

PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT

for

**the proposed opencast
mining and initial site areas
of the Northern and Southern
Clusters of the Bauba
Platinum Farms Mining
Project, Sekhukhune,
Limpopo**

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November 2017

Phase 1 Archaeological Impact Assessment for the proposed opencast mining and initial site areas of the Northern and Southern Clusters of the Bauba Platinum Farms Mining Project, Sekhukhune, Limpopo

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I, Tobias Coetzee, declare that –

- I act as the independent specialist;
- I am conducting any work and activity relating to the proposed Bauba Platinum Farms Mining Project 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: 24 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 for the Bauba Platinum Farms Mining Project Mining Right application. The study consists of three areas: Waterkop opencast area, Northern Cluster and Southern Cluster. The Northern Cluster is located about 57km southeast of Polokwane, Waterkop 43km northwest of Steelpoort and the Southern Cluster 30km west-northwest of Steelpoort. The aim of the study is to determine the scope of archaeological resources that could be impacted on by the proposed mining activities of these areas.

During the pedestrian survey on the demarcated portions, eight sites were observed. These are: one stone tool and pottery fragments within the initial area of the Northern Cluster; one pottery fragment and two stone-walling sites at the main area of the Northern Cluster; one stone-walling, one concentrated and one recent/historical site at the Main area of the Southern Cluster. The pottery fragments and stone-walling appear to date to the Iron Age/Farmer Period and the stone tools to the Middle Stone Age.

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.

Areas demarcated for the Bauba Platinum Farms Mining Project, Sekhukhune, Limpopo

The pottery fragments and stone tools observed within the demarcated boundaries of the proposed initial area of the Northern Cluster appear to be disturbed by a combination of agricultural fields, gullies and a soccer field. 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 Waterkop opencast area and initial area of the Southern Cluster revealed no material of heritage significance. The heritage sites observed within the boundaries of the main areas of the Northern and Southern Clusters point toward larger and more complex sites and will therefore require an archaeological survey of all the demarcations associated with the main areas.

Subject to adherence of the recommendations and approval by SAHRA mining activities may continue on the Waterkop opencast area, as well as the initial areas of the Northern and Southern Clusters. Development on the main areas of the Northern and Southern Clusters should not continue until these areas have been completely surveyed, recommendations made and feedback received by SAHRA. Prospecting/Drilling on addition land portions may also continue, but due to the sensitive archaeological landscape, it is recommended that a qualified archaeologist inspect each site before development. 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 development, all activities must be suspended pending further investigation by a qualified archaeologist.

Table of Contents

Executive Summary	3
1. Project Background	7
1.1 Introduction	7
1.2 Legislation.....	7
1.2.1 The EIA and AIA processes	8
1.2.2 Legislation regarding archaeology and heritage sites	9
2. Study Area and Project Description	12
2.1 Location & Physical environment	12
2.2 Project description.....	14
3. Archaeological Background	19
3.1 The Stone Age	19
3.2 The Iron Age & Historical Period.....	20
3.3 Steelpoort Archaeo-History	21
4. Methodology	24
4.1 Sources of information	25
4.1.1 Previous research	25
4.2 Limitations	26
5. Archaeological and Historical Remains	29
5.1 Stone Age Remains	29
5.2 Iron Age Farmer Remains.....	31
5.3 Historical Remains	36
5.4 Recent remains	37
5.5 Graves.....	37
6. Evaluation	38
6.1 Field Rating	38
7. Statement of Significance & Recommendations	39
7.1 Statement of significance	39
7.2 Recommendations	40
8. Addendum: Terminology	42
9. References	43

List of Figures

Figure 1: Regional and Provincial location of the study areas.	18
Figure 2: Rough indication of the study area on a map compiled by Merensky (Extract from: Merensky 1880).	21
Figure 3: Upslope area of the Waterkop section.	27
Figure 4: Environment of the Northern Cluster's main area.	27
Figure 5: Donga on the main area of the Northern Cluster.	28
Figure 6: Patches of dense vegetation at the Southern Cluster.	28
Figure 7: Stone tools at NC1.	30
Figure 8: ESA artefacts from Sterkfontein (Volman 1984).	30
Figure 9: MSA artefacts from Howiesons Poort (Volman 1984).	30
Figure 10: LSA scrapers (Klein 1984).	31
Figure 11: NC2 - Pottery fragments from the waste rock dump 1 area at the Northern Cluster.	32
Figure 12: NC3 – pottery fragment at the Northern Cluster.	32
Figure 13: NC4 – single row of stones at the Northern Cluster.	33
Figure 14: NC5 – Stone walling at the Northern Cluster.	33
Figure 15: SC2 – Stone-walling at the Southern Cluster.	34
Figure 16: Stone-walling associated with SC3 at the Southern Cluster.	34
Figure 17: Part of a grinding stone associated with SC3 at the Southern Cluster.	35
Figure 18: Stone cairns Associated with SC3 at the Southern Cluster.	35
Figure 19: Stone circle SC1.	37

List of Tables

Table 1: Northern Cluster development name & coordinates	16
Table 2: Waterkop development name & coordinates	16
Table 3: Southern Cluster development name & coordinates.	17
Table 4: Site coordinates	25
Table 5: Field Ratings	38
Table 6: Individual site ratings.	39

Appendices

Appendix A: General site conditions of individual areas to be developed.	A
Appendix B: Maps.	i

List of Figures in Appendix A

Figure 1: Northern Cluster – Initial – Return Water Dam	B
Figure 2: Northern Cluster – Initial – Offices and Workshops	B
Figure 3: Northern Cluster – Initial – Waste Rock Dump	C
Figure 4: Northern Cluster – Initial – Shaft.....	C
Figure 5: Northern Cluster – Initial – gully.....	D
Figure 6: Northern Cluster – Main – Shaft	D
Figure 7: Northern Cluster – Main – Return Water Dam.....	E
Figure 8: Northern Cluster – Main – donga.....	E
Figure 9: Upslope view from Waterkop Opencast 1 along the northern border	F
Figure 10: Downslope view from Waterkop Opencast 1 along the southern border	F
Figure 11: Upslope view from Waterkop Opencast 2 along the northern border	G
Figure 12: Downslope view from Waterkop Opencast 2 along the southern border	G
Figure 13: General environment of the Waterkop section as viewed from NW to SE.....	H
Figure 14: Southern Cluster – Initial – Return Water Dam.....	H
Figure 15: Southern Cluster – Initial – Waste Rock Dump.....	I
Figure 16: Southern Cluster – Initial – Shaft	I
Figure 17: Southern Cluster – Initial – Offices and Workshops	J
Figure 18: Southern Cluster – Main – Shaft.....	J
Figure 19: Southern Cluster – Main – Waste Water Treatment Plant.....	K

List of Figures in Appendix B

Figure 1: Segment of SA 1: 50 000 2429 BD indicating the Northern Cluster	ii
Figure 2: Northern Cluster initial area with survey transects.....	iii
Figure 3: Northern Cluster main area with survey transects	iv
Figure 4: Segment of SA 1: 50 000 2430 AC indicating the Waterkop area	v
Figure 5: Waterkop opencast area with survey transects	vi
Figure 6: Segment of SA 1: 50 000 2430 CA indicating the Southern Cluster.....	vii
Figure 7: Southern Cluster initial & main areas with survey transects	viii

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 Bauba Platinum Farms Mining Project Mining Right Application. The project is split into two phases and cover three areas: The Northern Cluster, Southern Cluster and Waterkop area. Phase one deals with the opencast mining of two sections within the Waterkop area, while phase two deals with the underground mining of the Northern and Southern Clusters. The Waterkop area is located on the farm Waterkop 113 KT (**Figure 1 & Appendix B: Figure 4**), the Northern Cluster on the farm Schoonoord 462 KS (**Figure 1 & Appendix B: Figure 1**) and the Southern Cluster on the farms Genokakop 285 KT and Groot Vygenboom 284 KT (**Figure 1 & Appendix B: Figure 6**), Sekhukhune, Limpopo. The purpose of this study is to examine the demarcated Waterkop area and initial portions of the Northern and Southern Clusters in order to determine if any archaeological resources of heritage value will be impacted on by the proposed mining activities. Certain sections of the Main Areas of the Northern and Southern Clusters were inspected as well in order to determine whether heritage resources might be expected. Additionally, this study archaeologically contextualises the general study area and will serve as an indication of the type of heritage resources to be expected during continued prospecting/drilling of the larger 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 during the initial phases of the Northern and Southern Clusters and the opencast mining of the Waterkop area.

