HERITAGE IMPACT ASSESSMENT

(REQUIRED UNDER SECTION 38(8) OF THE NHRA (No. 25 OF 1999)

FOR THE PROPOSED MAKGANYANE PROSPECTING APPLICATION, POSTMASBURG, NORTHERN CAPE PROVINCE

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Report Outline

Appendix 6 of GNR 326 EIA Regulations (7 April 2017) as amended provides the requirements for specialist reports undertaken as part of the environmental authorisation process. In line with this, Table 1 provides an overview of Appendix 6 together with information on how these requirements have been met.

Table 1. Specialist Report Requirements.

Requirement from Appendix 6 of GNR 326 EIA Regulations (7 April 2017)	Chapter
(a) Details of - (i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae	Section a Section 12
(b) Declaration that the specialist is independent in a form as may be specified by the competent authority	*Declaration of Independence*
(c) Indication of the scope of, and the purpose for which, the report was prepared	Section 1
(cA)an indication of the quality and age of base data used for the specialist report	Section 1, 3.4 and 7.1.
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	9
(d) Duration, Date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 3.4
(e) Description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 3
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 8 and 9
(g) Identification of any areas to be avoided, including buffers	Section 9
(h) Map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers	Section 8
(I) Description of any assumptions made and any uncertainties or gaps in knowledge	Section 3.7
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity **including identified alternatives on the environment** or activities;	Section 9
(k) Mitigation measures for inclusion in the EMPr	Section 9 and 10
(I) Conditions for inclusion in the environmental authorisation	Section 9 and 10
(m) Monitoring requirements for inclusion in the EMPr or environmental authorisation	Section 9 and 10
(n) Reasoned opinion - (i) as to whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and (ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Section 10.2
(o) Description of any consultation process that was undertaken during the course of preparing the specialist report	Section 6
(p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Refer to EIAr
(q) Any other information requested by the competent authority	Section 10

Executive Summary

The Department of Mineral Resources (DMR) granted Charlton Michael Rex a prospecting right (11 April 2019) for manganese ore, iron ore and diamonds (general) on the Farm Makganyane 667 (on Portion 2, portion of Portion 1, Remainder Portion, Remainder Portion of Portion 1 and Portion 3). The prospecting right was ceded to Makganyane Resources (Pty) Ltd on 30 October 2019 who intends to submit a Section 102 (S102) amendment application in terms of the MPRDA, 2002 to increase the number of boreholes to be drilled during the prospecting activities. The S102 application does not constitute a listed activity or specified activity but requires an application for a Part 2 amendment of the holder's EMP in terms of GNR 326 Section 31. To date drilling results and available data have defined that a more comprehensive drilling campaign is needed and that the whole Prospecting Right area should be viewed as a target and HCAC was appointed to conduct a high-level heritage scan and Impact Assessment of the proposed Makganyane drill plan area measuring 1141.4 ha. The study areas were assessed both on desktop level and by a high-level field survey to understand the heritage character of the area since final boreholes area not available at the time of the survey.

During the survey 10 find spots consisting of isolated stone tools were recorded. These find spots are out of context and of no significance apart from mentioning them in this report. The survey also recorded four features consisting of two cemeteries, a stone cairn that could possibly mark a pre-colonial burial and one feature relating to previous exploration.

In terms of the paleontological component, an independent study was conducted by Prof Marion Bamford (2019) the study concluded that the proposed site lies on some ancient non-fossiliferous rocks and mostly on windblown sands and sand dunes of the Quaternary Kalahari Group sands. It is very unlikely that these sands preserve *in situ* fossils because the sands have been transported and there are no pans or springs in the area. Fossils have been recovered from similar sediments in other parts of the country so a Fossil Chance Find Protocol should be added to the EMPr. Based on this information it is recommended that no palaeontological site visit is required unless fossils are discovered once excavations and mining commence. It should be noted that the Makganyane Formation diamictites do not contain fossils although they are indicated as such by the SAHRIS palaeosensitivity map.

The cultural landscape (mining and farming activities) is generally modern without significant cultural landscape elements of concern and impacts are deemed to be of low significance.

The impact of the proposed exploration drilling on heritage resources is considered to be low. The impact footprint of percussion drilling for exploration is very small and no bulk sampling will be done, no processing water or electricity will be needed and no servicing of equipment will take place on site. Access to the borehole locations will be mainly limited to existing farm tracks.

The impact of the proposed drilling on heritage resources will not have a significant impact on the heritage resources of the Northern Cape. It is recommended that the proposed project can commence on the condition that the following recommendations are implemented and based on approval from SAHRA

- Implementation of a chance finds procedure as outlined in Section 10.1;
- Known heritage resources should be avoided with a buffer zone of 30 meters;
- Existing roads should be used as far as possible;
- Any future listed activities should be subjected to an HIA;
- The ECO for the project should assess drill locations when these become available prior to drilling to confirm there are no graves, stone walling or any heritage features..

Declaration of Independence

Specialist Name	Jaco van der Walt
Declaration of Independence	I declare, as a specialist appointed in terms of the National Environmental Management Act (Act No 108 of 1998) and the associated 2014 Environmental Impact Assessment (EIA) Regulations, that I: - I act as the independent specialist in this application; - I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant; - I declare that there are no circumstances that may compromise my objectivity in performing such work; - I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity; - I will comply with the Act, Regulations and all other applicable legislation; - I have no, 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 form are true and correct; and - I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.
Signature	
Date	04/12/2019

a) Expertise of the specialist

Jaco van der Walt has been practising as a CRM archaeologist for 15 years. He obtained an MA degree in Archaeology from the University of the Witwatersrand focussing on the Iron Age in 2012 and is a PhD candidate at the University of Johannesburg focussing on Stone Age Archaeology with specific interest in the Middle Stone Age (MSA) and Later Stone Age (LSA). Jaco is an accredited member of ASAPA (#159) and have conducted more than 500 impact assessments in Limpopo, Mpumalanga, North West, Free State, Gauteng, KZN as well as he Northern and Eastern Cape Provinces in South Africa.

Jaco has worked on various international projects in Zimbabwe, Botswana, Mozambique, Lesotho, DRC Zambia and Tanzania. Through this he has a sound understanding of the IFC Performance Standard requirements, with specific reference to Performance Standard 8 – Cultural Heritage.

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ABBREVIATIONS

AIA: Archaeological Impact Assessment
ASAPA: Association of South African Professional Archaeologists
BGG Burial Ground and Graves
BIA: Basic Impact Assessment
CFPs: Chance Find Procedures
CMP: Conservation Management Plan
CRR: Comments and Response Report
CRM: Cultural Resource Management
DEA: Department of Environmental Affairs
EA: Environmental Authorisation
EAP: Environmental Assessment Practitioner
ECO: Environmental Control Officer
EIA: Environmental Impact Assessment*
EIA: Early Iron Age*
EIA Practitioner: Environmental Impact Assessment Practitioner
EMP: Environmental Management Programme
ESA: Early Stone Age
ESIA: Environmental and Social Impact Assessment
GIS Geographical Information System
GPS: Global Positioning System
GRP Grave Relocation Plan
HIA: Heritage Impact Assessment
LIA: Late Iron Age
LSA: Late Stone Age
MEC: Member of the Executive Council
MIA: Middle Iron Age
MPRDA: Mineral and Petroleum Resources Development Act
MSA: Middle Stone Age
NEMA National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NID Notification of Intent to Develop
NoK Next-of-Kin
PRHA: Provincial Heritage Resource Agency
SADC: Southern African Development Community
SAHRA: South African Heritage Resources Agency

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

GLOSSARY

Archaeological site (remains of human activity over 100 years old)
Early Stone Age (~ 2.6 million to 250 000 years ago)
Middle Stone Age (~ 250 000 to 40-25 000 years ago)
Later Stone Age (~ 40-25 000, to recently, 100 years ago)
The Iron Age (~ AD 400 to 1840)
Historic (~ AD 1840 to 1950)
Historic building (over 60 years old)

1 Introduction and Terms of Reference:

HCAC has been contracted by Greenmined Environmental (Pty) Ltd to conduct a heritage impact assessment of the proposed Makganyane Prospecting Application in the Northern Cape Province (Figure 1 – 4).

The study aims to assess the impact of the proposed project on non-renewable heritage resources and to submit appropriate recommendations about the responsible cultural resources management measures that might be required to assist the developer in managing the discovered heritage resources in a responsible manner. It is also conducted to protect, preserve, and develop such resources within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999). The report outlines the approach and methodology utilized before and during the survey, which includes: Phase 1, review of relevant literature; Phase 2, the physical surveying of the area on foot and by vehicle; Phase 3, reporting the outcome of the study.

During the survey 10 find spots consisting of isolated stone tools were recorded. These find spots are out of context and of no significance apart from mentioning them in this report. The survey also recorded four features consisting of two cemeteries, a stone cairn that could possibly mark a pre-colonial burial and one feature relating to previous exploration.

General site conditions and features on sites were recorded using photographs, GPS locations, and site descriptions. Possible impacts were identified, and mitigation measures are proposed in the following report. SAHRA as the commenting authority under section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) requires all documents, compiled in support of this application to be submitted to SAHRA.

1.1 Terms of Reference

Field study

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

Reporting

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

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

Table 2: Project Description

Size of property	1580 ha on Portion 2 (portion of Portion 1), Remainder Portion, Remainder Portion of Portion 1 and Portion 3 of the farm Makganyene No 667.
Magisterial District	Tsantsabane Local Municipality
1: 50 000 map sheet number	2822BB
Central co-ordinate of the study area	-28.147663° 22.934599°

Table 3: Infrastructure and project activities

Type of development	Prospecting Application
Project Description	Exploration of the approved PR area commenced with detailed surface outcrop mapping along the outcrops present on the Remaining Extent (RE), and Portion 1 (Remaining Extent) of the farm Makganyene No 667 in 2019. This was followed by geo-physical surveys comprising of limited ground magnetic and audio-magnetotelluric surveys covering portions of the same properties. Data collected during the above surveys served as motivation for the implementation of a first phase drilling campaign. Percussion drilling was found efficient enough to achieve the desired objectives at the site and the drilling of the first boreholes commenced in July 2019.
Project Components	The approved Prospecting Work Programme (PWP) of the project notes that the invasive prospecting activities will entail the following: "*Diamond drilling will be done to determine the potential thickness and grade of any deposits:* • *nine holes are recommended;* • *holes depth will be ±20 m;* • *holes will be logged and sampled, as combined samples, done by a geologist;* • *samples will be analysed by an accredited laboratory for its content*." The expanded drilling campaign will take place in the exact same way as processing has been done to date. No bulk sampling will be done, no processing water or electricity will be needed and no servicing of equipment will take place on site. Should access be needed to one or more of the borehole locations that cannot be reached with existing farm roads/tracks the drill rig will drive through the veld to the earmarked area, avoiding prominent vegetation and large trees. The tracks to these areas will be below the threshold of the NEMA: EIA Regulations, 2017 and no new roads will be constructed.

