena) (Mönnig 1988: 17). The Pedi recognised the authority of the Mongatane and paid tribute as well. According to Hunt (1931: 277) oral traditions recall conflict between the Pedi and people known as Mapalakat, who were described as having light complexions, long hair, wore long white dresses and carried rifles. They might have been of Arabian origin. Accordingly a few such parties were killed and their rifles taken. Thobele was succeeded by Kabu, who in turn was succeeded by Thobejane. The reign of Thobejane was characterised by a period of peace and prosperity. Moukangwe eventually succeeded Thobejane and in turn was succeeded by Mohube (Mönnig 1988: 19).

During Mohube's reign a significant change took place which led to the creation of the Pedi empire. The exact reasons are not very clear but resulted in the death of Mohube at the hand of the Komane, a Koni group. The new Pedi leader, Mampuru, successfully repulsed a Mongatane attack and defeat the Komane. The Pedi proved victorious and Mampuru organised his regiments into fighting units (Mönnig 1988: 19-20). Conflict ensued between Mampuru and Morwamotše, the rightful heir, and resulted in Mampuru moving away to the north (Hunt 1931: 280). Mampuru also rebuilt his village at a safer location slightly to the north along the Steelpoort River. Dikotope succeeded Morwamotše but clashed with his brother, Thulare. Thulare, with the help of Mampuru, defeated Dikoptope who joined forces with the Mongatane. Under Thulare's reign, the Pedi saw their greatest expansion and period of prosperity (Mönnig 1988: 21).

After Thulare's death in 1824 a period of confusion and disorder followed as disagreement existed among the sons of Thulare. This also resulted in gaps in historic events. During this period of turmoil, the Matabele under Mzilikazi raided a large amount of cattle and fled from the Zulu to the south-western Transvaal. From here, Mzilikazi raided surrounding communities (Posselt 1919: 4). Phethedi, a son of Thulare, encountered one such party and successfully defeated them (Bryant 1929: 427 & Hunt 1931: 285). This, however, was answered by

Mzilikazi who sent an army that crushed the Pedi and killed all remaining sons of Thulare, except for two. Sekwati, one of the two sons who remained, fled with the remaining Pedi to the north and took refuge with the Ramapulana. They returned to Bopedi four years later (Merensky 1899: 71 & Hunt 1931: 286).

After Sekwati's return, his greatest opposition was Morangrang, a Koni leader. Morangarang was apparently defeat by the Kgaga of Mphahlele. Sekwati also defeated his half- brother, Kabu, reduced the power of the Magakala, and re-established the paramountcy of the Pedi (Mönnig 1988: 23). Sekwati settled at Phiring, which is roughly 45km southwest of the current study area. The settlement was located on a rocky hilltop where Sekwati successfully repulsed Swazi and Zulu attacks.

In 1837, a trek under Louis Trichardt saw the first contact between the Voortrekkers and the Pedi under Sekwati. This initial contact was peaceful (Van Rooyen 1951: 97). In 1845 the Voortrekker Hendrik Potgieter entered Bopedi from the south and met with Sekwati. The Voortrekkers then settled to the east at Ohrigstad (Mönnig 1988: 24). The Pedi heartland at this stage was located in the triangular area between the Steelpoort and Olifants Rivers. In certain places, however, their territory did extend to areas north of the Olifants River (Bergh 1999: 157), an area associated with rich iron and copper deposits (Bergh 1999: 8).

The initial peaceful relationship between the Voortrekkers and the Pedi was short-lived as a result of arguments relating to land encroachment and stock-theft. Potgieter unsuccessfully attacked the Pedi at Phiring in 1847 and again in 1852. Afterwards Sekwati relocated his stronghold to Thaba-Mosego on the eastern slopes of the Leolo Mountians and called his village Tšate. It should be noted that the Leolo Mountians border the study area to the south. On 17 November 1857, a peace treaty was signed between the Boers and the Pedi and saw a period of peace. On 22 September 1861, Sekwati died and the chieftainship was forcefully taken by Sekhukhune (Mönnig 1988: 24-26).

A period of strife and unrest existed during Sekhukhune's reign. Again, initial relations with the Boers were peaceful and both parties accepted the Steelpoort River as boundary. During this time, two groups of Swazi sought refuge with the Pedi and Sekhukhune allowed them to settle in the Leolo Mountains. The Swazi sent an army to recapture these groups, but was crushed by the Pedi. Sekhukhune also welcomed missionary work and allowed a mission station to be built closer to Tšate. Many people were converted, also Sekhukhune's half-brother, Johannes Dinkwanyane. Johannes Dinkwanyane and Merensky, however, fled with their following to Botšabelo near Middelburg in November of 1864. This was the result of Sekhukhune regarding missionary work as a threat to his rule (Mönnig 1988: 26-28). In 1873 Dinkwanyane moved with a considerable Koni following to the Spekboom valley north of Lydenburg or Mashishing as it is known as today, and Sekhukhune accepted him as a Pedi chief. Here Johannes Dinkwanyane established Mafolofolo. His aim was to move to Elandspruit, which used to be Koni territory, but was made difficult by the Lydenburg Landdros (Delius & Schoeman 2008: 155).