In the following report, I discuss the implication for the proposed mining activities on the demarcated portions of the Waterkop, Northern and Southern Cluster areas 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 areas are located in the Limpopo Province and lie between Polokwane and Steelpoort within the Sekhukhune District Municipality and Fetakgomo Local Municipality.

Opencast Waterkop Area

The Waterkop section is located about 77km southeast of Polokwane and 43km northwest of Steelpoort. The two sections demarcated for opencast mining are located near the top of a lone standing section of the Leolo Mountains, which are about 6km to the west. The R37 road between Burgersfort and Polokwane runs 3.5km to the east. At present, several mines are located along the eastern foot of the mountain while some illegal mining take place at the top of the mountain. The elevation of the two areas demarcated for opencast mining are 1300 metres above sea level (**Figure 1 & Appendix B: Figure 4**).

The study area falls within the Quaternary catchment B71B. The closest perennial river to the study area is the Motse River, which flows roughly 5.7km to the southeast. It should be noted that several non-perennial streams exist in the vicinity of the study area.

Northern Cluster

The Northern Cluster is located about 57km southeast of Polokwane and 60km northwest of Steelpoort. The proposed cluster consists of 14 demarcations with the initial section being located about 1.7km to the west of the main area. This area is located towards the northern parts of the Leolo Mountains and in the valley bottom. The R37 road between Burgersfort and Polokwane runs 5.7km to the north. No mining activities are found in the immediate vicinity of the proposed development. The average elevation of the areas demarcated for mining is 870 metres above sea level (**Figure 1 & Appendix B: Figure 1**).

The study area falls within the Quaternary catchment B52G. The closest perennial river to the study area is the Olifants River, which flows roughly 4.4km to the west of the proposed initial development. It should be noted that several non-perennial streams exist in the vicinity of the study area.

Southern Cluster

The Southern Cluster is located about 95km southeast of Polokwane and 30km west-northwest of Steelpoort. The proposed cluster consists of 13 demarcations with the initial section located along the eastern boundary. This area is located roughly in the middle of the Leolo Mountains and near the top of the mountain. This area is remote with no quick access to main roads. No mining activities are found in the immediate vicinity of the proposed development. The average elevation of the areas demarcated for mining is 1600 metres above sea level (**Figure 1 & Appendix B: Figure 6**).

The study area falls within the Quaternary catchment B71B. The closest perennial river to the study area is the Motse River, which divides the cluster into a western and eastern half. It should be noted that several non-perennial streams exist in the vicinity of the study area.

Vegetation and rainfall

The study area falls within the Savannah Biome, which covers approximately 32.8% of South Africa (Mucina & Rutherford 2006). The Northern Cluster 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 & Rutherford 2006).

The Waterkop area and Southern Cluster fall 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 fall 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 & Rutherford 2006). Previous classifications (Acocks 1953) identified this vegetation type as Mixed Bushveld with Sourish Mixed Bushveld along the upper slopes.

A part of the Initial area to be developed of the Southern Cluster falls on Leolo Summit Sourveld. This vegetation unit is associated with discontinuous summits on the Leolo Mountain range, which extends to the norite massif of the Dwars River Mountains further to the south. Leolo Summit Sourveld is found between 1700 – 1920 metres above sea level. In terms of conservation, this vegetation unit is considered vulnerable and has a conservation target of 24%. The majority of this vegetation type has been disturbed by subsistence agriculture and is threatened by mining activity. Erosion in the area varies between moderate and very high (Mucina & Rutherford

2006).

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 °C and a minimum of 12.2 °C. The study area is associated with a northeast breeze that limits extreme temperatures (EMP, Eco Elementum (Pty) Ltd 2015).

2.2 Project description

Bauba A Hlabirwa Mining Investments (Pty) Ltd appointed Red Kite Environmental Solutions (2017) to undertake the required scopes of work for obtaining Environmental Authorisations, Mining Rights and Water Use Licenses for the proposed Bauba Platinum Farms Mining Project.

Phase 1 of the proposed project concerns the opencast mining of the Waterkop section located on the Farm Waterkop 113 KT. This section consists of two linear demarcated areas running in a NW-SE direction near the top of a lone standing mountain. Several mines operate at the foot of the mountain. Proposed Opencast Area 1 is roughly 1.2km X 77m and Opencast Area 2 is 1.4km X 50m. The total area amounts to roughly 14ha (**Table 2 & Appendix B: Figure 5**). Platinum Group Metals will be mined through a typical grid-by-grid truck and shovel method. Initial development will consist of topsoil striping and stockpiling, followed by drilling and blasting of the rock face. Run of Mine (ROM) will be handled with large front-end loaders and trucks and will be transferred to an off-site processing plant for further processing. Waste rock will be stockpiled until sufficient space is available inside the pit area (Red Kite Environmental Solutions 2017). The general environment of the Waterkop section consists of very steep gradients and thick vegetation cover. The closest mining activity occurs about 600m downslope of the proposed opencast mining (**Appendix A: Figure 9 – 13**). Some sections at the top of the mountain, however, are somewhat disturbed by illegal mining activity.

Phase 2 deals with the construction of two underground mines: The Northern and Southern Clusters. This phase plans to mine Platinum Group Metals (PGMs) such as Platinum, Rhodium and other associated minerals through the underground board-and-pillar mining methods. Initial shaft areas with associated infrastructure have been identified at both clusters (Red Kite Environmental Solutions 2017).

According to Red Kite Environmental Solutions (2017) exploration activities on the five farms associated with the Northern Cluster (Schoonoord 462 KS, Indie 474 KS, Zwitserland 473 KS, Fisant Laagte 506 KS and Waterkop 113 KT) identified a feasible target area on the Schoonoord farm. The target area consists of a 5ha initial area and a 145ha main area. Early access to the shallower parts of the oar body will be obtained through the initial

shaft, which will be sunk to a depth of 1800mbs. The shallower portion of the ore body starts at 1500mbs while the main shaft will access ore at a depth of 3000mbs. The sinking and equipping of the primary shaft will continue while primary access will be obtained from the initial shaft. A triple decline system will be used to connect the two shafts. The initial area consists of a shaft, waste rock dump, return water dam and offices and workshops (**Table 1; Appendix A: Figures 1 – 4; Appendix B: Figure 2**). The main area will consist of the following infrastructure: Accommodation, beneficiation plant, shaft (**Appendix A: Figure 6**), two offices and workshop areas, two return water dams (**Appendix A: Figure 7**), tailings storage facilities, waste rock dump and a waste water treatment plant (**Table 1 & Appendix B: Figure 3**). The general environment of the Northern Cluster initial area is characterised by a flat valley bottom, sparse vegetation, a soccer field, erf demarcations through the use of thorn bush and several erosion gullies (**Appendix A: Figure 5**). The section where the main mining area will be located is characterised by dense vegetation, deep donga's (**Appendix A: Figure 8**) and several agricultural fields.

According to Red Kite Environmental Solutions (2017), exploration activities on the three farms associated with the Southern Cluster (Groot Vygenboom 284 KT, Genokakop 285 KT and Houtbosch 323 KT) identified a feasible target area on the Groot Vygenboom and Genokakop farms. The target area consists of a 5ha initial area and a 45ha main area. Early access to the Merensky and UG2 horizons will be obtained through the initial shaft towards the eastern boundary of the proposed development. The vertical shaft will continue to a depth of 1800mbs. Trackless equipment will hoist the mined ore to the surface, where the material will be stored in separate Merensky and UG2 silos prior to being transferred via conveyor for further beneficiation. Red Kite Environmental Solutions (2017) anticipates the construction of a concentrator and smelting infrastructure in order to concentrate PGMs prior to off-site transportation to refineries. The initial area consists of a shaft, waste rock dump, return water dam and offices & workshops (**Table 3 & Appendix A: Figures 14 – 17**). The main area will consist of the following infrastructure: Accommodation, beneficiation plant, shaft (**Appendix A: Figure 18**), offices and workshop, two return water dams, tailings storage facility, waste water treatment plant (**Appendix A: Figure 19**) and a waste rock dump (**Table 3 & Appendix B: Figure 7**). The general environment of the Southern Cluster is characterised by a hilltop environment, grassland and a nearby river.