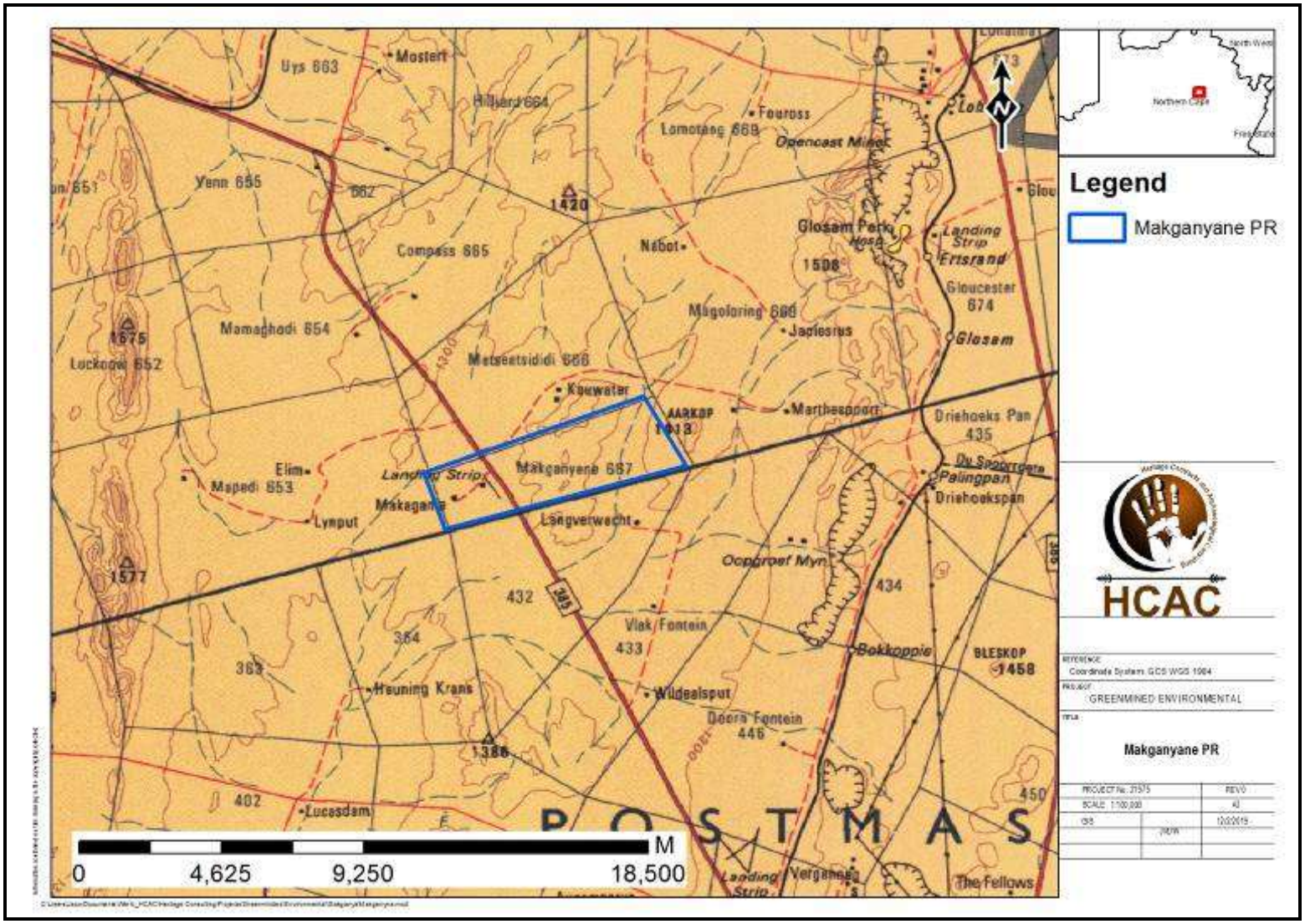

Figure 1. Provincial locality map indicating the prospecting right area (1: 250 000 topographical map).

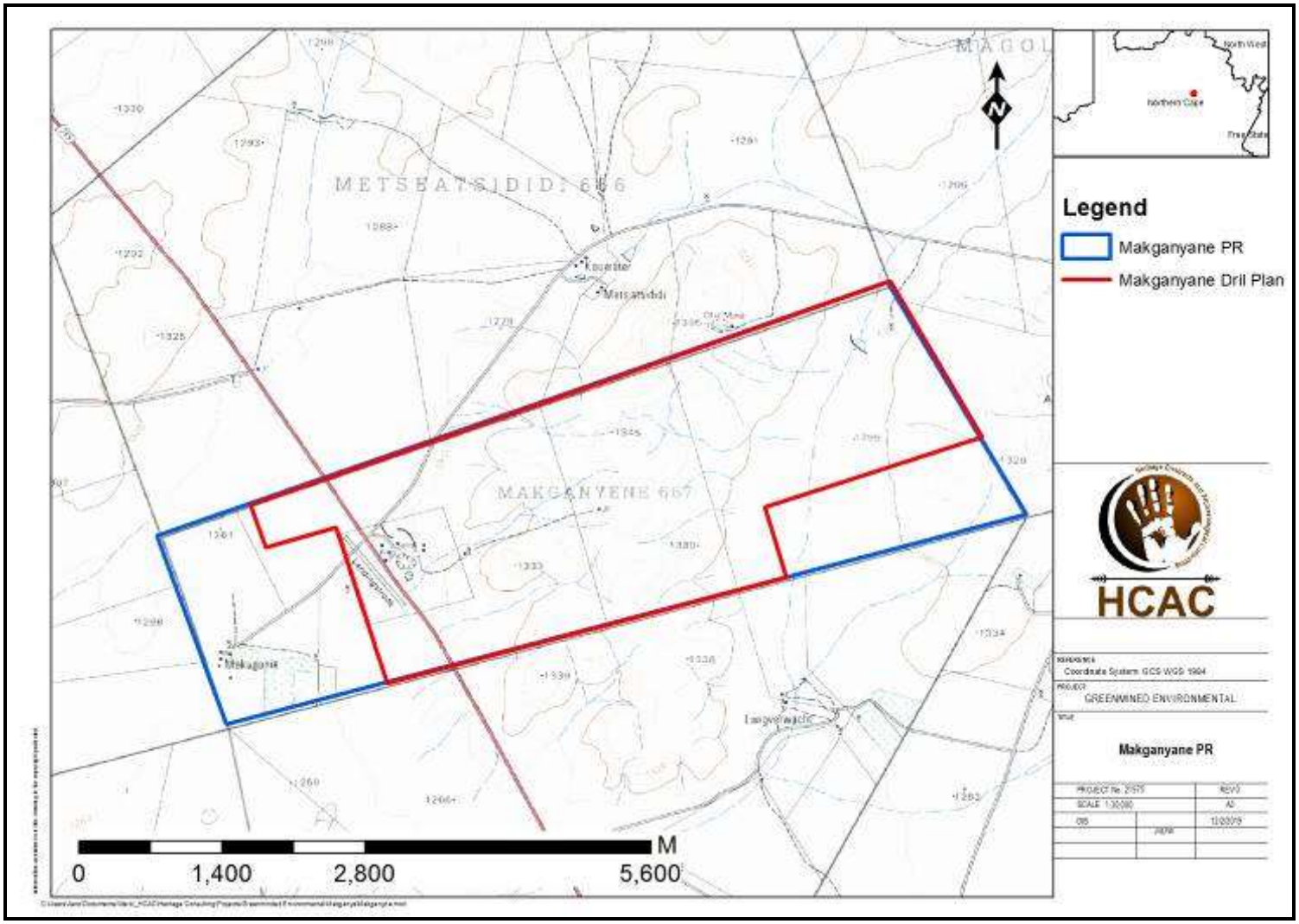

Figure 2: Regional locality map indicating the prospecting right area drill plan area (1:50 000 topographical map).