The first Sekhukhune War started on 16 May 1876 and to a large extent resulted from conflict originating from land encroachment. After the Boers successfully defeated Dinkwanyane's stronghold they moved towards Tšate, but retreated after they failed to dislodge the Pedi (Mönnig1988: 28-29). Fort Weeber was built west of the Leolo Mountains to hold the boundary between the Pedi and the Boers, but also to harass the Pedi where possible. The fort was manned by Captain Ferreira and 100 men (Van Rooyen 1951: 266). Later, as second fort, Fort Burgers was built at the Steelpoort River (**Figure 3**).

In February of 1877 Pedi and Boer representatives met at Botšabelo to discuss peace terms. The treaty was signed on 15 February 1877. The treaty stated that the Pedi had to pay 2000 head of cattle and that the Pedi would become subjects of the Republic. Two months later, however, the British annexed the Transvaal but considered the treaty valid. The Pedi would therefore be recognised as British subjects. The British under Sir Theophilus Shepstone demanded a payment of 2000 head of cattle from the Pedi. This set the stage for the second Sekhukhune war when a full payment could not be made. Accordingly, the Pedi sent raiding parties across the border. With the end of the Zulu war General Sir Garnet Wolseley proposed peace with the Pedi should they agree with the following terms: Sekhukhune should recognise the sovereignty of the British Crown, pay taxes to the British Government in Transvaal, permit the erection of several forts in Bopedi, and pay a fine of 2500 head of cattle. Sekhukhune refused and Sir Garnet Wolseley mobilised his army of about 12000 men. Sir Garnet Wolseley defeated Sekhukhune on 28 November 1878 and was sent to prison in Pretoria. This crushed the Pedi empire and ended the Sekhukhune era (Mönnig1988: 30-31).