Table 1: Northern Cluster development name & coordinates

Development	Property	Portion	Map Reference (1:50 000)	Coordinates
Initial Offices & workshops 1	Schoonoord 462 KS	0	2429BD	S: -24.320761 E: 29.800633
Initial Return water dam 1	Schoonoord 462 KS	0	2429BD	S: -24.319554 E: 29.799548
Initial shaft	Schoonoord 462 KS	0	2429BD	S: -24.320231 E: 29.799513
Initial Waste rock dump	Schoonoord 462 KS	0	2429BD	S: -24.321150 E: 29.798713
Main Accommodation	Schoonoord 462 KS	0	2429BD	S: -24.315949 E: 29.819277
Main Beneficiation plant	Schoonoord 462 KS	0	2429BD	S: -24.327068 E: 29.820227
Main Offices and workshops 2	Schoonoord 462 KS	0	2429BD	S: -24.321090 E: 29.818901
Main Offices and workshops 3	Schoonoord 462 KS	0	2429BD	S: -24.321325 E: 29.821835
Main Return water dam 2	Schoonoord 462 KS	0	2429BD	S: -24.318715 E: 29.822116
Main Return water dam 3	Schoonoord 462 KS	0	2429BD	S: -24.325270 E: 29.822797
Main shaft	Schoonoord 462 KS	0	2429BD	S: -24.323994 E: 29.822358
Main Tailings storage facility	Schoonoord 462 KS	0	2429BD	S: -24.325814 E: 29.825980
Main Waste rock dump	Schoonoord 462 KS	0	2429BD	S: -24.328630 E: 29.822795
Main Waste water treatment plant	Schoonoord 462 KS	0	2429BD	S: -24.319993 E: 29.824079

Table 2: Waterkop development name & coordinates

Development	Property	Portion	Map Reference (1:50 000)	Coordinates
Opencast 1	Waterkop 113 KS	RE	2430AC	S: -24.380460 E: 30.023610
Opencast 2	Waterkop 113 KS	RE	2430AC	S: -24.379419 E: 30.024364

Table 3: Southern Cluster development name & coordinates

Development	Property	Portion	Map Reference (1:50 000)	Coordinates
Initial Offices & workshops 1	Groot Vygenboom 284 KT	0	2430CA	S: -24.605345 E: 30.041572
Initial Return water dam 1	Groot Vygenboom 284 KT	0	2430CA	S: -24.605398 E: 30.040070
Initial shaft	Groot Vygenboom 284 KT	0	2430CA	S: -24.605036 E: 30.040604
Initial Waste rock dump 1	Groot Vygenboom 284 KT	0	2430CA	S: -24.604233 E: 30.040642
Main Accommodation	Genokakop 285 KT	0	2430CA	S: -24.609626 E: 30.040332
Main Beneficiation plant	Groot Vygenboom 284 KT	0	2430CA	S: -24.601088 E: 30.040285
Main shaft	Groot Vygenboom 284 KT	0	2430CA	S: -24.599063 E: 30.032591
Main Offices & workshops 2	Groot Vygenboom 284 KT	0	2430CA	S: -24.601868 E: 30.036655
Main Return water dam 2	Groot Vygenboom 284 KT	0	2430CA	S: -24.601686 E: 30.031749
Main Return water dam 3	Groot Vygenboom 284 KT	0	2430CA	S: -24.603150 E: 30.030286
Main Tailings storage facility	Groot Vygenboom 284 KT	0	2430CA	S: -24.603645 E: 30.028925
Main Waste rock dump 2	Groot Vygenboom 284 KT	0	2430CA	S: -24.597910 E: 30.037214
Main Waste water treatment plant	Groot Vygenboom 284 KT	0	2430CA	S: -24.600770 E: 30.033338

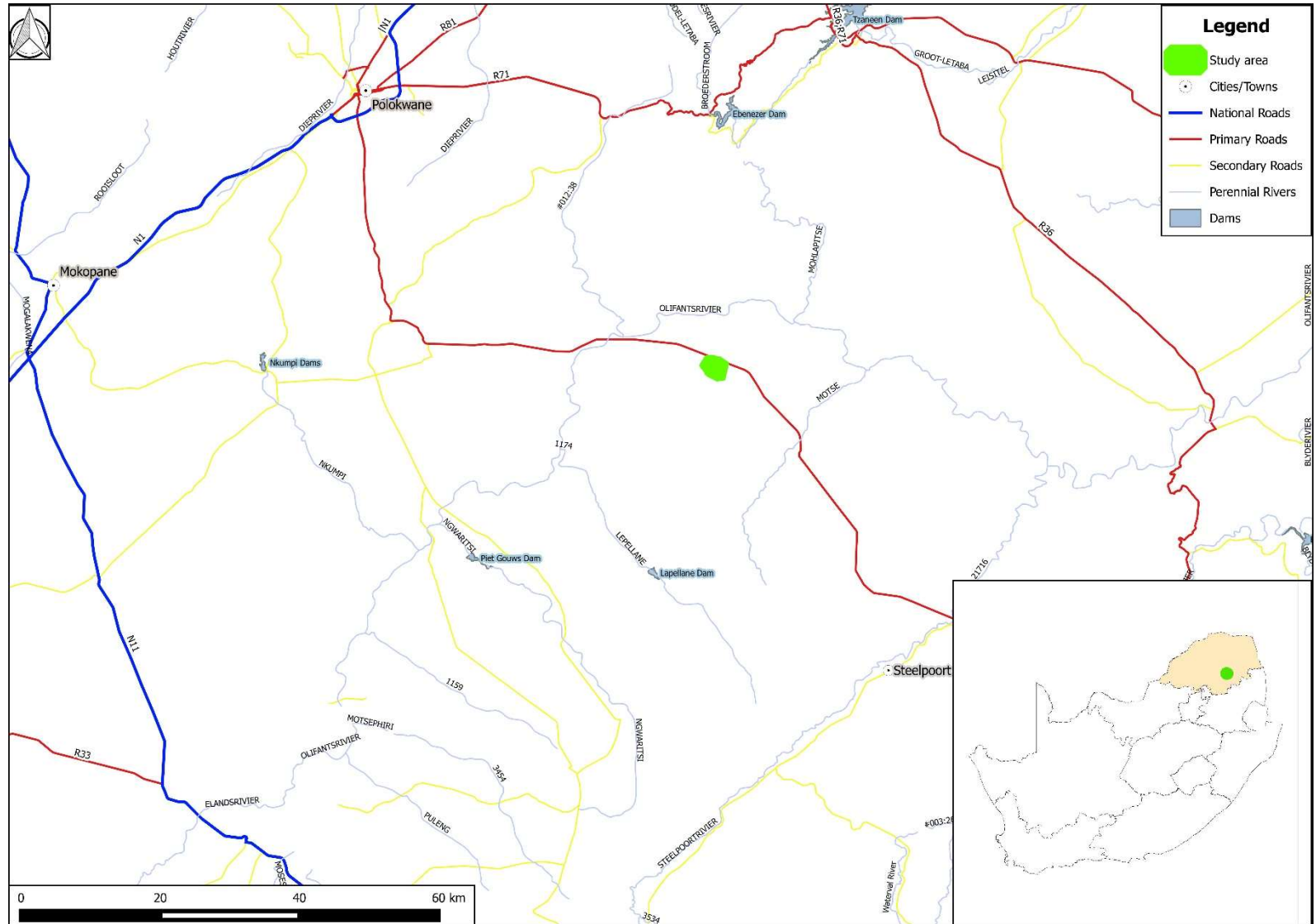


Figure 1: Regional and Provincial location of the study areas.

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 (**Figure 2**).