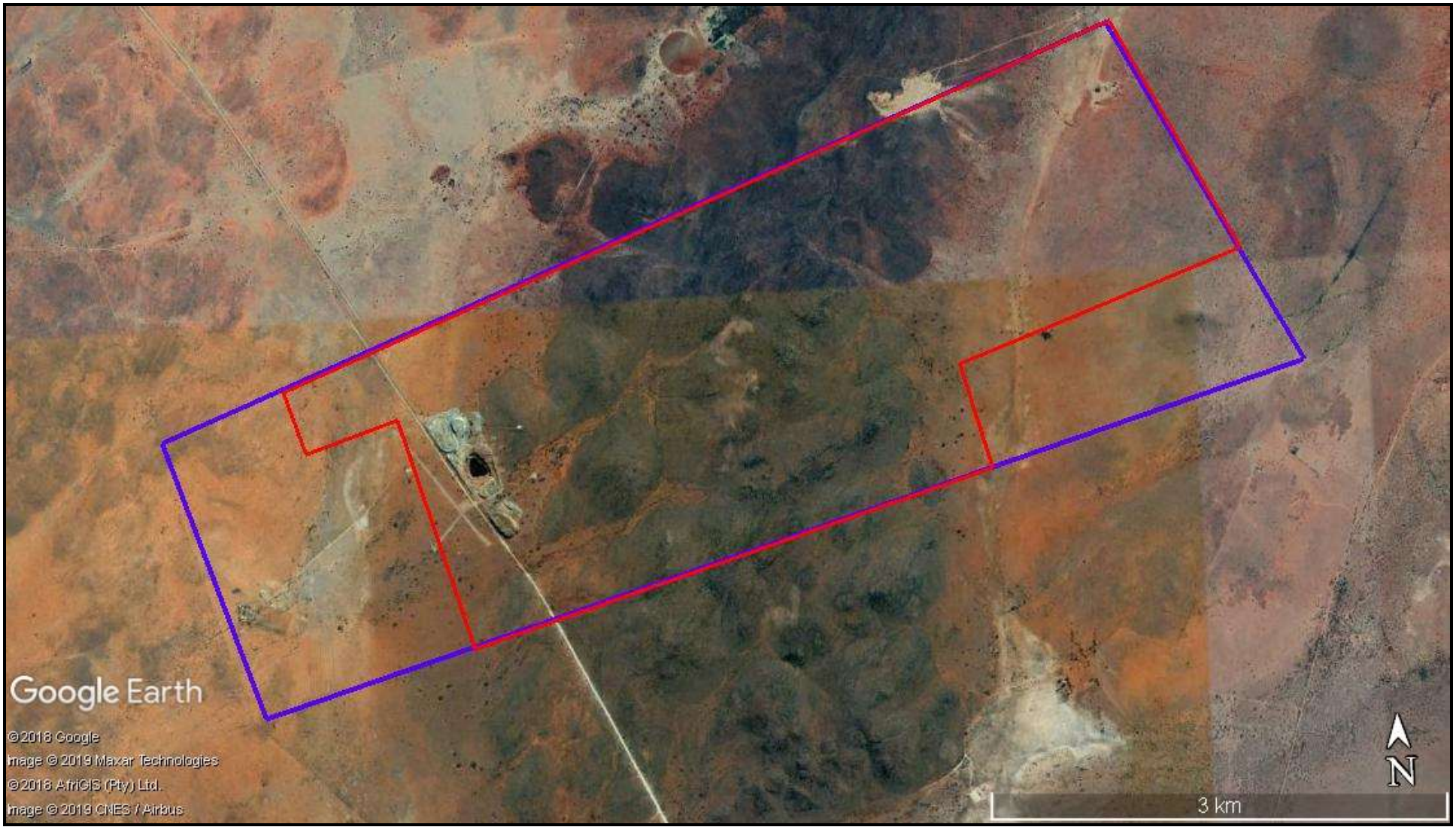

Figure 3. Satellite image indicating the prospecting right area in blue and the drill plan area in red (Google Earth 2019).

2 Legislative Requirements

The HIA is required under the following legislation:

- National Heritage Resources Act (NHRA), Act No. 25 of 1999)
- National Environmental Management Act (NEMA), Act No. 107 of 1998 - Section 23(2)(b)
- Mineral and Petroleum Resources Development Act (MPRDA), Act No. 28 of 2002 - Section 39(3)(b)(iii)

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

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

The HIA should be submitted to the PHRA if established in the province or to SAHRA. SAHRA will ultimately be responsible for the professional evaluation of Phase 1 AIA reports upon which review comments will be issued. 'Best practice' requires Phase 1 AIA reports and additional development information, as per the impact assessment report and/or EMPr, to be submitted in duplicate to SAHRA after completion of the study. SAHRA accepts Phase 1 AIA reports authored by professional archaeologists, accredited with ASAPA or with a proven ability to do archaeological work.

Minimum accreditation requirements include an Honours degree in archaeology or related discipline and three years of post-university CRM experience (field supervisor level). Minimum standards for reports, site documentation and descriptions are set by ASAPA in collaboration with SAHRA. ASAPA is based in South Africa, representing professional archaeology in the SADC region. ASAPA is primarily involved in the overseeing of ethical practice and standards regarding the archaeological profession. Membership is based on proposal and secondment by other professional members.

Phase 1 AIA's are primarily concerned with the location and identification of heritage sites situated within a proposed development area. Identified sites should be assessed according to their significance. Relevant conservation or Phase 2 mitigation recommendations should be made. Recommendations are subject to evaluation by SAHRA.

Conservation or Phase 2 mitigation recommendations, as approved by SAHRA, are to be used as guidelines in the developer's decision-making process.

Phase 2 archaeological projects are primarily based on salvage/mitigation excavations preceding development destruction or impact on a site. Phase 2 excavations can only be conducted with a permit, issued by SAHRA to the appointed archaeologist. Permit conditions are prescribed by SAHRA and include (as minimum requirements) reporting back strategies to SAHRA and deposition of excavated material at an accredited repository.

In the event of a site conservation option being preferred by the developer, a site management plan, prepared by a professional archaeologist and approved by SAHRA, will suffice as a minimum requirement.

After mitigation of a site, a destruction permit must be applied for with SAHRA by the applicant before development may proceed.

Human remains older than 60 years are protected by the National Heritage Resources Act, with reference to Section 36. Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act), as well as the Human Tissues Act (Act 65 of 1983), and are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36[5]) of Act 25 of 1999) applies to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in this age category, located inside a formal cemetery administrated by a local authority, require the same authorisation as set out for graves younger than 60 years, in addition to SAHRA authorisation. If the grave is not situated inside a formal cemetery but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws, set by the cemetery authority, must be adhered to.

Human remains that are less than 60 years old are protected under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925), as well as the Human Tissues Act (Act 65 of 1983), and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning; or in some cases, the MEC for Housing and Welfare. Authorisation for exhumation and reinternment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. To handle and transport human remains, the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

3 Methodology

3.1 Literature Review

A brief survey of available literature was conducted to extract data and information on the area in question to provide general heritage context into which the development would be set. This literature search included published material, unpublished commercial reports and online material, including reports sourced from the South African Heritage Resources Information System (SAHRIS).

3.2 Genealogical Society and Google Earth Monuments

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where sites of heritage significance might be located; these locations were marked and visited during the fieldwork phase. The database of the Genealogical Society was consulted to collect data on any known graves in the area.

3.3 Public Consultation and Stakeholder Engagement:

Stakeholder engagement is a key component of any development process; it involves stakeholders interested in, or affected by the proposed development. Stakeholders are provided with an opportunity to raise issues of concern (for this report, only heritage-related issues will be included). The aim of the public consultation process was to capture and address any issues raised by community members and other stakeholders. The process involved:

- Placement of advertisements and site notices
- Stakeholder notification (through the dissemination of information and meeting invitations);
- Stakeholder meetings were undertaken with I&APs;
- Authority Consultation
- The compilation of a Report.
- The compilation of a Comments and Response Report (CRR).

3.4 Site Investigation

Conduct a field study to: a) systematically survey the proposed project area to locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest; b) record GPS points of sites/areas identified as significant areas; c) determine the levels of significance of the various types of heritage resources recorded in the project area.

Table 4: Site Investigation Details

	Site Investigation
Date	27 and 28 November 2019
Season	Summer – Archaeological visibility is high although some areas have been impacted on by mining activities. The area earmarked for prospecting has been sufficiently covered (Figure 4) to understand the heritage context of the study area.

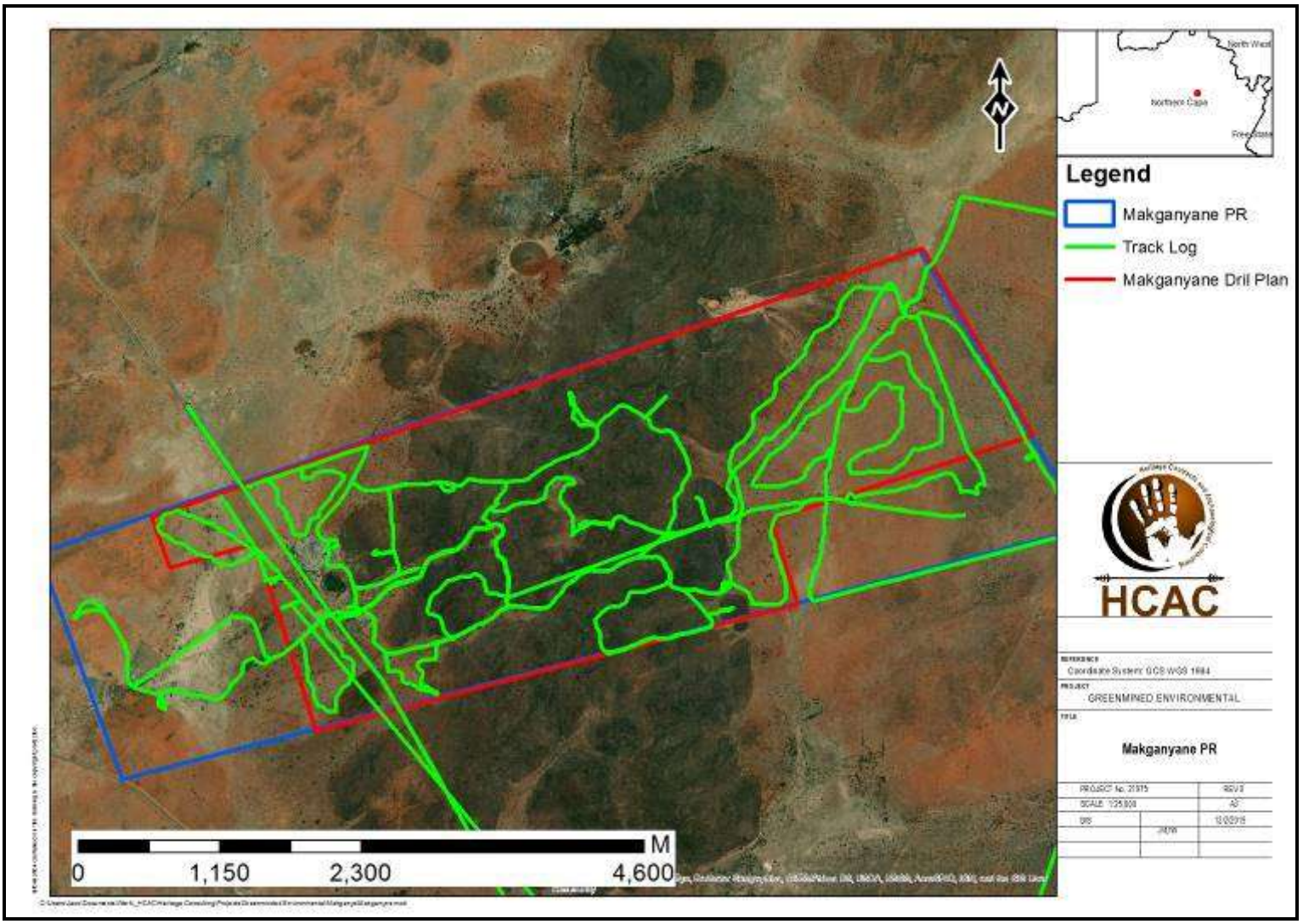

Figure 4: Track logs of the survey in green.

3.5 Site Significance and Field Rating

Section 3 of the NHRA distinguishes nine criteria for places and objects to qualify as 'part of the national estate' if they have cultural significance or other special value. These criteria are:

- Its importance in/to the community, or pattern of South Africa's history;
- Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- Its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- Its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa;
- Sites of significance relating to the history of slavery in South Africa.