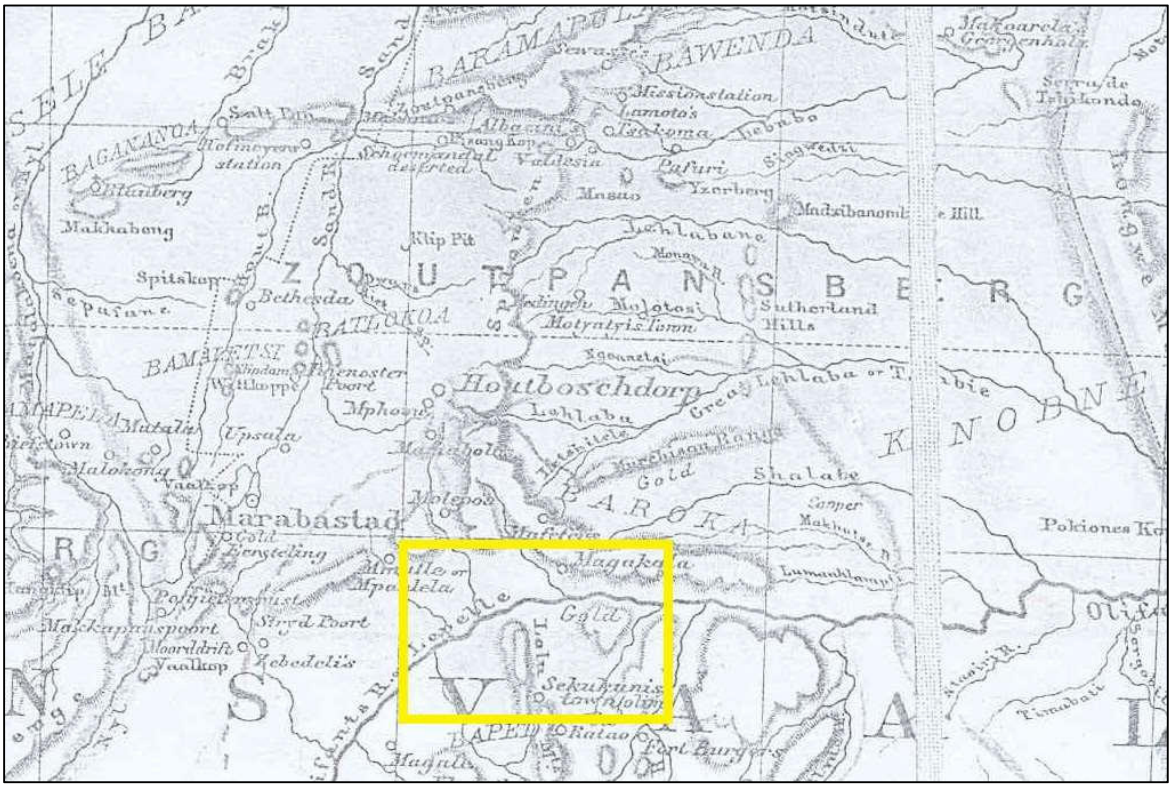

Figure 3: Rough indication of the study area on a map compiled by Merensky (Extract from: Merensky 1880).

4. Methodology

I conducted archaeological reconnaissance of the study area through a systematic pedestrian site survey where possible and an unsystematic survey where not. The transects were spaced roughly 60m apart where possible and sites were recorded via GPS (Global Positioning System) location and photographic record (**Table 2**). Also, the site was inspected beforehand on Google as well as black and white aerial imagery in order to identify possible heritage remains. No remains, however, were observed on aerial imagery. The transects stretched in a northwest – southeast direction and followed contour lines (**Figure 4**). The total area surveyed was roughly 42 ha. It should be noted that the area indicated as 'Current mining extent' on **Figure 4** was plotted from Google Earth and that the actual extent of the current mining activities are somewhat larger, especially towards the north-eastern side. For safety reasons, the areas within the mining boundary were accessed using a vehicle, while the surrounding areas were accessed on foot.

The reconnaissance of the area under investigation served a twofold purpose:

- To obtain an indication of heritage material found in the general area as well as to identify or locate archaeological sites on the demarcated portions of the remaining extent of the farm Moeijelijk 412 KS. This was done in order to establish a heritage context and to supplement background information that

would benefit the mining company through identifying areas that are sensitive from a heritage perspective.

- All archaeological and historical events have spatial definitions in addition to their cultural and chronological context. Where applicable, spatial recording of these definitions were done by means of a handheld GPS during the site visit.