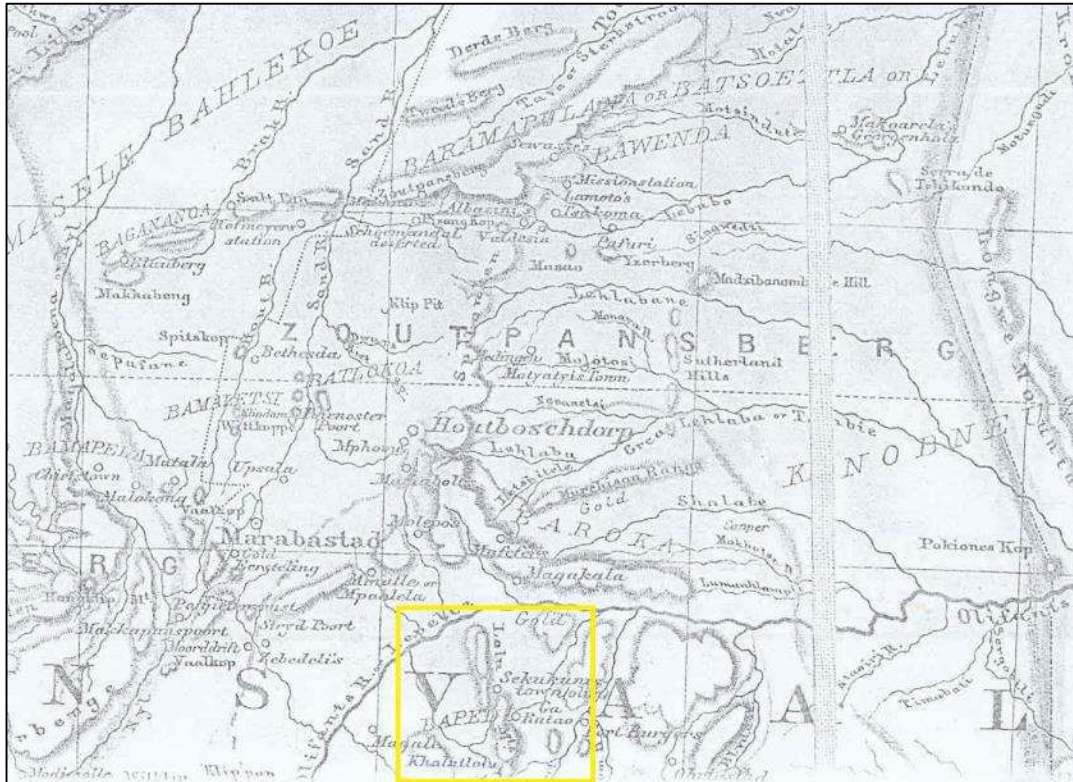


Figure 2: Rough indication of the study area on a map compiled by Merensky (Extract from: Merensky 1880).

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 Waterkop 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 Dikotope 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. Morangrang 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 50km southwest of the Waterkop 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 Mountains and called his village Tšate. It should be noted that the study areas form part of the Leolo Mountains. 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 Landdroos (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 (Mönnig 1988: 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.

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).

4. Methodology

I conducted archaeological reconnaissance of the following study areas through a systematic pedestrian site survey:

- Northern Cluster: Initial area; Main shaft; Main return water dam 3
- Southern Cluster: Initial area, Main shaft; Main waste water treatment plant
- Waterkop: Opencast areas

The transects were spaced roughly 60m apart where possible and sites were recorded via GPS (Global Positioning System) location and photographic record (**Table 4**). 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 total area surveyed was roughly 37ha (**Appendix B: Figures 2, 3, 5 & 7**). It should be noted that the area indicated as 'Current mining extent' on **Appendix B: Figure 5** was plotted from Google Earth and that the actual extent of the current mining activities are somewhat larger.

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 Waterkop and initial portions of the Northern and Southern Clusters. 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.

Table 4: Site coordinates

Site / Survey Point Name	Longitude	Latitude
NC 1	29.799334	-24.320272
NC 2	29.798806	-24.320301
NC 3	29.821650	-24.323589
NC 4	29.822196	-24.323512
NC 5	29.822876	-24.323946
SC 1	30.032563	-24.598335
SC 2	30.030765	-24.598488
SC 3	30.033235	-24.600477

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 occur 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.

Mr. Sparks and Mr. Tsepo accompanied me on the survey to provide security due to an increased threat level from illegal mining activity in the general area. Both are from the local community and provided valuable information.

4.1.1 Previous research

A study done by Frans Roodt on the farm Brakfontein 464 KS, which is located about 10km northwest of the Waterkop section and 7km east of the Northern Cluster, 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. These farms are located about 6km north-northwest of the Waterkop section and 12km west of the Northern Cluster. Roodt (2002a) located nine Early Iron Age sites belonging to the Doornkop cultural tradition. Although some sites 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 4km to the east of the Northern Cluster, 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 6km to the northwest of the Waterkop section, 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).

Pistorius (2012) conducted an archaeological survey, located roughly 10km to the west of the Southern Cluster, for the construction of a 132kV power line between the Tshatana, Lesego and Jane Furse substations. This study identified no material culture of heritage significance.

4.2 Limitations

The vegetation on the Waterkop section consists mainly of thick thorn bush and shrubs (**Figure 3**). The general visibility and accessibility 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 initial area of the Northern Cluster proved easier to survey as this section is located in the valley bottom. A few dongas and dense vegetation on the main area, however, hampered inspection (**Figures 4 & 5**). Apart from patches of dense vegetation on the Southern Cluster, no limitations hampered surveying (**Figure 6**).



Figure 3: Upslope area of the Waterkop section.



Figure 4: Environment of the Northern Cluster's main area.



Figure 5: Donga on the main area of the Northern Cluster.



Figure 6: Patches of dense vegetation at the Southern Cluster.

5. Archaeological and Historical Remains

5.1 Stone Age Remains

Initial area – Northern Cluster

Several Stone Age flakes were observed on the surface near disturbed sections. NC1 (**Figure 7**) was observed on the proposed shaft area. No concentration of stone tools were observed.

Main area – Northern Cluster

No Stone Age material were observed on the surveyed sections of the main area, which include the main shaft and return water dam 3.

Waterkop section

No Stone Age material were observed on the surveyed sections of the proposed opencast areas.

Initial area – Southern Cluster

No Stone Age material were observed on the surveyed sections of the initial area.

Main area – Southern Cluster

No Stone Age material were observed on the surveyed sections of the main area, which include the main shaft and waste water treatment plant.

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 8 - 10** below are examples of stone tools often associated with the Early, Middle and Later Stone Age of southern Africa.

Three studies done by Frans Roodt (2002a, 2002b & 2003) identified scattered Middle Stone Age flakes in the general area.



Figure 7: Stone tools at NC1.



Figure 8: ESA artefacts from Sterkfontein (Volman 1984).

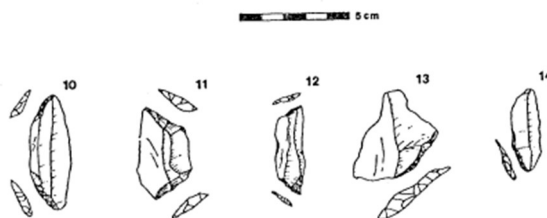


Figure 9: MSA artefacts from Howiesons Poort (Volman 1984).



Figure 10: LSA scrapers (Klein 1984).

5.2 Iron Age Farmer Remains

Initial area – Northern Cluster

Pottery fragments were observed within the waste rock dump 1 area (Figure 11). These undecorated fragments appear not be concentrated and are associated with disturbed areas (NC2).

Main area – Northern Cluster

Three Iron Age/Farmer sites were observed within the area demarcated for the main shaft: NC3 (Figure 12), NC4 (Figure 13) and NC5 (Figure 14). One undecorated pottery fragment was observed at NC3, while NC4 consists of a single row of stones. NC5 is characterised by a short section of stone-walling roughly 2.5m X 30cm. No material culture remains were observed in association with NC4 and NC5.

Waterkop section

No Iron Age/Farmer remains were observed on the surveyed sections of the proposed opencast area.

Initial area – Southern Cluster

No Iron Age/Farmer remains were observed on the surveyed sections of the initial area.

Main area – Southern Cluster

Two sites dating to the Iron Age/Farmer Period were observed: SC2 & SC3. SC2 consists of a short section, roughly 4m X 1m of stone-walling located halfway downslope (Figure 15). The height of the wall is about 0.4m. SC3 is marked as a polygon on Appendix B: Figure 7. This area consists of several features and artefacts and include stone-walling (Figure 16), grinding stones (Figure 17) and several stone cairns (Figure 18).