The presence and distribution of heritage resources define a 'heritage landscape'. In this landscape, every site is relevant. Also, because heritage resources are non-renewable, heritage surveys need to investigate an entire project area, or a representative sample, depending on the nature of the project. In the case of the proposed project, the local extent of its impact necessitates a representative sample and only the footprint of the areas demarcated for development was surveyed. In all initial investigations, however, the specialists are responsible only for the identification of resources visible on the surface. This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The following criteria were used to establish site significance with cognisance of Section 3 of the NHRA:

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

In addition to this criteria field ratings prescribed by SAHRA (2006), and acknowledged by ASAPA for the SADC region, were used for the purpose of this report. The recommendations for each site should be read in conjunction with section 10 of this report.

FIELD RATING	***GRADE***	***SIGNIFICANCE***	***RECOMMENDED MITIGATION***
National Significance (NS)	Grade 1	-	Conservation; national site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; provincial site nomination
Local Significance (LS)	Grade 3A	High significance	Conservation; mitigation not advised
Local Significance (LS)	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected A (GP. A)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP. B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction

3.6 Impact Assessment Methodology

The criteria below are used to establish the impact rating on sites:

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- The **duration**, wherein it will be indicated whether:
  - the lifetime of the impact will be of a very short duration (0-1 years), assigned a score of 1;
  - the lifetime of the impact will be of a short duration (2-5 years), assigned a score of 2;
  - medium-term (5-15 years), assigned a score of 3;
  - long term (> 15 years), assigned a score of 4; or
  - permanent, assigned a score of 5;
  - The **magnitude**, quantified on a scale from 0-10 where; 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
  - The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1-5 where; 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
  - The **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
  - the **status**, which will be described as either positive, negative or neutral.
  - the degree to which the impact can be reversed.
  - the degree to which the impact may cause irreplaceable loss of resources.
  - the *degree* to which the impact can be mitigated.

The **significance** is calculated by combining the criteria in the following formula:

S=(E+D+M) P

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- < 30 points: Low (i.e., where this impact would not have a direct influence on the decision to develop in the area),
- 30-60 points: Medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- 60 points: High (i.e., where the impact must have an influence on the decision process to develop in the area).

3.7 Limitations and Constraints of the study

The authors acknowledge that the brief literature review is not exhaustive on the literature of the area. Due to the subsurface nature of archaeological artefacts, the possibility exists that some features or artefacts may not have been discovered/recorded during the survey. Also the possible occurrence of graves and other cultural material cannot be excluded. Similarly, the depth of the deposit of heritage sites cannot be accurately determined due to its subsurface nature. This report focussed on the area earmarked for prospecting and not the entire farm and consisted of a high level non-intrusive surface survey. It is possible that new information could come to light in future, which might change the results of this Impact Assessment.

4 Description of Socio-Economic Environment

According to census 2011, there are 35 093 people in the municipality. Of these, 52,8% are African black, 37,6% are coloured, and 8,4% are white. Other population groups make up the remaining 1,2% of the population.

Of those aged 20 years and older, 13,9% had some primary schooling, 5,3% had completed primary, 35,4% had some secondary, and 25,4 had matric. Only 6,4% had a higher qualification, and 13,7% had no form of schooling.

Economically Tsantsabane is known for being rich in minerals, and for its mining, agriculture, manufacturing and farming sectors. Tsantsabane has reinvented itself over the years as one of the leading investment hot spots in the Northern Cape. The construction of the Anglo American Kumba Iron Ore's Kolomela mine has brought an implosion of development to the area.

5. Description of the Physical Environment:

The proposed prospecting areas are located on on Portion 2 (portion of Portion 1), Remainder Portion, Remainder Portion of Portion 1 and Portion 3 of the farm Makganyene No 667. The general area consists of two kinds of topographical elements: undulating plains (Figure 5 & 6) characterised by thick sand cover and a range of hills (Figure 7 & 8) roughly splitting the area in two. Archaeological visibility is the lowest on the plains that are mantled with Aeolian sand and characterised by grass veld. The vegetation and landscape are described by Mucina and Rutherford (*The Vegetation of South Africa, Lesotho and Swaziland*, South African National Biodiversity Institute, Kirstenbosch, August 2006) as Kuruman Mountain Bushveld and Olifantshoek Plains Thornveld. The geological forms in the study area are described as the Ongeluk formation and the Makganyene formation. The lithology of the area consists of diamictite, subordinate sandstone, carbonate rock, jaspilite, mudrock, chert and biotite-muscovite metapelite (Figure 9).

Figure 5. Plains with thick sand cover.

Figure 6. Plains with thick sand cover.

Figure 7.Plains with ridge in the background.

Figure 8. Rocky ridge characterising the centre of the study area.

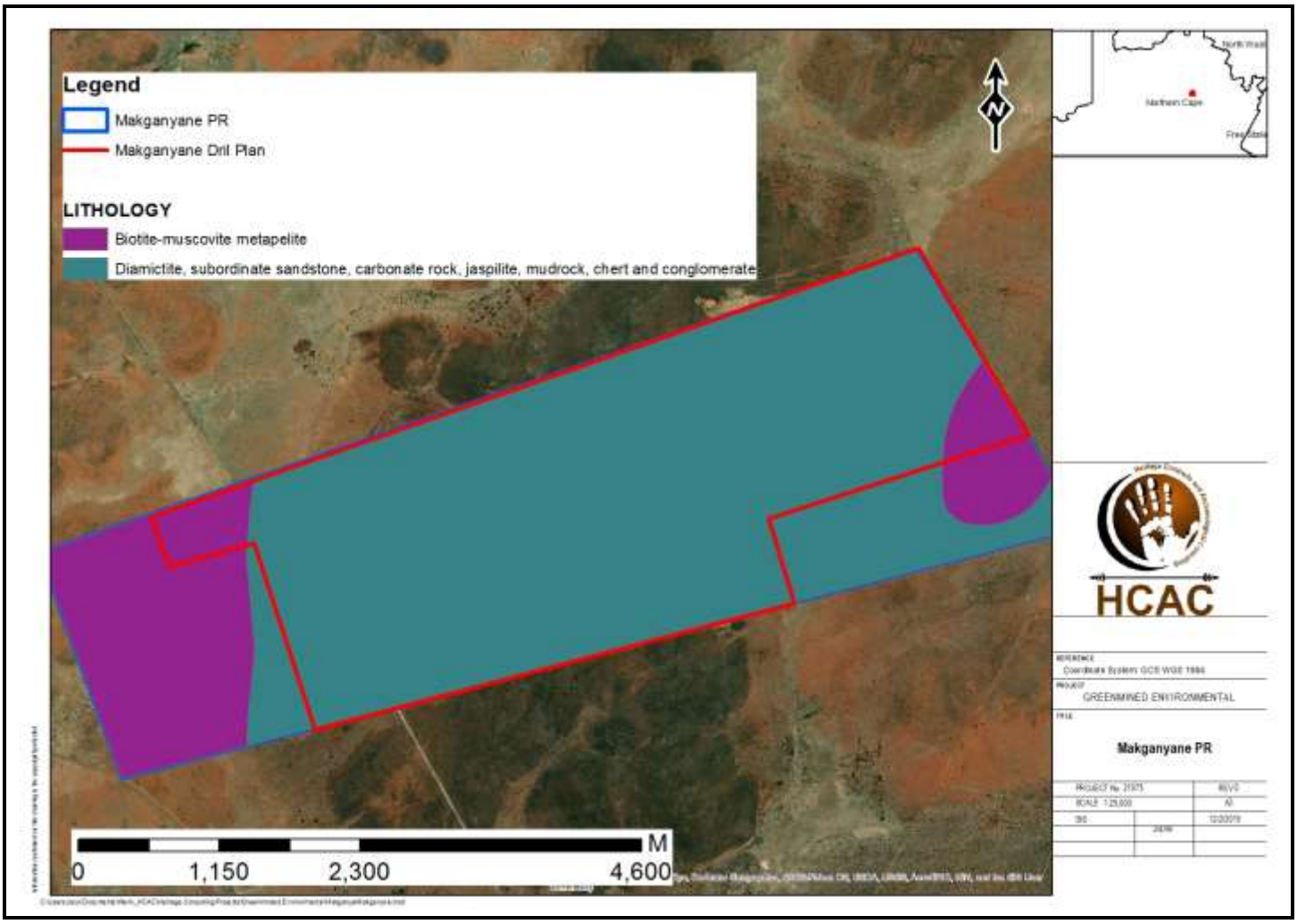

Figure 9: Lithology of the study area.

6. Results of Public Consultation and Stakeholder Engagement:

Adjacent landowners and the public at large were informed of the proposed activity as part of the process. Site notices and advertisements notifying interested and affected parties were placed at strategic points and in local newspapers as part of the process.

7. Literature / Background Study:

7.1. Literature Review

Few studies are on record near the study area. Cultural Resource Management reports conducted in the area consulted for this study is listed below:

Author	Year	Project	Findings
Beaumont, P.	2007	Phase 1 HIA for the Farm Makgananye, Postmasburg, Northern Cape.	8 Stone Artefacts, no sites of significance.
Kusel, U.	2013	Phase 1 AIA report on archaeological contexts and heritage resources on the farms Heuningkrans 364 and Langverwacht 432 in the Postmasburg District Municipality of the Northern Cape Province	Structures and Stone Age sites.

7.1.1. Genealogical Society and Google Earth Monuments

No cemeteries or graves are indicated in the study area.

7.2. General History of the area

The archaeological record for the greater study area consists of the Stone Age and Iron Age.

7.3. Stone Age

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age and the Earlier Stone Age. Each of these phases contains sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges. For Cultural Resources Management (CRM) purposes it is often only expected/ possible to identify the presence of the three main phases. Yet sometimes the recognition of cultural groups, affinities or trends in technology and/or subsistence practices, as represented by the sub-phases or industrial complexes, is achievable (Lombard 2011). The three main phases can be divided as follows;

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

The larger study area has a wealth of pre-colonial archaeological sites (Morris & Beaumont 2004). Famous sites in the region include the world renowned Wonderwerk Cave to the north of the study area. Closer to Kuruman two shelters on the northern and southern faces of GaMohaan (in the Kuruman Hills north west of the town) contain Later Stone Age remains and rock paintings. Rock art is known to occur at Danielskuil to the north east and on Carter Block (Morris 2008). Middle Stone Age material is on record around the study area.

Archaeological surveys have shown rocky outcrops and hills, drainage lines, riverbanks and confluences to be prime localities for archaeological finds and specifically Stone Age sites, as these areas where utilized for settlement of base camps close to water and hunting ranges.