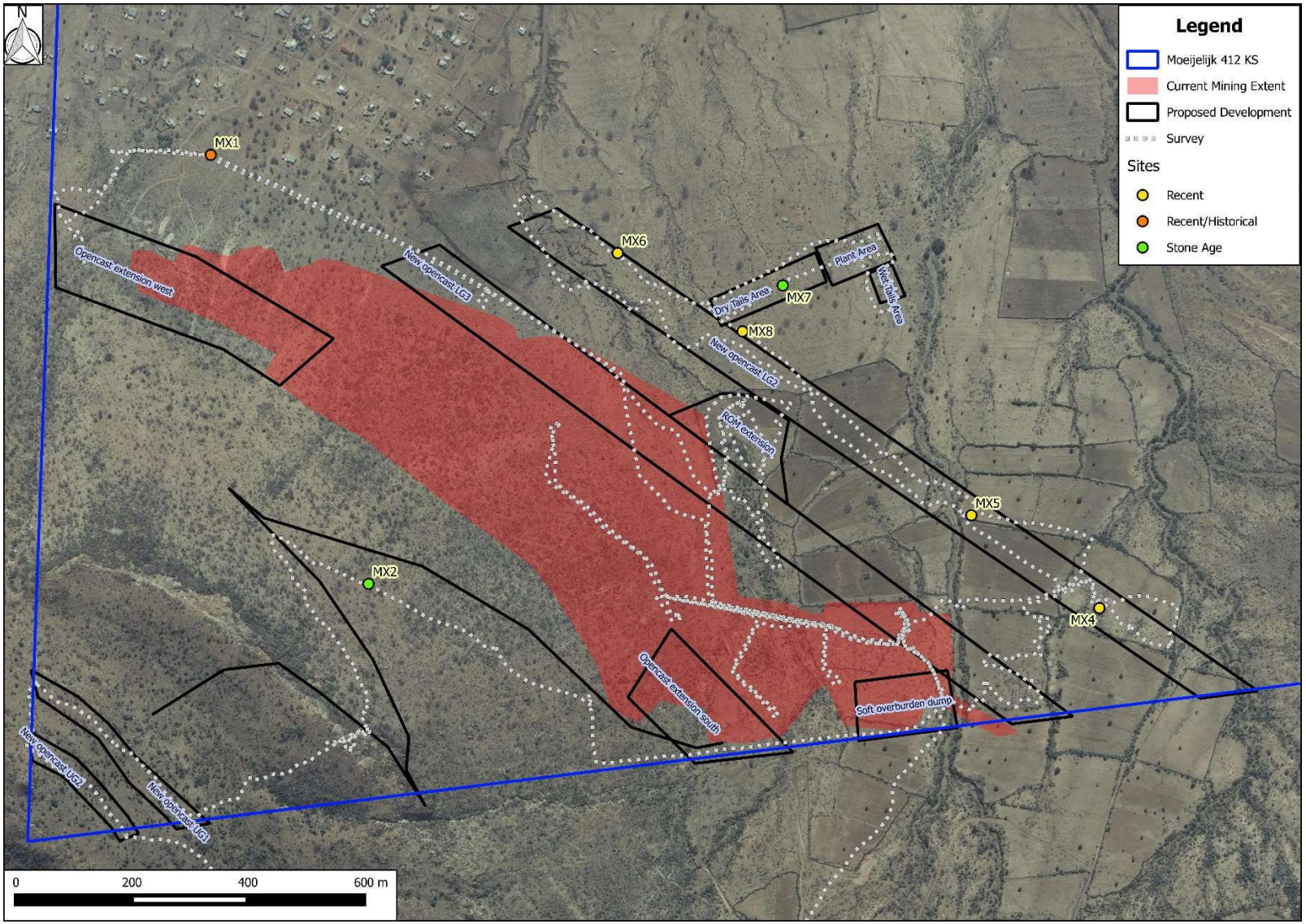

Figure 4: Study area with survey transects.

Table 2: Site coordinates

Site / Survey Point Name	Longitude	Latitude
MX 1	29.953010	-24.295501
MX 2	29.955691	-24.302790
MX 3	29.961214	-24.309298
MX 4	29.968105	-24.303201
MX 5	29.965931	-24.301624
MX 6	29.959922	-24.297169
MX 7	29.962726	-24.297719
MX 8	29.962043	-24.298499

4.1 Sources of information

At all times during the survey, I followed standard archaeological procedures for the observation of heritage resources. As most archaeological material occurs in single or multiple stratified layers beneath the soil surface, I paid special attention to disturbances; both man-made such as roads and clearings, and those made by natural agents such as burrowing animals and erosion. I recorded locations of archaeological material remains by means of a Garmin Oregon 550 GPS and photographed these sites as well as general conditions on the terrain with a Sony Cyber-shot camera.

I conducted a literature study, which incorporated previous work done in the region, in order to place the study area into context from a heritage perspective.

Personal communication with Mr. James Gordon from the Moeijelyk Chrome Mine revealed that apart from the one foundation falling outside of the footprint to be developed, no other material of heritage significate existed (James Gordon, pers. comm. 2017). In addition, Mr. Amos accompanied me on the survey to provide security due to an increased threat level from illegal mining activity in the general area. Mr. Amos is form the local community and proved valuable information regarding certain stone features.

4.1.1 Previous research

A study done by Frans Roodt on the farm Brakfontein 464 KS, which borders the remaining extent of the farm Moeijelijk 412 KS, identified several weathered pottery fragments. Some of these fragments were identified as belonging to the Eiland facies (Roodt 2003: 6) of the Kalundu Tradition. The most likely date range for these potsherds are between AD 1000 and 1300 (Huffman 2007: 227). Other material located during his study include grinding stones and an Achatina shell bead (Roodt 2003: 5). Roodt (2003) also identified seven clearly identifiable Early and Middle Iron Age sites. Remains include an Early Iron Age Doornkop site with associated midden deposits, a high concentration of pottery, bone and hut rubble. According to Roodt (2003) the Doornkop sites predate the Late Iron Age Pedi communities and are of scientific value. Recommendations included phase 2 test pit excavation at certain sites.

Frans Roodt conducted an archaeological study on the greater Zwartkoppies 413 KS and Moeijelijk 412 KS farms. Roodt (2002a) located nine Early Iron Age sites belonging to the Doornkop cultural tradition. Although some site are disturbed original floors were still found in situ. Two of these sites were classified as having medium significance and required mitigation before destruction. Sixteen Middle Iron Age sites belonging to the Eiland cultural tradition were located, of which at least one site is undisturbed. Again two of these sites were classified as having medium significance and required mitigation before destruction. Roodt (2002a) also located one Late Iron Age site in a disturbed state. The associated pottery fragments belong to the Moloko cultural tradition. The allocated significance was low, but still required mitigation before being destroyed.

Another archaeological survey, located roughly 10km to the west of the study area, was conducted by Frans Roodt (2002b) in 2002. This study identified similar material culture compared to the study done on the Brakfontein 464 KS farm with the exception of an eggshell and iron bead (Roodt 2002b). Roodt (2002a, 2002b & 2003) also observed scattered Middle Stone Age flakes.