Several of the studies done in the general area recorded Iron Age/Farmer Period remains, indicating a rich archaeological landscape in terms of this time period.



Figure 11: NC2 - Pottery fragments from the waste rock dump 1 area at the Northern Cluster.



Figure 12: NC3 – pottery fragment at the Northern Cluster.



Figure 13: NC4 – single row of stones at the Northern Cluster.



Figure 14: NC5 – Stone walling at the Northern Cluster.



Figure 15: SC2 – Stone-walling at the Southern Cluster.



Figure 16: Stone-walling associated with SC3 at the Southern Cluster.



Figure 17: Part of a grinding stone associated with SC3 at the Southern Cluster.



Figure 18: Stone cairns Associated with SC3 at the Southern Cluster.

5.3 Historical Remains

Initial area – Northern Cluster

No historical remains were observed on the surveyed sections of the initial area.

Main area – Northern Cluster

No historical remains were observed on the surveyed sections of the main area.

Waterkop section

No historical remains were observed on the surveyed sections of the proposed opencast area.

Initial area – Southern Cluster

No historical remains were observed on the surveyed sections of the initial area.

Main area – Southern Cluster

I found one site that might date to historical or recent times, although the possibility exists that it might be older: SC1 (**Figure 19**). This site is located on the northern border of the main shaft of the Southern Cluster and consists of a single row of stones packed in a circular formation with diameter of about 2.5m. No material culture were observed in association with this feature.

One of the studies conducted by Frans Roodt in 2002 on a farm towards the northern parts of the Leolo Mountains, identified a series of historical occupation sites along a mountain slope (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 19: Stone circle SC1.

5.4 Recent remains

No recent remains were observed within the boundaries of the surveyed areas.

5.5 Graves

No graves were observed within the boundaries of the surveyed areas.

Other studies done in the area, however, identified several graveyards. These graveyards are associated with nearby villages (Roodt 2003: 6). The study done by Karodia (2013) 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 context of the findings within the demarcated portions of the initial area of the Northern Cluster are disturbed, the sites have a low significance level and do not require additional research. The sites observed within the main areas of the Northern and Southern Clusters, however, appear to part of larger sites and will require further investigation prior to development.

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 5: 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 6: Individual site ratings

Site / Survey Point Name	Type	Rating	Field Rating/Grade	Significance	Recommendation
NC 1	Stone tool	General Protection B	4 B	Medium	Record site
NC 2	Pottery	General Protection B	4 B	Medium	Record site
NC 3	Pottery	General Protection B	4 B	Medium	Record site
NC 4	Row of stones	General Protection B	4 B	Medium	Record site
NC 5	Stone-walling	General Protection B	4 B	Medium	Record site
SC 1	Stone circle	General Protection C	4 B	Medium	Record site
SC 2	Stone-walling	General Protection C	4 B	Medium	Record site
SC 3	Cairns & walling	General Protection C	4 B	Medium	Record site

*NC 3 – NC 5 and SC 1 – SC 3 require further investigation as stated in the recommendations.

7. Statement of Significance & Recommendations

7.1 Statement of significance

The demarcated portions of the proposed Waterkop, Northern and Southern Cluster areas

I observed several areas of heritage importance on the areas demarcated for the proposed mining development. Several potsherd fragments and stone tools were observed on the initial area of the Northern Cluster, but because river courses cross these portions and some areas are used as a soccer field or agricultural fields, the context is disturbed. Also, because only a few fragments were observed, the significance is considered to be low.

The heritage remains observed within the boundaries of the selected main areas of the Northern and Southern Clusters, however, appear to be part of larger sites and should therefore not be interpreted as isolated occurrences. It is therefore important to first survey the remaining areas of the main areas demarcated for development in order to obtain a better understanding of the context and extent of heritage resources. Material observed within these areas include stone-walling, pottery, grinding stones, stone cairns and stone tools.

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 and stone walling observed within the study area possibly date to the Iron Age Farmer Period, while the stone tools likely date to the Middle Stone Age. 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 and pottery fragments observed at sites NC1 and NC2 within the initial area of the Northern Cluster appear to be disturbed and are therefore of low significance. The recording done during the survey is deemed sufficient.
- The sites observed within the selected boundaries of the main areas of the Northern and Southern Clusters appear to form part of larger sites and should therefore be viewed in the context of the larger surrounding area, especially due to the sensitive nature of the general archaeological landscape. Therefore, it is recommended that an archaeological survey first be conducted on all the portions of the main areas of the Northern and Southern Clusters before development can continue on these areas, followed by recommendations and approval by SAHRA.
- Prospecting/drilling on additional land portions associated with the project may continue, but due to the sensitive nature of the archaeological landscape it is recommended that a qualified archaeologist inspect each site prior to development.
- 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 initial areas of the Northern and Southern Clusters, as well as the Waterkop opencast area, 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 salvage 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 Moeijeljik 412 KS, Limpopo Province*. Eco Elementum (Pty) Ltd.
- Pistorius, J. 2012. A Phase 1 Heritage Impact Assessment (HIA) Study for Eskom's Proposed 132kV Power Lines Between the Proposed Tshatane and Lesego Substations and Between the Proposed Tshatane Substation and the Existing Jane Furse Substation in the Limpopo Province. Pretoria.
- 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 Swaziland*. 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 & Moeijeljik 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: Northern Cluster – Initial – Return Water Dam.



Figure 2: Northern Cluster – Initial – Offices and Workshops.



Figure 3: Northern Cluster – Initial – Waste Rock Dump.



Figure 4: Northern Cluster – Initial – Shaft.



Figure 5: Northern Cluster – Initial – gully.



Figure 6: Northern Cluster – Main – Shaft.



Figure 7: Northern Cluster – Main – Return Water Dam.



Figure 8: Northern Cluster – Main – donga.



Figure 9: Upslope view from Waterkop Opencast 1 along the northern border.



Figure 10: Downslope view from Waterkop Opencast 1 along the southern border.



Figure 11: Upslope view from Waterkop Opencast 2 along the northern border.

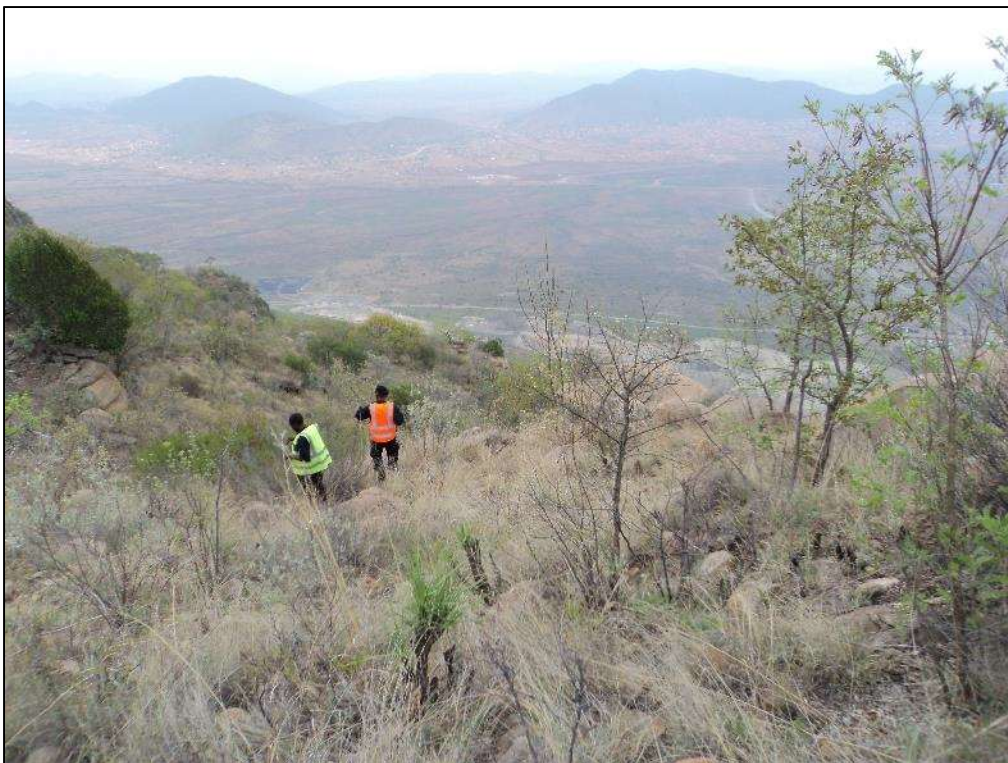


Figure 12: Downslope view from Waterkop Opencast 2 along the southern border.