According to Morris (2005) in the immediate area to the north of the study area, the Earlier Stone Age is represented by 11 known sites (Bruce, Kathu, Uitkoms, Sishen, Demaneng, Lylyveld and Mashwening); the Middle Stone Age by 5 sites (all in the vicinity of Kathu); and the Later Stone Age by 10 sites (one on King, one at Mashwening and eight at Kathu) Rock engravings have been identified from Sishen and Bruce (the Bruce site was salvaged and recorded by Fock & Fock 1984), as well as Beeshoek, to the east of the study area (Fock & Fock 1984; Morris 1992; Beaumont 1998). Specularite sources are known on Demaneng and Lylyveld, and were mined in Stone Age times at a site on Doornfontein to the east of the study area (Beaumont 1973; Beaumont & Boshier 1974) and at Tsantsabane to the east of Postmasburg (Beaumont 1973; Thackeray et al. 1983): numerous other specularite workings have also been recorded (Beaumont 1973).

Stone Age artefacts are often recorded at industrial sites similar to the mining activities at Makganyane and the effects of heavy-duty earth moving machinery on the formation of lithic debitáge at open-air Stone Age/Palaeolithic sites was examined by Bradfield and Van der Walt (2018) at a site close to Kathu. The experiment with heavy-duty machinery produced only one pseudo-formal tool, most of the debitáge produced mimics that occasioned by knapping and this could attribute to some of the debitage/ artefacts identified on industrial sites.

7.4. Iron Age

Iron Age expansion southwards past Kuruman into the Ghaap plato and towards Postmasburg dates to the 1600's (Humphreys, 1976 and Thackeray, 1983). Definite dates for Tswana presence in the Postmasburg area are around 1805 when Lichtenstein visited the area and noted the mining activities of the Tswana (probably the Thlaping) tribes in the area. The Thlaro and Thlaping settled the area from Campbell in the east to Postmasburg and towards the Langeberg close to Olifantshoek in the north west before 1770 (Snyman, 1988). The Korana expansion after 1770 started to drive the Thlaro and Thlaping further north towards Kuruman (Shillington, 1985); Morris (2005) indicated that three Iron Age sites close to the study area are on record (Demaneng, Lylyveld and Kathu).

7.5 Anglo-Boer War

There are no battlefields or concentration camp sites close to the study area.

7.6. Cultural Landscape

Historical land use and the cultural landscape are linked since the cultural landscape is shaped to some extent by the history of the area. The farm is used for the farming of livestock in recent years, evident by fences and watering holes. This is largely related to small stock but has not left much trace. Some mining activities also took place between 1967 and 1982 with a single farmstead located in the western portion of the study area (Figure 10 – 12).

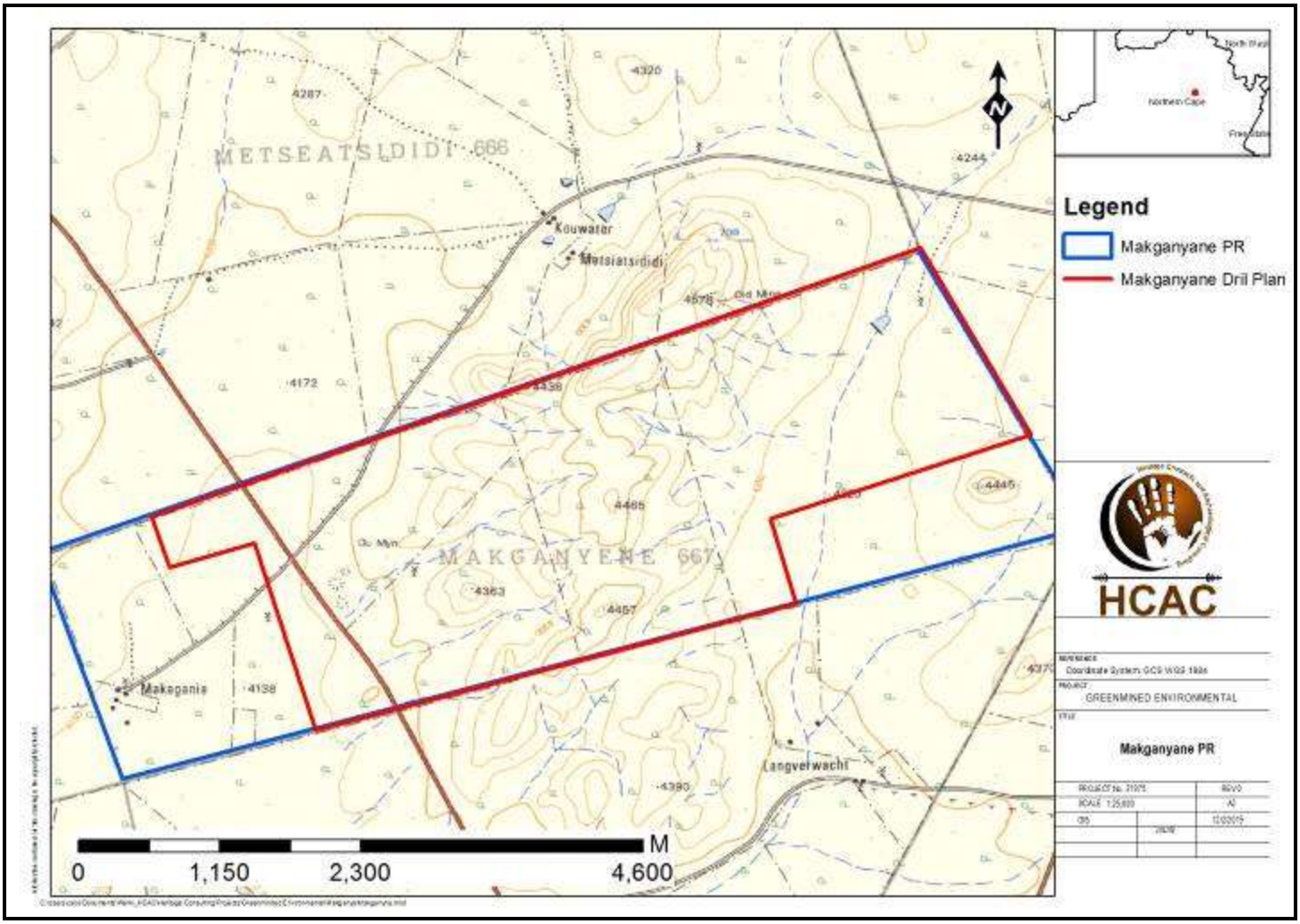

Figure 10. 1967 map of the study area. An existing farmstead and old mine works are visible.

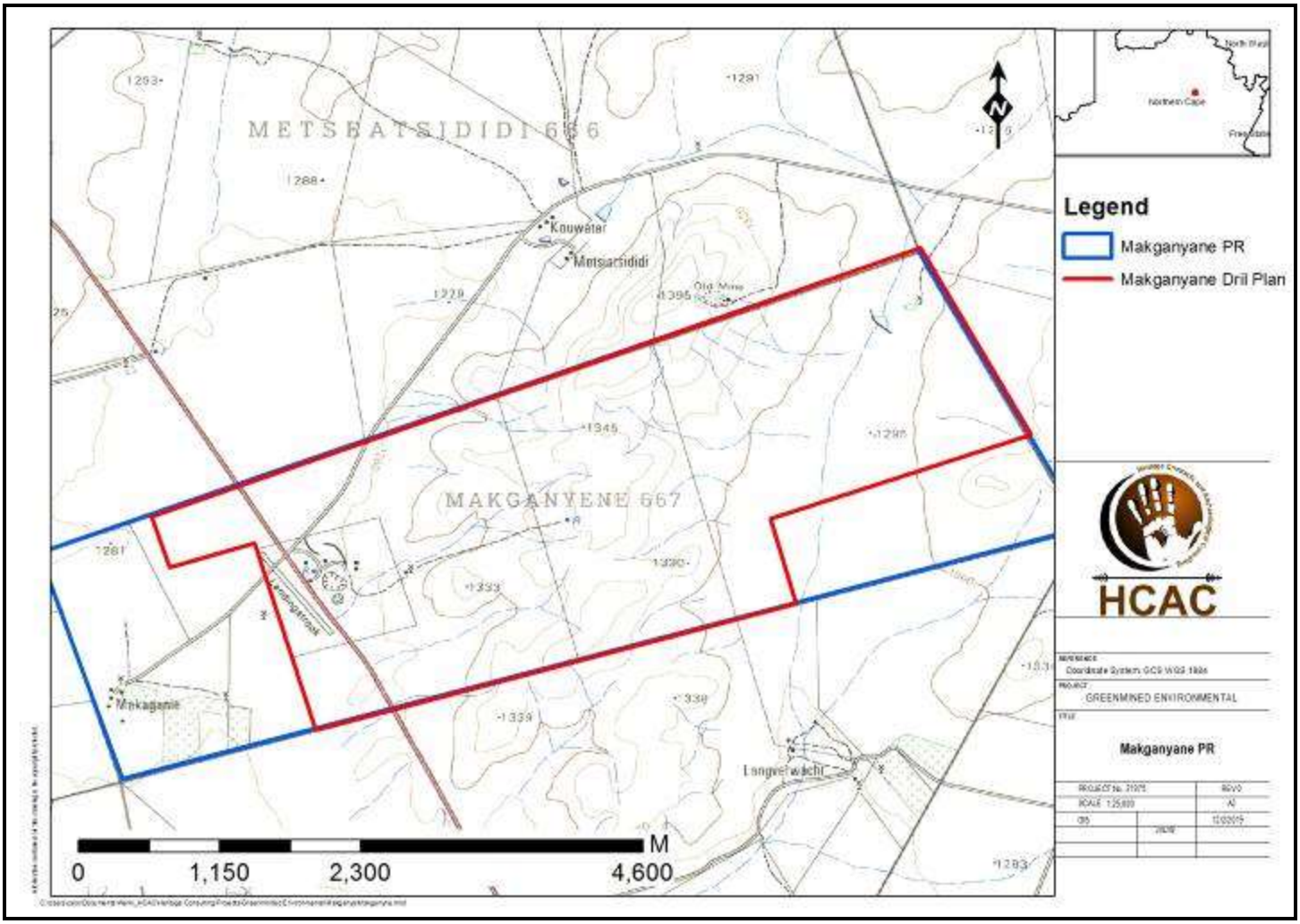

Figure 11. 1982 map of the study area. An existing farmstead and the expansion of previous mining and new access roads are vicible.