A farm to the south of the study area, Klipfontein 465 KS, revealed several Iron Age/Historic open scatter sites as well as isolated Iron Age/Historic occurrences and features classified as having no significance. Material associated with these sites include ceramic fragments and grinding stones located in abandoned fields and erosion gullies (Karodia 2013: 27, 38).

4.2 Limitations

The vegetation on the study area consists mainly of thick thorn bushes and shrubs (**Figures 5 - 7**). The general visibility of the upslope area was poor during the time of surveying as a result of dense vegetation, steep slopes, as well as a significant amount of loose rocks occurring over the entire surface (November 2017). The north-eastern section also proved difficult to survey as a result of dense thorn bushes used to demarcate agricultural/grazing field boundaries. The eastern corner of New Opencast LG2 could not be accessed, but appear to consist of an agricultural field. Mr. Gordon (pers. comm. 2017) confirmed this. The exact route of the proposed road upslope could not be followed due to the steep gradient and dense vegetation. However, the closest practicable route was followed which included part of a nearby existing road.

Figure 5: Environment towards the northern section of the study area.

Figure 6: Environment next to the proposed road.

Figure 7: Different agricultural fields demarcated using thorn bush.

5. Archaeological and Historical Remains

5.1 Stone Age Remains

Two Middle Stone Age flakes were observed on the surface of the study area and are generally found in eroded areas. MX2 (**Figure 8**) was observed on the existing road leading upslope and MX7 (**Figure 9**) on the proposed Dry Tails Area. No concentration of stone tools were observed. Three studies done by Frans Roodt in the vicinity of the study area (2002a, 2002b & 2003) identified scattered Middle Stone Age flakes.

Although there were limited Stone Age archaeological remains visible, more might occur in the area. These artefacts are often associated with rocky outcrops or water sources. **Figures 10 - 12** below are examples of stone tools often associated with the Early, Middle and Later Stone Age of southern Africa.

Figure 8: Stone tool MX 2.

Figure 9: Stone tool MX 7.

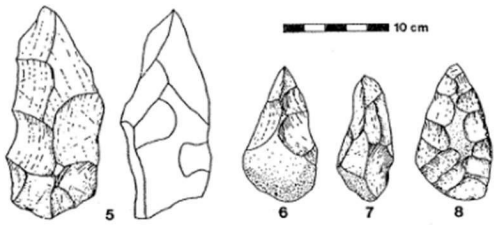

Figure 10: ESA artefacts from Sterkfontein (Volman 1984).

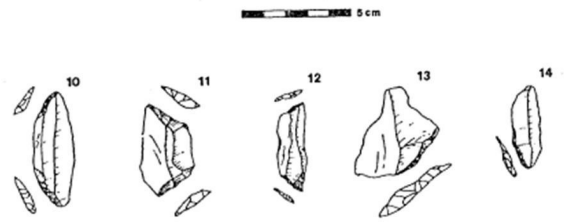

Figure 11: MSA artefacts from Howiesons Poort (Volman 1984).

Figure 12: LSA scrapers (Klein 1984).

5.2 Iron Age Farmer Remains

I found several pottery fragments belonging to the Iron Age Farmer Period within the demarcated study areas. Fragments were observed within the ROM Extension area (**Figure 13**), the area between New Opencast LG2 and LG3 (**Figure 14**), and one decorated potshard within the Wet Tails Area (**Figure 15**). These fragments appear not be concentrated and are associated with disturbed areas.

Figure 13: Pottery fragments from the ROM extension.

Figure 14: Pottery fragments from between New Opencast LG2 and LG3.

Figure 15: Decorated pottery fragment form the Wet Tails Area.

5.3 Historical Remains

I found two sites that might date to historical times: MX1 & MX3. MX1 (**Figure 16**) consists of a stone foundation measuring about 7 X 3m and is located north of the proposed Opencast Extension West area and not within any of the areas demarcated for development. I observed no material culture associated with this site. A site road borders MX1 to the north and the actual current mining extent is much closer than is indicated on **Figure 4**. MX3 (**Figure 17)** is located a significant distance to the south of the proposed development and on a different property. This site consists of partially intact angular and circular walls that appear to have been a homestead. This site, however, is not at risk of being destroyed by the proposed development.

One of the studies conducted by Frans Roodt in 2002 on a farm roughly 10km to the west of the study area, identified a series of historical occupation sites along the slope of a mountain (Roodt 2002b: 11). Another study conducted by Roodt in 2002 in the general area identified 18 recent historical sites. Eight of these sites have associated burials (Roodt 2002a).

Figure 16: Historical foundation MX 1.

Figure 17: Historical homestead MX 3.