Figure 13: General environment of the Waterkop section as viewed from NW to SE.



Figure 14: Southern Cluster – Initial – Return Water Dam.



Figure 15: Southern Cluster – Initial – Waste Rock Dump.



Figure 16: Southern Cluster – Initial – Shaft.



Figure 17: Southern Cluster – Initial – Offices and Workshops.



Figure 18: Southern Cluster – Main – Shaft.



Figure 19: Southern Cluster – Main – Waste Water Treatment Plant.

Appendix B: Maps

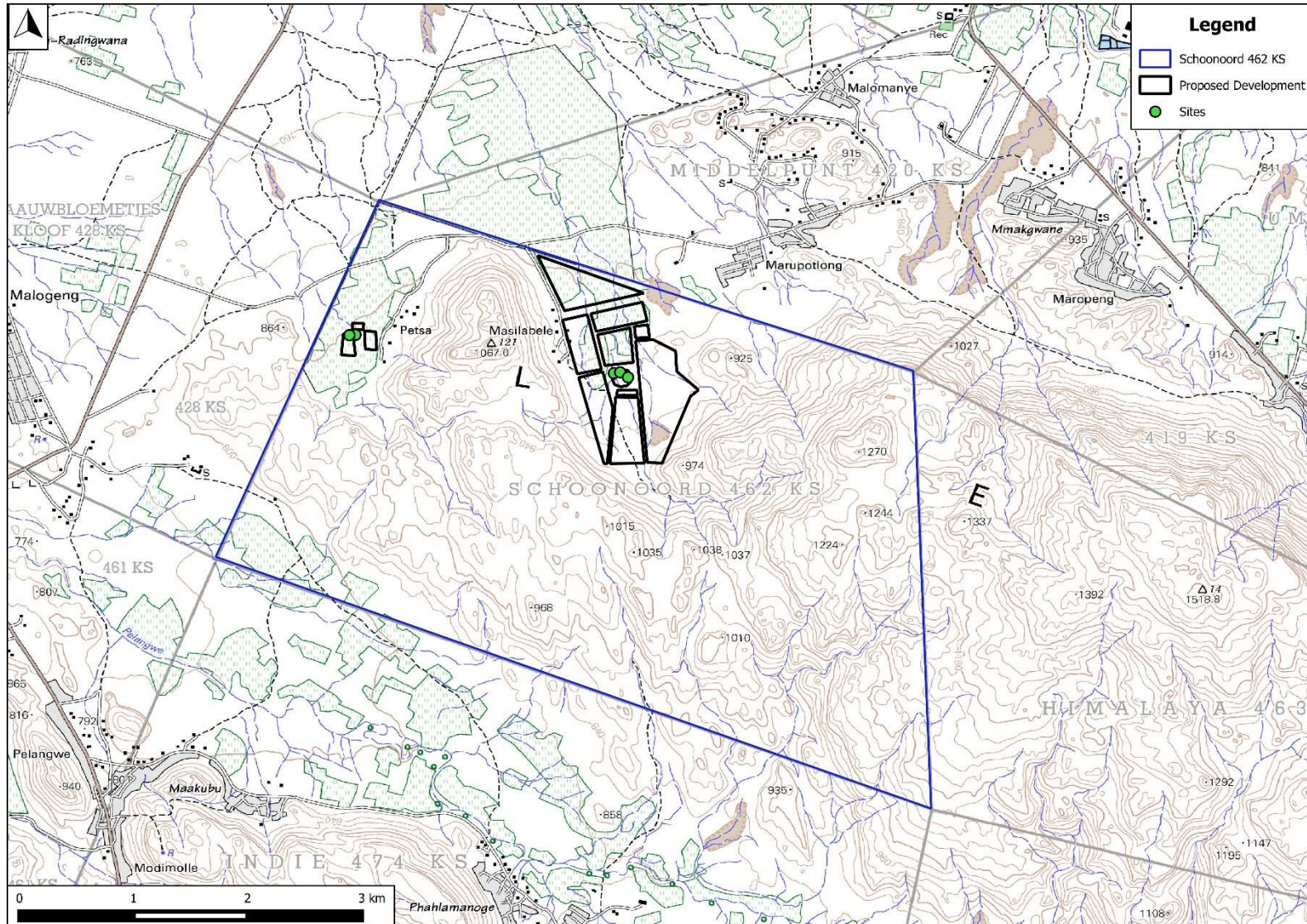


Figure 1: Segment of SA 1: 50 000 2429 BD indicating the Northern Cluster.



Figure 2: Northern Cluster initial area with survey transects.

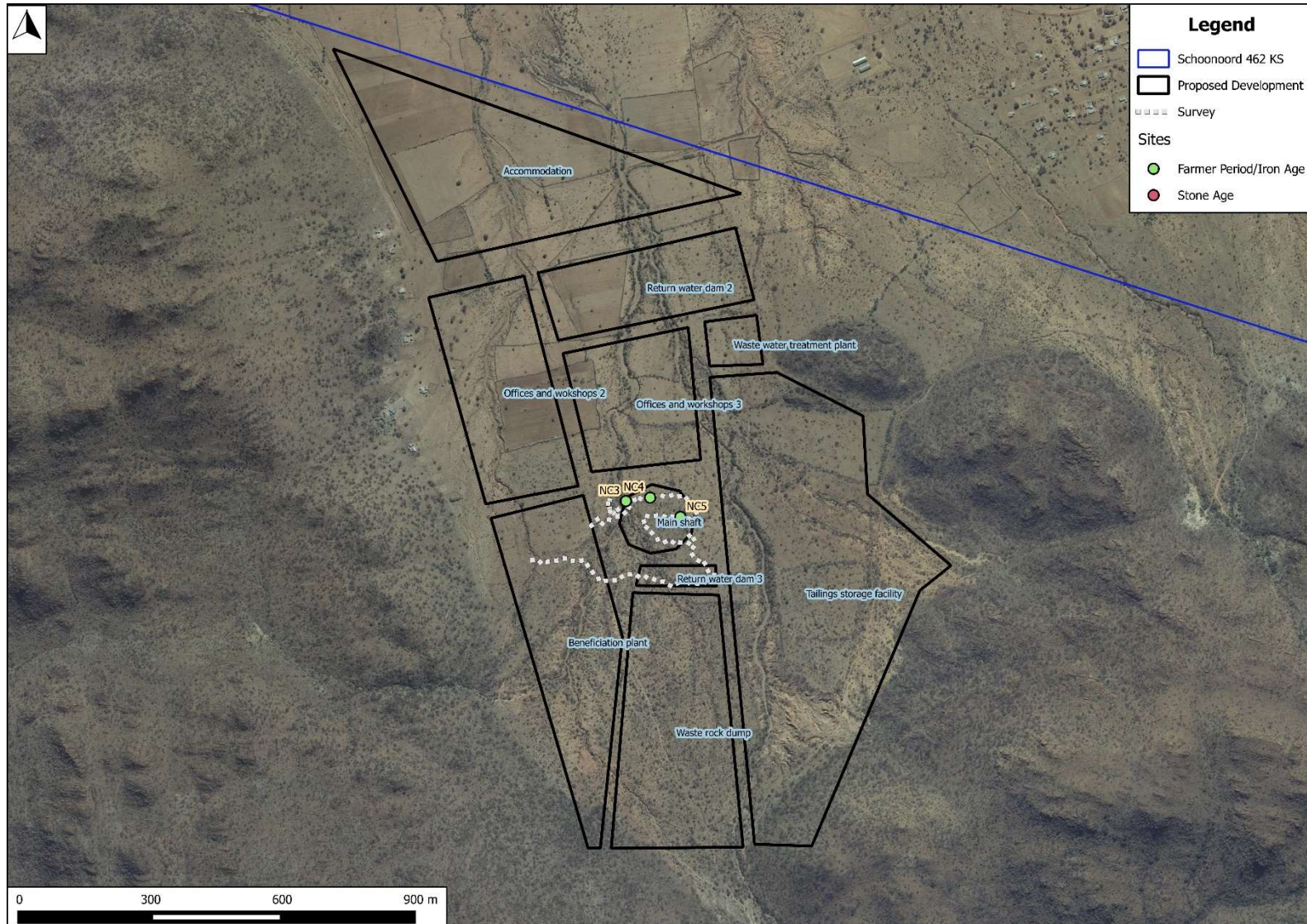


Figure 3: Northern Cluster main area with survey transects.