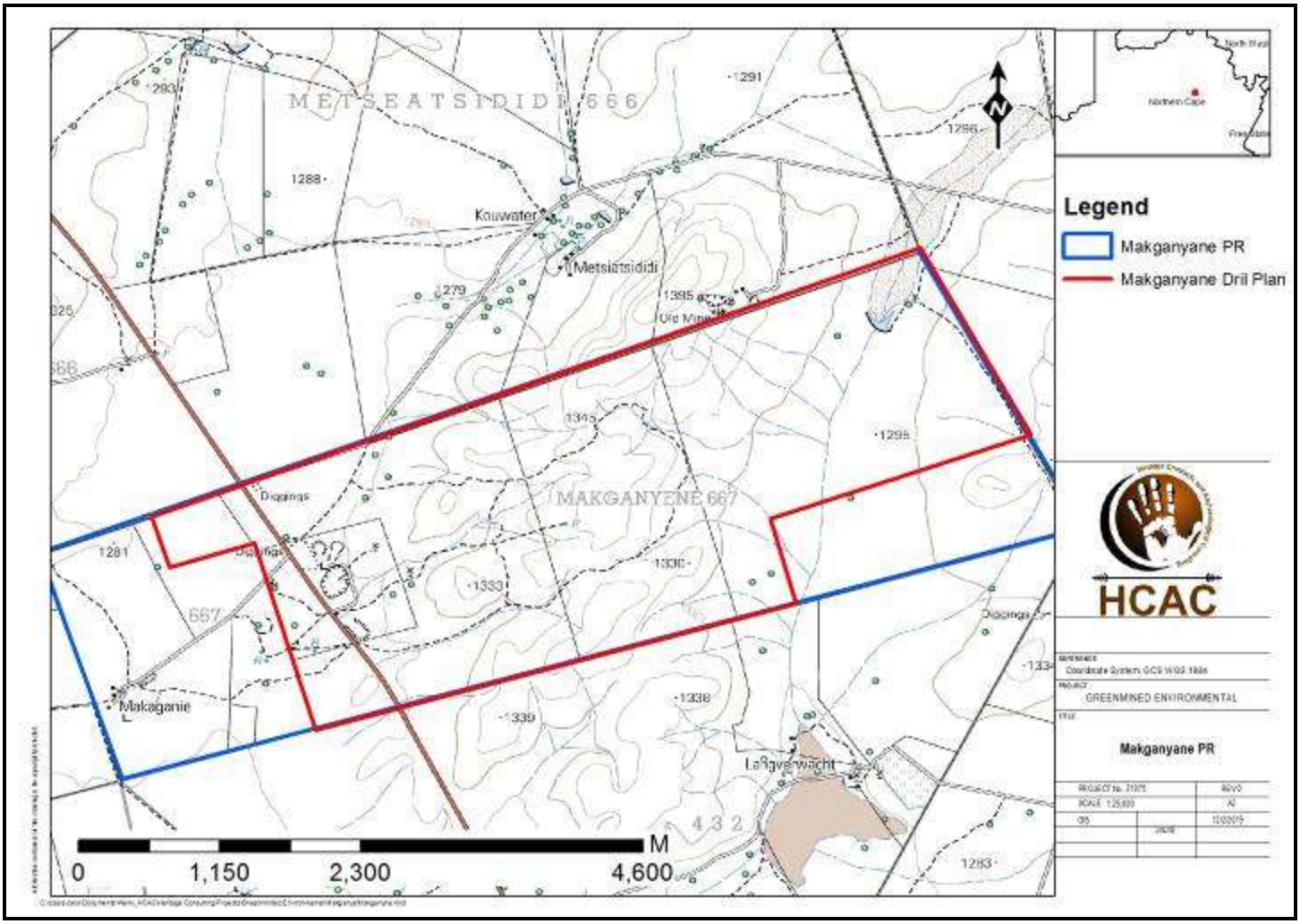

Figure 12. 2009 map of the study area. Additional road developments are visible as well as the mining developments and farmstead as seen on previous maps.

8. Findings of the Survey

It is important to note that the field work consisted of a high-level survey focusing on the proposed prospecting area, as indicated in Figure 1 - 4 and not the entire farm. The general area consists of two kinds of topographical elements: undulating plains characterised by thick Quaternary sand cover and a range of hills (Figure 13 & 14) roughly splitting the area in two. The local geology is not conducive to the forming of shelters on the ridges in contrast to areas where small shelters have been noted with lithic scatters to the north-west and to the east on the farms Heuningkrans, Langverwacht and Mookaneng (Kusel 2013 and vd Walt 2019). Archaeological visibility is the lowest on the plains that are mantled with Aeolian sand and characterised by grass veld. Dense growth of Swarthaak (Acacia mellifera) resulted in restricted access to some sections on the ridge in the middle of the study area.

No rock art, historical farm steads or colonial-era stone-walling (dwellings or kraals) were recorded. Human impact is limited to isolated farming infrastructure like farm fences, tracks, wind pumps and dams relating to the cultural landscape that consist of extensive farming and mining activities (Figure 15 & 16).

During the survey 10 find spots and four features were recorded (Figure 17, Table 5 & 6). Find spots consist of isolated Stone Age artefacts and were recorded with the Prefix “FS” and numbered numerically. These isolated find spots are out of context and of no significance apart from mentioning them in this report. Artefacts are mostly undiagnostic although MSA and LSA elements were noted. Raw material varies and consists of Banded Iron Stone, Quartzsite and chert. The closest quartzite source is from the Langberge approximately 15 km away (Beaumont 2007) and therefore transported to the study area.

The survey also recorded 4 features consisting of 3 burial sites and 1 feature relating to exploration. All four features are located outside of the proposed drilling plan area and will not be impacted on. Graves and burial sites are of high social significance (Field rating GP A) and the exploration trenches are of no heritage significance (Field Rating GPC).

In terms of the paleontological component, an independent study was conducted by Prof Marion Bamford (2019) the study concluded that the proposed site lies on some ancient non-fossiliferous rocks and mostly on windblown sands and sand dunes of the Quaternary Kalahari Group sands. It is very unlikely that these sands preserve *in situ* fossils because the sands have been transported and there are no pans or springs in the area. Fossils have been recovered from similar sediments in other parts of the country so a Fossil Chance Find Protocol should be added to the EMPr. Based on this information it is recommended that no palaeontological site visit is required unless fossils are discovered once excavations and mining commence. It should be noted that the Makganyane Formation diamictites do not contain fossils although they are indicated as such by the SAHRIS palaeosensitivity map.

Figure 13. General view of the study area.

Figure 14. Ridge in the middle of the study area.

Figure 15. Remains of previous mining activities.

Figure 16. Farming infrastructure.

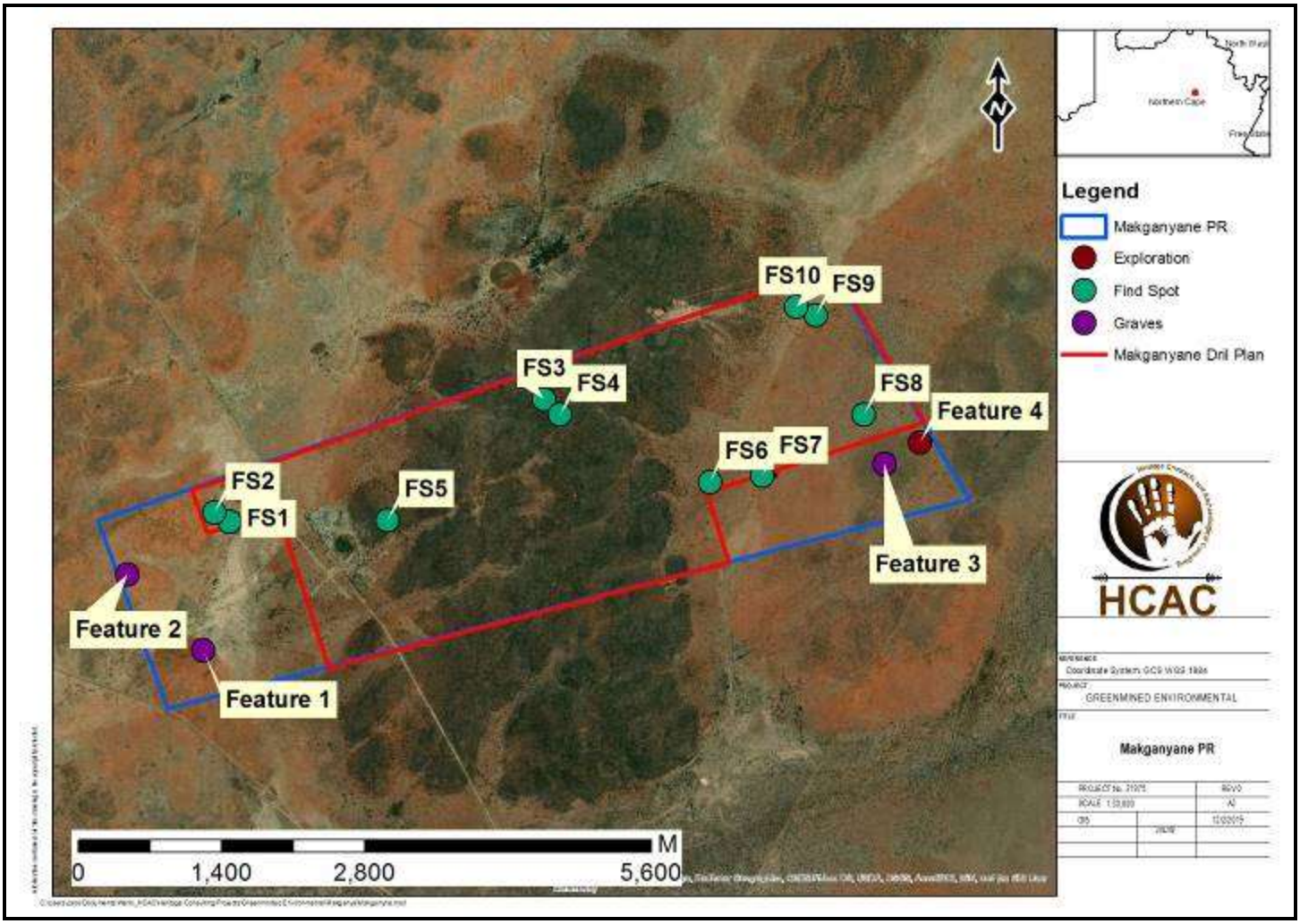

Figure 17. Heritage features recorded during the survey.

Table 5.Find Spots recorded during the survey.