5.4 Recent remains

Recent remains observed within the demarcated areas include several sites associated with collecting wood and drying maize. On several occasions, three rows of stones measuring about 0.5 X 2m were observed (**Figure 18**). Collected wood are stacked on top of these structures to ease the process of tying the stacks together. Other features consist of a single row of stones packed in a rectangular formation (MX4 – MX6, MX8). These features are used to dry maize and dimensions are generally about 6 X 6m (**Figures 19 – 22**).

Figure 18: Structure used to tie collected wood together.

Figure 19: Maize platform MX 4.

Figure 20: Maize platform MX 5.

Figure 21: Maize platform MX 6.

Figure 22: Maize platform MX 8.

5.5 Graves

No graves were observed during the survey. According to Mr. Amos, however, a grave was located near the entrance to the site offices but has since been relocated to a formal graveyard. The neighbouring farm to the southwest revealed several graveyards. These graveyards, however, are associated with a nearby village (Roodt 2003: 6). The study done by Karodia (2013) on the farm to the south of the study area identified two informal burial grounds comprising roughly 21 graves. These graves consist of packed stones and was given a field rating of IV A.

6. Evaluation

The significance of an archaeological site is based on the amount of deposit, the integrity of the context, the kind of deposit and the potential to help answer present research questions. Historical structures are defined by Section 34 of the National Heritage Resources Act, 1999, while other historical and cultural significant sites, places and features, are generally determined by community preferences.

A fundamental aspect in the conservation of a heritage resource relates to whether the sustainable social and economic benefits of a proposed development outweigh the conservation issues at stake. There are many aspects that must be taken into consideration when determining significance, such as rarity, national significance, scientific importance, cultural and religious significance, and not least, community preferences. When, for whatever reason the protection of a heritage site is not deemed necessary or practical, its research

potential must be assessed and if appropriate mitigated in order to gain data / information which would otherwise be lost. Such sites must be adequately recorded and sampled before being destroyed.

Because the findings within the demarcated portions of the remaining extent of the farm Moeijelijk 412 KS are either of recent origin or are out of context, the sites have a low significance level and do not require additional research.

6.1 Field Rating

All sites should include a field rating in order to comply with section 38 of the National Heritage Resources Act (Act No. 25 of 1999). The field rating and classification in this report is prescribed by SAHRA.

Table 3: Field Ratings

Rating	Field Rating/Grade	Significance	Recommendation
National	Grade 1		National site
Provincial	Grade 2		Provincial site
Local	Grade 3 A	High	Mitigation not advised
Local	Grade 3 B	High	Part of site should be retained
General protection A	4 A	High/Medium	Mitigate site
General Protection B	4 B	Medium	Record site
General Protection C	4 C	Low	No recording necessary

Table 4: Individual site ratings

Site / Survey Point Name	Type	Rating	Field Rating/Grade	Significance	Recommendation
MX 1	Foundation	General Protection B	4 B	Medium	Record site
MX 2	Stone tool	General Protection C	4 C	Low	No recording necessary
MX 3	Homestead	General Protection B	4 B	Medium	Record site
MX 4	Maize drying	General Protection C	4 C	Low	No recording necessary
MX 5	Maize drying	General Protection C	4 C	Low	No recording necessary
MX 6	Maize drying	General Protection C	4 C	Low	No recording necessary
MX 7	Stone tool	General Protection C	4 C	Low	No recording necessary
MX 8	Maize drying	General Protection C	4 C	Low	No recording necessary

7. Statement of Significance & Recommendations

7.1 Statement of significance

The demarcated portions for the extension of current mining activities of the Moeijelyk Chrome Mine

I observed several areas of heritage importance on the areas demarcated for the expansion of mining activities. Several potsherd fragments were observed on the areas ROM Extension and Wet Tails Area, but because river courses cross these portions the context is disturbed. Also, because only a few fragments were observed, the significance is considered to be low.

A single stone tool was observed on the Dry Tails Area and near the proposed road. Again the context is disturbed by either a watercourse or road. Because only single stone tools were observed, the context is considered to be low.

The Recent/Historical sites observed (MX1 & MX3) fall outside of the areas demarcated for development and should therefore not be at risk from destruction. No other sites of heritage importance were observed on the remaining demarcated portions.

Generally, the sites fall within an archaeologically rich and sensitive area, as can be seen from the studies done by Roodt (2002a, 2002b & 2003) and Karodia (2013). Accordingly, there is a strong association with Early and Middle Iron Age remains that stretch to the Historical Period in the post-Sekhukhune wars era. The most information available, however, is found in oral histories identifying the Pedi as a key role player in the general area. The pottery fragments observed within the study area possibly date to the Iron Age Farmer Period, while it is likely that the angular foundations date to historical times. The possibility of informal graves located within this area should be kept in mind.