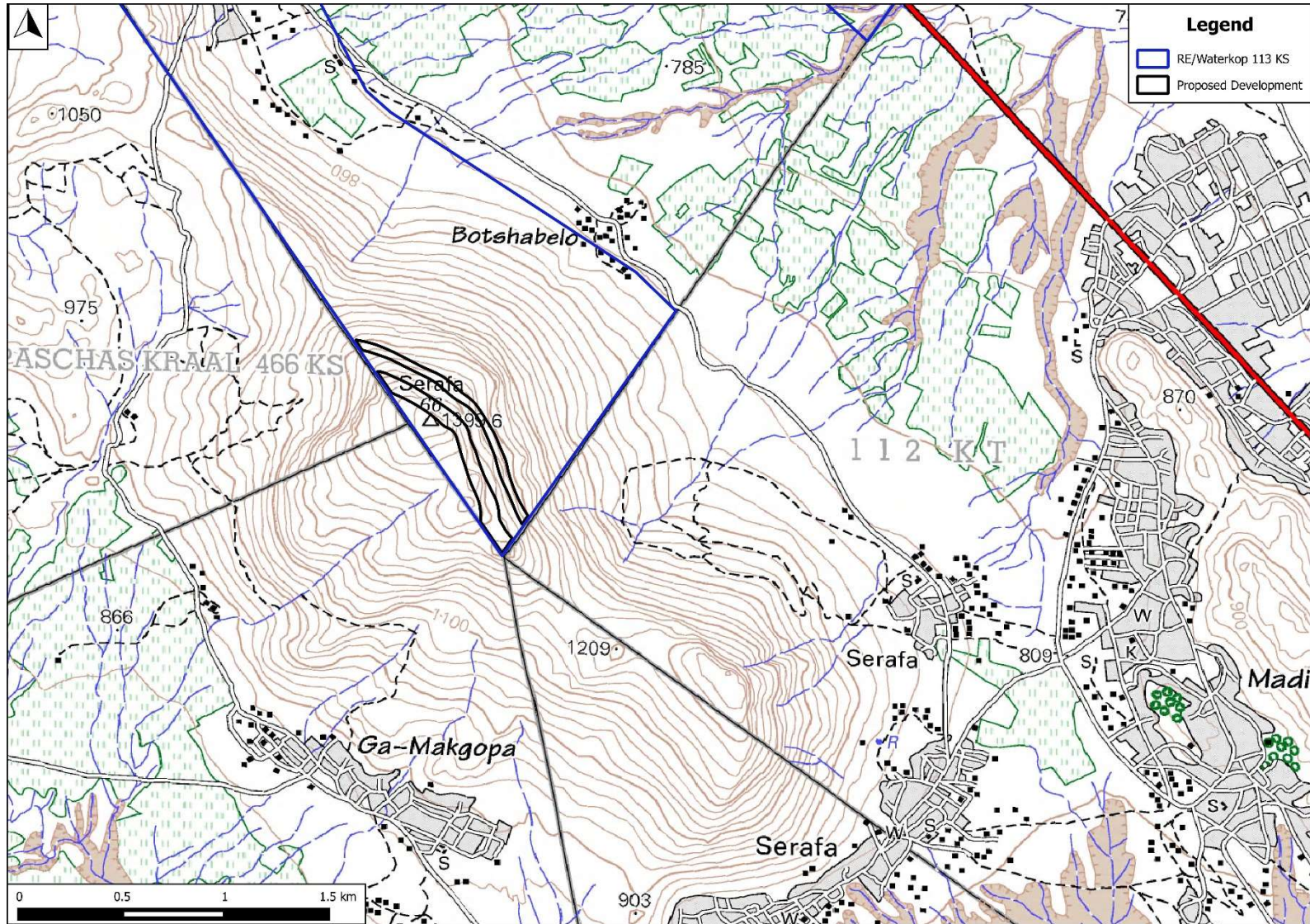


Figure 4: Segment of SA 1: 50 000 2430 AC indicating the Waterkop area.

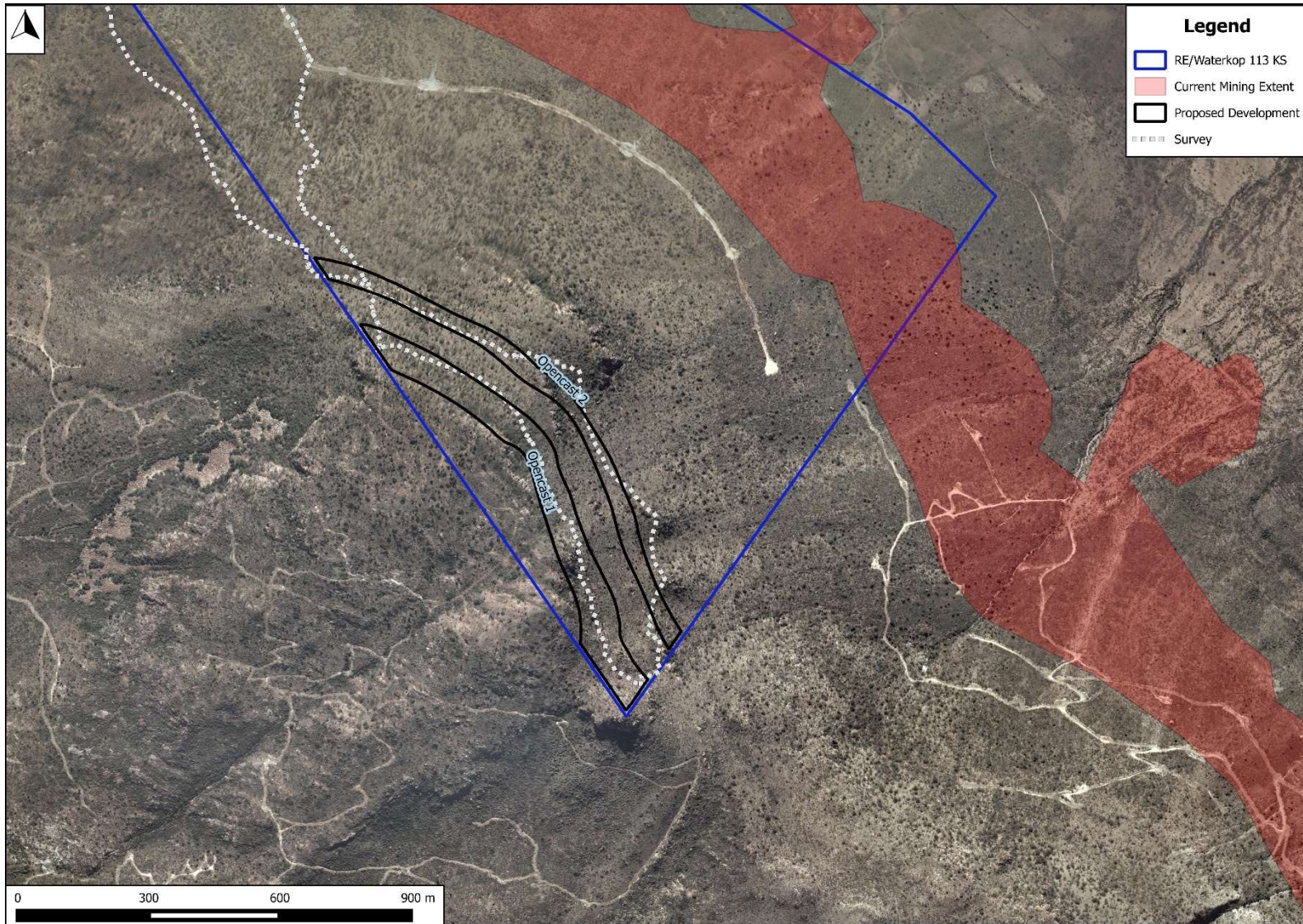


Figure 5: Waterkop opencast area with survey transects.