Feature Number	Description	LONGITUDE	LATITUDE
FS1	Archaeological - Stone Age, Miscellaneous flake on quartzite	22° 54' 31.9320" E	28° 08' 59.4853" S
FS2	Archaeological - Stone Age, Flake with dorsal removals on quartzite	22° 54' 26.9245" E	28° 08' 56.6124" S
FS3	Archaeological – MSA, Pointed flake with dorsal removal and faceted striking platform	22° 56' 11.4613" E	28° 08' 20.7493" S
FS4	Archaeological – LSA, End and side scraper with use wear	22° 56' 16.5587" E	28° 08' 25.5444" S
FS5	Archaeological - Stone Age, Broken flake with bulb of percussion	22° 55' 21.8892" E	28° 08' 59.0351" S
FS6	Archaeological - Stone Age, Blade with dorsal removal on red sands	22° 57' 04.0537" E	28° 08' 47.0545" S
FS7	Archaeological - Stone Age, miscellaneous flake	22° 57' 20.5705" E	28° 08' 45.1321" S
FS8	Archaeological - Stone Age, miscellaneous flake	22° 57' 52.6391" E	28° 08' 25.5552" S
FS9	Archaeological - Stone Age	22° 57' 37.4473" E	28° 07' 54.2135" S
FS10	Archaeological - Stone Age, Miscellaneous flake with use wear/trampling on chert	22° 57' 31.4711" E	28° 07' 51.5569" S

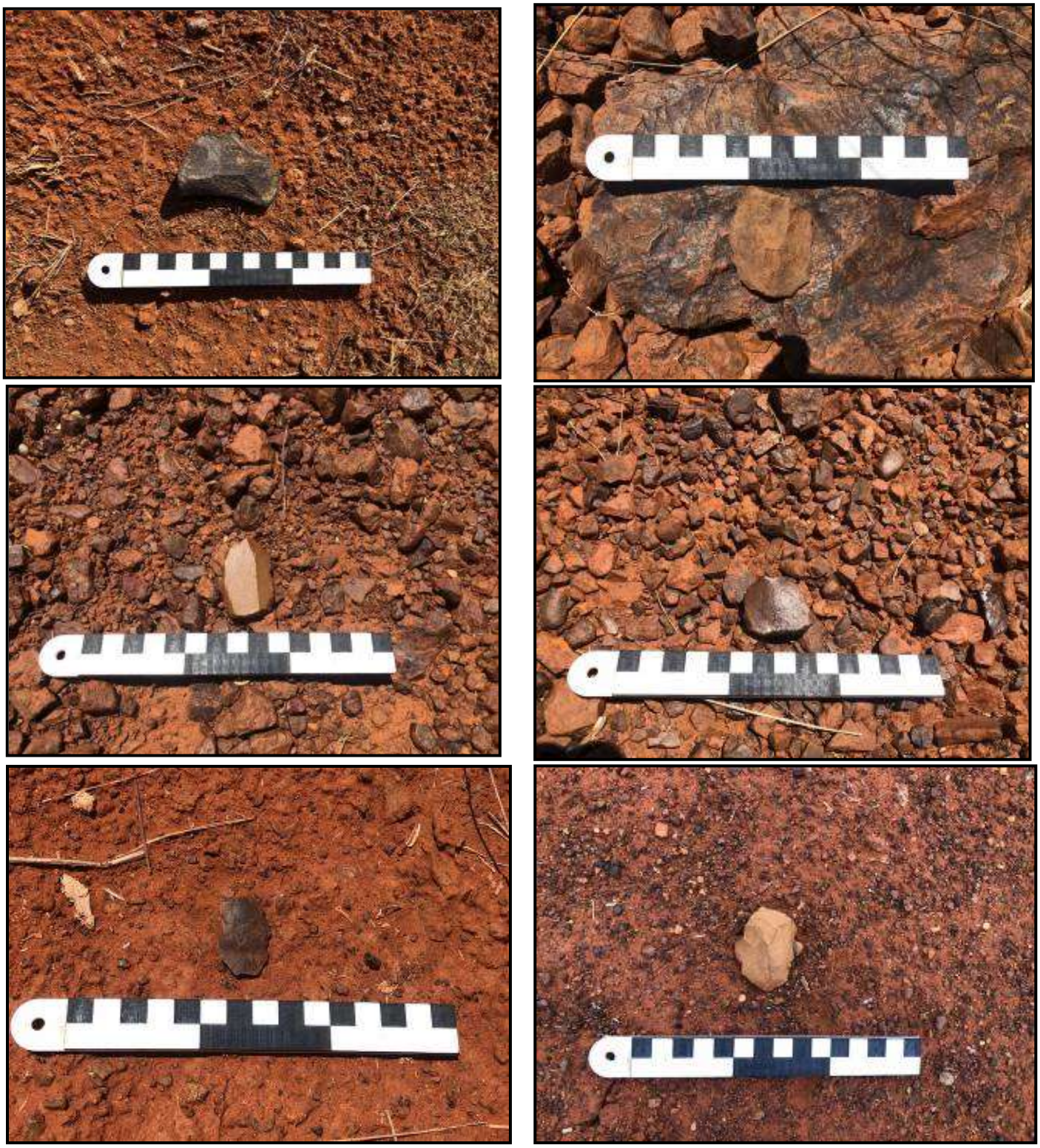

Figure 18. Range of Stone tool artefacts recorded as find spots during the survey.

Table 6. Heritage features recorded.

Label	Description	LONGITUDE	LATITUDE
Feature 1	Peens family cemetery. Fenced in with granite headstones	22° 54' 23.4577" E	28° 09' 40.3741" S
Feature 2	Stone packed graves of farm labourers	22° 53' 59.4635" E	28° 09' 16.3549" S
Feature 3	Stone cairn on small hill possibly pre-colonial grave	22° 57' 59.4505" E	28° 08' 41.2655" S
Feature 4	Exploration trenches measuring approximately three by two meters	22° 58' 10.6535" E	28° 08' 34.4616" S

Figure 19. Feature 1 - Peens family cemetery.

Figure 20. Feature 1 fenced in.

Figure 21. Stone packed graves at Feature 2.

Figure 22. Stone packed graves at Feature 2.

Figure 23. Stone cairn - Feature 3.

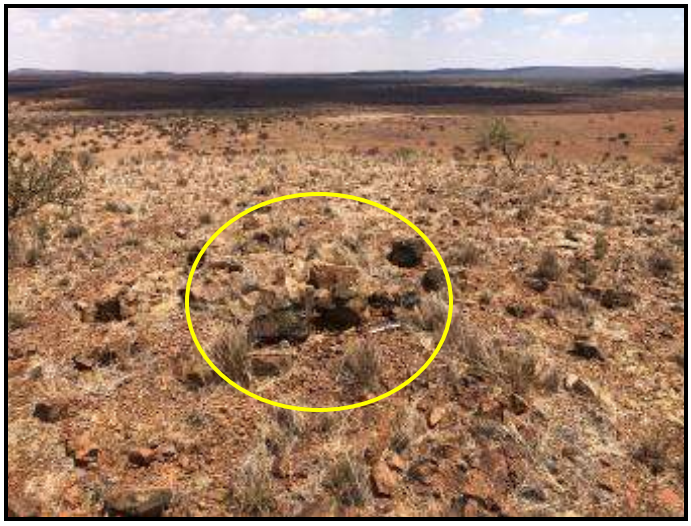

Figure 24. Feature 3 on top of small hill.

Figure 25. Feature 4 - Exploration trench.

Figure 26. Rocks from trench at Feature 4.

8.1. Sensitivity of the project area

Based on the results of the field work and previous studies conducted in the area cultural layering dating back to the Stone Age with scatters and sites dating to the ESA, MSA and LSA are on record for the larger area. Sites and artefacts dating to these periods are scattered over the landscape with ESA and MSA artefacts found close to the Banded Iron Stone Ridges with isolated artefacts found on the thick Hutton sands marking the plains in the study area that is underlain by colluvial rubble. The contact zone between the Quartanary sands and the Banded Iron Stone at the foot of the ridges that divides the area in two is known to contain higher densities of lithics (e.g. Kusel 2013). The known distribution of finds in the study area in relation to site distribution associated with landscape features was used as the main criteria for generating a three-tier sensitivity map of the study area (Figure 27).

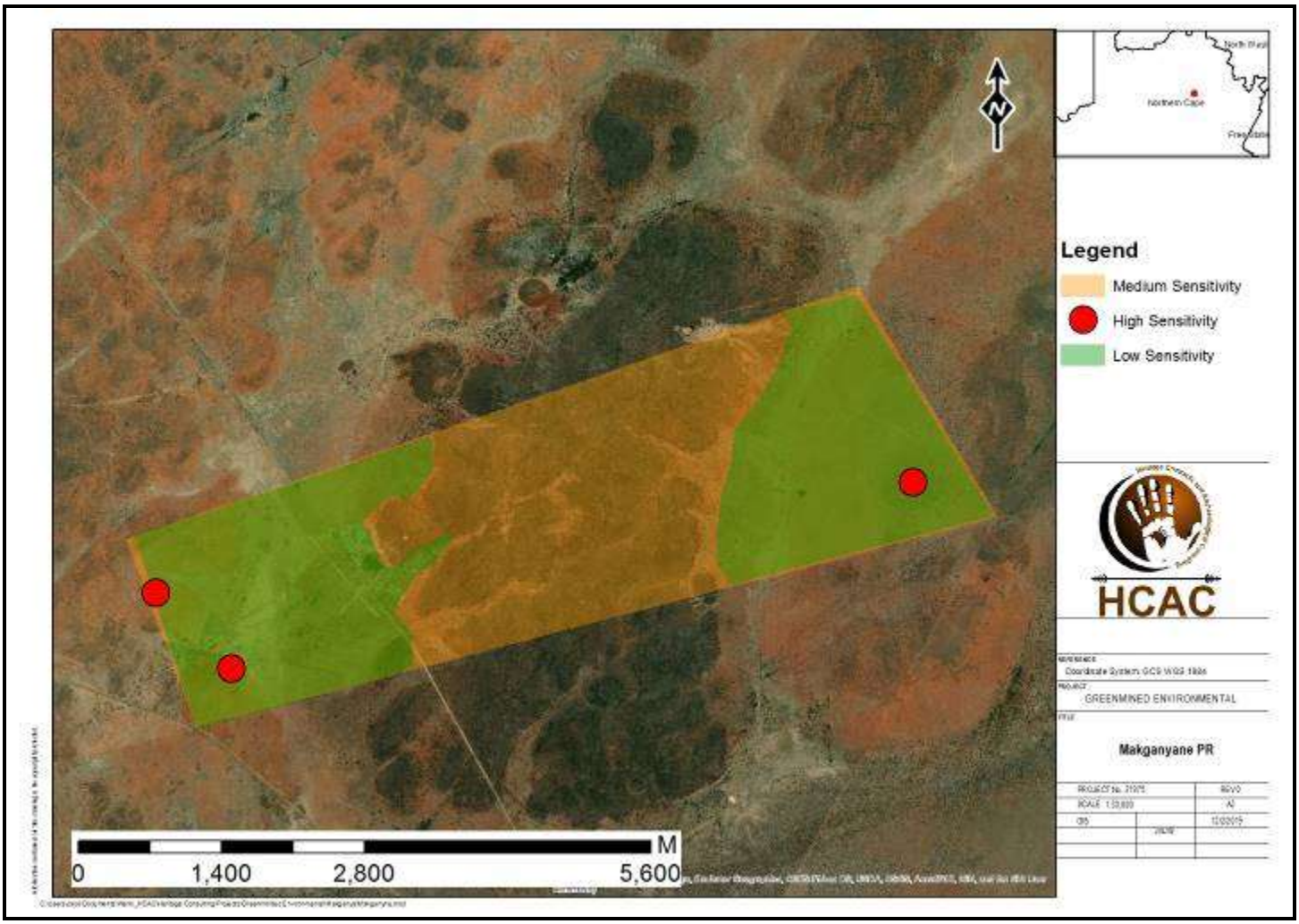

Figure 27. Heritage Sensitivity map.