7.2 Recommendations

The archaeological and historical landscape around Steelpoort infers a rich and diverse cultural horizon. Therefore, the following recommendations are made in terms with the National Heritage Resources Act (25 of 1999) in order to avoid the destruction of heritage remains in areas demarcated for development:

- The context of the stone tools observed at sites MX2 and MX7 appear to be disturbed and are therefore of low significance. The recording done during the survey is deemed sufficient.

- Site MX1 falls outside of the area demarcated for development and should therefore not be impacted by development. However, should site MX1's existence be threatened by development, it is recommended that the site be recorded via drawings and photographs and that a destruction permit be obtained from SAHRA. There is a high probability that the site exceeds 60 years of age and are therefore protected under the National Heritage Resources Act, 25 of 1999 section 36 (6).

- Because site MX3 is located on a different property and a significant distance from the Moeijelyk Chrome Mine, this site should be reassessed when development is proposed on the specific property.

- Sites MX4 – MX6 and MX8 are of recent origin and therefore of low heritage significance. The recoding done during this study is regarded as sufficient.

- Because archaeological artefacts generally occur below surface, the possibility exists that culturally significant material may be exposed during the development and construction phases, in which case all activities must be suspended pending further archaeological investigations by a qualified archaeologist. Also, should skeletal remains be exposed during development and construction phases, all activities must be suspended and the relevant heritage resources authority contacted (See National Heritage Resources Act, 25 of 1999 section 36 (6)).

- Should the need arise to expand the development beyond the surveyed area mentioned in this study, the following applies: a qualified archaeologist must conduct a full Phase 1 Archaeological Impact Assessment (AIA) on the sections beyond the demarcated areas which will be affected by the expansion, in order to determine the occurrence and extent of any archaeological sites and the impact development might have on these sites.

- From a heritage point of view, development may proceed on the demarcated portions, subject to the abovementioned conditions, recommendations and approval by the South African Heritage Resources Agency.

8. Addendum: Terminology

Archaeology:

The study of the human past through its material remains.

Artefact:

Any portable object used, modified, or made by humans; e.g. pottery and metal objects.

Assemblage:

A group of artefacts occurring together at a particular time and place, and representing the sum of human activities.

Context:

An artefact's context usually consist of its immediate *matrix* (the material surrounding it e.g. gravel, clay or sand), its *provenience* (horizontal and vertical position within the matrix), and its *association* with other artefacts (occurrence together with other archaeological remains, usually in the same matrix).

Cultural Resource Management (CRM):

The safeguarding of the archaeological heritage through the protection of sites and through selvage archaeology (rescue archaeology), generally within the framework of legislation designed to safeguard the past.

Excavation:

The principal method of data acquisition in archaeology, involving the systematic uncovering of archaeological remains through the removal of the deposits of soil and other material covering and accompanying it.

Feature:

An irremovable artefact; e.g. hearths or architectural elements.

Ground Reconnaissance:

A collective name for a wide variety of methods for identifying individual archaeological sites, including consultation of documentary sources, place-name evidence, local folklore, and legend, but primarily actual fieldwork.

Matrix:

The physical material within which artefacts is embedded or supported, i.e. the material surrounding it e.g. gravel, clay or sand.

Phase 1 Assessments:

Scoping surveys to establish the presence of and to evaluate heritage resources in a given area.

Phase 2 Assessments:

In-depth culture resources management studies which could include major archaeological excavations, detailed site surveys and mapping / plans of sites, including historical / architectural structures and features. Alternatively, the sampling of sites by collecting material, small test pit excavations or auger sampling is required.

Sensitive:

Often refers to graves and burial sites although not necessarily a heritage place, as well as ideologically significant sites such as ritual / religious places. *Sensitive* may also refer to an entire landscape / area known for its significant heritage remains.

Site:

A distinct spatial clustering of artefacts, features, structures, and organic and environmental remains, as the residue of human activity.

Surface survey:

There are two kinds: (1) unsystematic and (2) systematic. The former involves field walking, i.e. scanning the ground along one's path and recording the location of artefacts and surface features. Systematic survey by comparison is less subjective and involves a grid system, such that the survey area is divided into sectors and these are walked ally, thus making the recording of finds more accurate.

9. References

Acocks, J. P. H. 1953. *Veld types of South Africa*. Pretoria: Government Printer.

Bergh, J. L. 1999. *Geskiedenisatlas van Suid-Afrika: Die Vier Noordelike Provinsies*. Pretoria: Van Schaik Uitgewers.

Bryant, A. T. 1929. *Olden Times in Zululand and Natal*. London: Longmans, Green.

Clarke, R. J. & Kuman, K. 2000. *The Sterkfontein Caves Palaeontological and Archaeological Sites*. Johannesburg: University of the Witwatersrand.