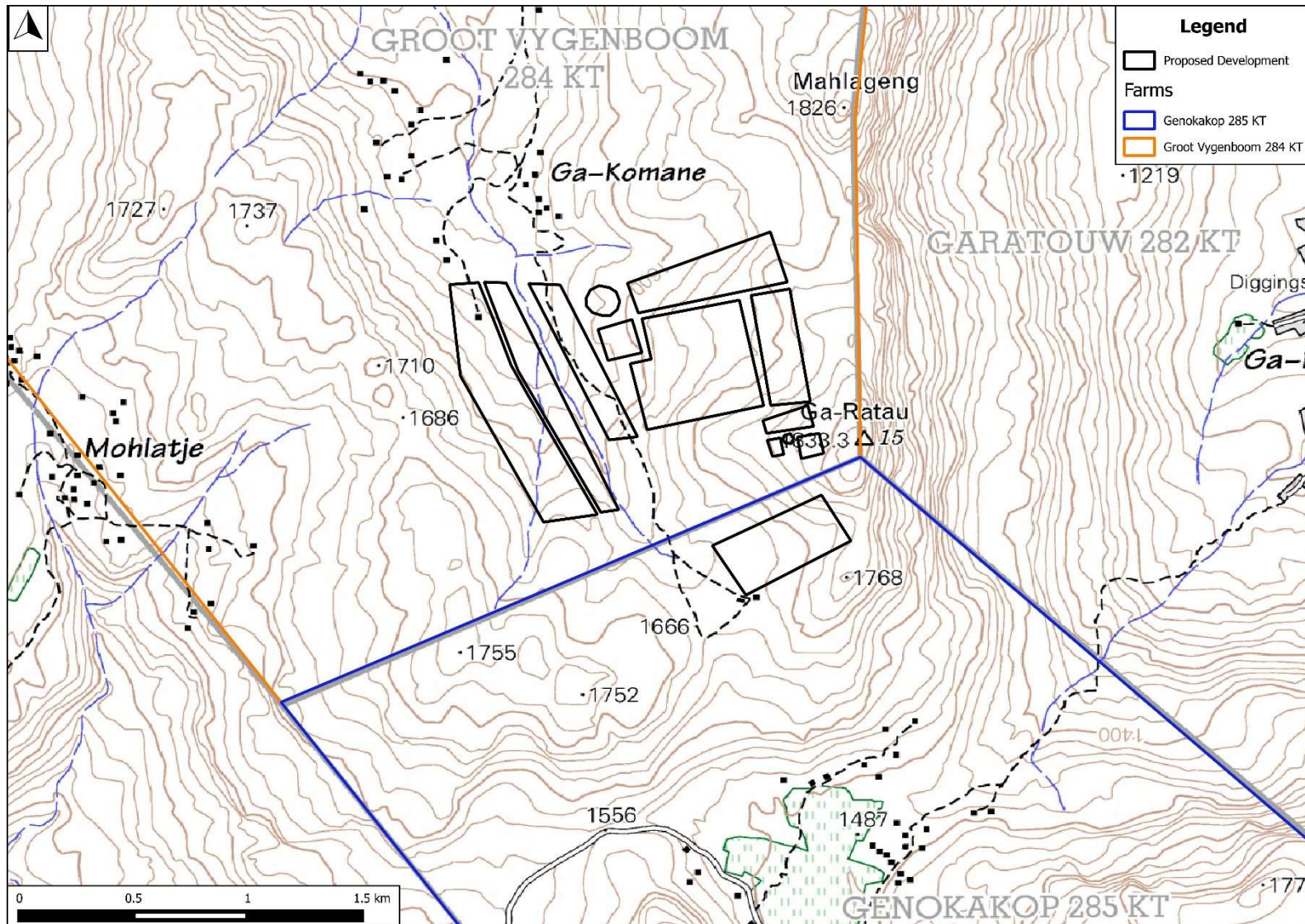


Figure 6: Segment of SA 1: 50 000 2430 CA indicating the Southern Cluster.

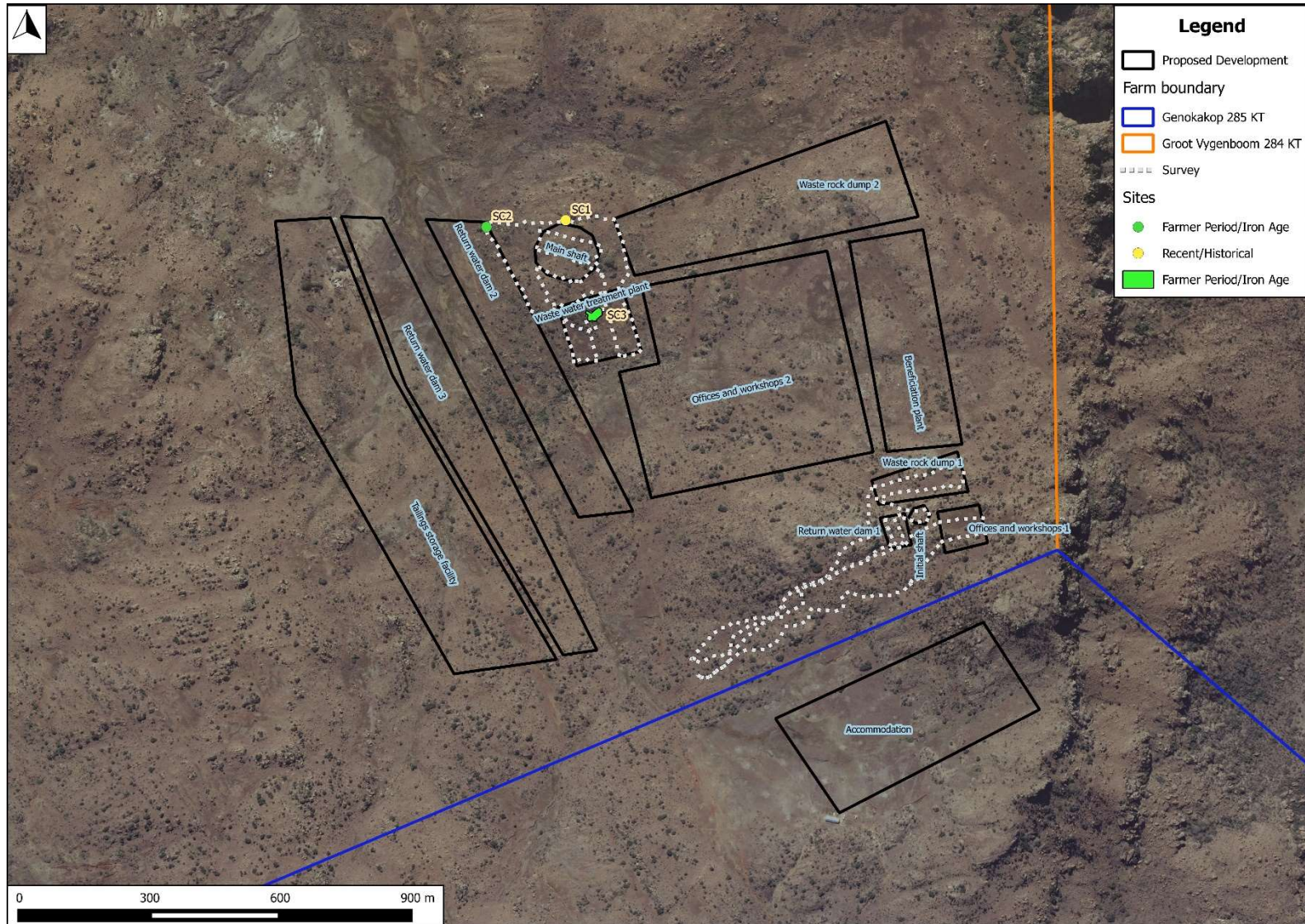


Figure 7: Southern Cluster initial & main areas with survey transects.