Deacon, H. & Deacon, J. 1999. *Human beginnings in South Africa.* Cape Town: David Philip.

Delius, P. & Schoeman, M.H. 2008. Revisiting Bokoni: populating the stone ruins of the Mpumalanga Escarpment. In Swanepoel, N., Esterhuysen, A., Bonner, P. (eds) *Five Hundred Years Rediscovered: Southern African Precedents and Prospect, 500 Years Initiative 2007 Conference Proceedings*: 135-167. Johannesburg: Wits University Press.

Eco Elementum (Pty) Ltd. 2015. *Environmental Management Plan I.R.O. An Application for a Bulk Sample on a portion of the remaining extent of the farm Moeijelijk 412 KS, Limpopo Province*. Eco Elementum (Pty) Ltd.

Huffman, T. N. 2007. *Handbook to the Iron Age.* Pietermaritzburg: UKZN Press.

Hunt, D. R. 1931. An Account of the Bapedi. *Bantu Studies V: 291-326.*

Karodia, S. 2013. *Heritage Impact Assessment for the proposed Bokoni Klipfontein Opencast Mine Project, Klipfontein 465 KS, Sekhukhune, Limpopo Province*. Digby Wells Environmental.

Klein, R. G. (ed.) 1984. *South African prehistory and paleoenvironments*. Rotterdam: Balkema.

Merensky, A. 1899. *Erinnerungen aus dem Missionsleben in Transvaal 1859-1882*. Berlin: Evnagel. Missiongesellschaft.

Mitchell, P. 2002. *The archaeology of southern Africa.* Cambridge: Cambridge University Press.

Mönnig, H. O. 1988. *The Pedi*. Pretoria: J.L. van Schaik.

Mucina, L. & Rutherford, M. C. 2006. *The Vegetation of South Africa, Lesotho and Swazil*and.. Pretoria: South African National Biodiversity Institute, Strelitzia 19.

Posselt, F. W. T. 1919. Mzilikazi, The Rise of the Amandebela. *Rhod. Sci. Ass. XVIII*.

Red Kite Environmental Solutions. 2017. Bauba A Hlabirwa Mining Investments: Moeijelyk Chrome Mine Mining Right Amendment Project Description. Red Kite Environmental Solutions.

Roodt, F. 2002a. *Phase 1 Heritage Assessment: Potlaki: Farms Zwartkoppies 413 KS & Moeijelijk 412 KS, Limpopo Province*. R & R Cultural Resource Consultants.

Roodt, F. 2002b. *Phase 1 Heritage Assessment: Lebowa Platinum Mines: Atok Lepelle Open Cast Mine Merensky and UG 2 Reefs, Limpopo Province*. R & R Cultural Resource Consultants.

Roodt, F. 2003. *Phase 1 Heritage Assessment: Lebowa Platinum Mines: Atok Brakfontein Shaft & Associated Infrastructure, Limpopo Province*. R & R Cultural Resource Consultants.

Toth, N. & Schick, K. 2007. *Handbook of paleoanthropology*. Berlin: Springer.

Van Rooyen, T. S. 1951. Die verhouding tussen die Boere, Engelse en Naturelle in die geskiedenis van die Oos-Transvaal tot 1882. *Archives year book for South African History XVII*.

Van Warmelo, N. J. 1935. *A Preliminary Survey of the Bantu Tribes of South Africa*. Pretoria: Government Printer.

Volman, T. P. 1984. Early Prehistory of southern Africa. In: Klein, R. G. (ed.) *Southern African prehistory and paleoenvironments*. Rotterdam: Balkema.

Human Tissue Act No. 65 of 1983, Government Gazette, Cape Town

National Heritage Resource Act No.25 of 1999, Government Gazette, Cape Town

Removal of Graves and Dead Bodies Ordinance No. 7 of 1925, Government Gazette, Cape Town

Maps

Merensky, A. 1880. Map of the Transvaal.

Appendix A:
General site conditions of individual areas to be developed

Figure 1: Opencast extension south.

Figure 2: Soft overburden dump.

Figure 3: Undisturbed central section of New Opencast LG3.

Figure 4: Undisturbed eastern section of New Opencast LG3.

Figure 5: Undisturbed section of Opencast Extension West.

Figure 6: Rom Extension.

Figure 7: Road uphill.

Figure 8: Undisturbed section of New Opencast UG1.

Figure 9: Disturbed section of New Opencast UG1.

Figure 10: Undisturbed section of New Opencast UG2.

Figure 11: New Opencast LG2.

Figure 12: Dry Tails Area.

Figure 13: Plant Area.

Figure 14: Wet Tails Area.