9. Potential Impact

The chances of impacting unknown archaeological sites of significance in the study area is considered to be low. The impact footprint of percussion drilling for exploration is very small (Figure 28). Any direct impacts that did occur would be during the drilling phase only and expected to be of low significance, none of the recorded heritage features are located within the area marked for the drilling plan (Figure 17 and Table 7). Cumulative impacts occur from the combination of effects of various impacts on heritage resources. The importance of identifying and assessing cumulative impacts is that the whole is greater than the sum of its parts. Due to the fact that the area is generally speaking of low heritage significance the cumulative impacts are low.

Figure 28: Existing exploration locations in the study area.

Table 7: Distribution of heritage features to the drill block plan.

Label	Impact	Distance to drilling block plan
Feature 1	None	996 m
Feature 2	None	861 m
Feature 3	None	262 m
Feature 4	None	169 m

9.1. Pre-Construction phase:

It is assumed that this phase will entail clearance and groundworks. Impacts (if heritage resources are present) include destruction or partial destruction of non-renewable heritage resources.

9.2. Construction Phase

During this phase, the impacts and effects are similar in nature but more extensive than the pre-construction phase. These activities can have a negative and irreversible impact on heritage sites. Impacts include destruction or partial destruction of non-renewable heritage resources.

9.3. Operation Phase:

No impact is envisaged for the recorded heritage resources during this phase.

Table 8. Impact on heritage resources.

Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological and paleontological material or objects as well as graves (if present).		
	Without mitigation	**With mitigation (Preservation/ excavation of site)**
Extent	Local (3)	Local (3)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (2)	Low (2)
Probability	Not probable (2)	Not probable (2)
Significance	**20 (Low)**	**20 (Low)**
Status (positive or negative)	Negative	Negative
Reversibility	Not reversible	Not reversible
Irreplaceable loss of resources?	No resources were recorded	No resources were recorded.
Can impacts be mitigated?	Yes, a chance find procedure should be implemented.	Yes
Mitigation: A chance find procedure must be incorporated for the project within the EMPR and known sites must be avoided.		
Cumulative impacts: The impact footprint of percusion drilling is very small and the exploration will not cause a whole scale change to the environment.		
Residual Impacts: Although surface sites can be avoided or mitigated, there is a small chance that completely buried sites would still be impacted but this cannot be quantified.		

10. Conclusion and recommendation

The Department of Mineral Resources (DMR) granted Charlton Michael Rex a prospecting right (11 April 2019) for manganese ore, iron ore and diamonds (general) on the Farm Makganyane 667 (on Portion 2, portion of Portion 1, Remainder Portion, Remainder Portion of Portion 1 and Portion 3). The prospecting right was ceded to Makganyane Resources (Pty) Ltd on 30 October 2019 who intends to submit a Section 102 (S102) amendment application in terms of the MPRDA, 2002 to increase the number of boreholes to be drilled during the prospecting activities. The S102 application does not constitute a listed activity or specified activity but requires an application for a Part 2 amendment of the holder's EMP in terms of GNR 326 Section 31.

To date drilling results and available data have defined that a more comprehensive drilling campaign is needed and that the whole Prospecting Right area should be viewed as a target and HCAC was appointed to conduct a high-level heritage scan and Impact Assessment of the proposed Makganyane drill plan area measuring 1141.4 ha. The study areas were assessed both on desktop level and by a high-level field survey to understand the heritage character of the area since final boreholes area not available at the time of the survey.

The general area consists of two kinds of topographical elements: undulating plains characterised by thick Quaternary sand cover and a range of hills (Figure 13 & 14) roughly splitting the area in two. The local geology is not conducive to the forming of shelters on the ridges in contrast to areas where small shelters have been noted with lithic scatters to the north-west and to the east on the farms Heuningkrans, Langverwacht and Mookaneng (Kusel 2013 and vd Walt 1019). Archaeological visibility is the lowest on the plains that are mantled with Aeolian sand and characterised by grass veld. Dense growth of Swarthaak (Acacia mellifera) resulted in restricted access to some sections on the ridge in the middle of the study area.

No rock art, historical farm steads or colonial-era stone-walling (dwellings or kraals) were recorded. Human impact is limited to isolated farming infrastructure like farm fences, tracks, wind pumps and dams relating to the cultural landscape that consist of extensive farming and mining activities.

During the survey 10 Stone Age find spots and four features were recorded. The recorded features consist of three burial sites and one feature relating to exploration. All four features are located outside of the proposed drilling plan area and will not be impacted on. Graves and burial sites are of high social significance (Field rating GP A) and the exploration trenches are of no heritage significance (Field Rating GPC).

The Find spots consist of isolated Stone Age artefacts. These isolated find spots are out of context and of no significance apart from mentioning them in this report. Artefacts are mostly undiagnostic although MSA and LSA elements were noted. Raw material varies and consists of Banded Iron Stone, Quartzsite and chert. A Study by Beaumont (2007) on the same farm currently assessed recorded eight isolated artefacts and concluded that the study area is of low heritage significance.

Based on the results of the field work and previous studies conducted in the area cultural layering dating back to the Stone Age with scatters and sites dating to the ESA, MSA and LSA are on record for the larger area. Sites and artefacts dating to these periods are scattered over the landscape with ESA and MSA artefacts found close to the Banded Iron Stone Ridges with isolated artefacts found on the thick Hutton sands marking the plains in the study area that is underlain

by colluvial rubble. The contact zone between the Quartanary sands and the Banded Iron Stone at the foot of the ridges that divides the area in two is known to contain higher densities of lithics (e.g; Kusel 2013). The known distribution of finds in the study area in relation to site distribution associated with landscape features was used as the main criteria for generating a three-tier sensitivity map of the study area (Figure 27).

In terms of the paleontological component, an independent study was conducted by Prof Marion Bamford (2019) the study concluded that the proposed site lies on some ancient non-fossiliferous rocks and mostly on windblown sands and sand dunes of the Quaternary Kalahari Group sands. It is very unlikely that these sands preserve *in situ* fossils because the sands have been transported and there are no pans or springs in the area. Fossils have been recovered from similar sediments in other parts of the country so a Fossil Chance Find Protocol should be added to the EMPr. Based on this information it is recommended that no palaeontological site visit is required unless fossils are discovered once excavations and mining commence. It should be noted that the Makganyane Formation diamictites do not contain fossils although they are indicated as such by the SAHRIS palaeosensitivity map.

The cultural landscape (mining and farming activities) is generally modern without significant cultural landscape elements of concern and impacts are deemed to be of low significance.

The impact of the proposed exploration drilling on heritage resources is considered to be low. The impact footprint of percussion drilling for exploration is very small and no bulk sampling will be done, no processing water or electricity will be needed and no servicing of equipment will take place on site. Access to the borehole locations will be mainly limited to existing farm tracks.

The impact of the proposed drilling on heritage resources will not have a significant impact on the heritage resources of the Northern Cape. It is recommended that the proposed project can commence on the condition that the following recommendations are implemented and based on approval from SAHRA

- Implementation of a chance finds procedure as outlined in Section 10.1;
- Known heritage resources should be avoided with a buffer zone of 30 meters;
- Existing roads should be used as far as possible;
- Any future listed activities should be subjected to an HIA;
- The ECO for the project should assess drill locations when these become available prior to drilling to confirm there are no graves, stone walling or any heritage features.

10.1. Chance Find Procedure

The possibility of the occurrence of subsurface finds or previously unknown sites cannot be excluded. Therefore, if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find and therefor chance find procedures should be put in place for the project. A short summary of chance find procedures is discussed below.

This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below.

11. If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
12. It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area.
13. The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.

10.2. Reasoned Opinion

The impact of the proposed project on heritage resources is considered low and no further pre-construction mitigation in terms of archaeological resources is required based on approval from SAHRA. Furthermore, the socio-economic benefits associated with the project also outweigh the possible impacts of the development on heritage resource if the correct mitigation measures (i.e. chance find procedure) are included in the EMPr.

10.3. Potential risk

Potential risks to the proposed project are the occurrence of unknown and unmarked graves. The possibility exists that the study area could contain graves of which surface indicators have been destroyed and subsurface material could be uncovered during earthworks. These risks can be mitigated to an acceptable level with the implementation of a chance find procedure as outlined in Section 10.1.

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Appendix A - Curriculum Vitae of Specialist

Jaco van der Walt
Archaeologist

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Education:

Particulars of degrees/diplomas and/or other qualifications:

Name of University or Institution:		University of Pretoria
Degree obtained	**:**	BA Heritage Tourism & Archaeology
Year of graduation	**:**	2001
Name of University or Institution:		University of the Witwatersrand
Degree obtained	**:**	BA Hons Archaeology
Year of graduation	**:**	2002
Name of University or Institution	**:**	University of the Witwatersrand
Degree Obtained	**:**	MA (Archaeology)
Year of Graduation	:	2012
Name of University or Institution	**:**	University of Johannesburg
Degree	**:**	PhD
Year	:	Currently Enrolled

EMPLOYMENT HISTORY:

2011 – Present:	**Owner – HCAC (Heritage Contracts and Archaeological Consulting CC)**.
2007 – 2010 :	**CRM Archaeologist,** Managed the Heritage Contracts Unit at the University of the Witwatersrand.
2005 - 2007:	**CRM Archaeologist**, Director of Matakoma Heritage Consultants
2004:	**Technical Assistant**, Department of Anatomy University of Pretoria
2003:	**Archaeologist**, Mapungubwe World Heritage Site
2001 - 2002:	**CRM Archaeologists,** For R & R Cultural Resource Consultants, Polokwane
2000:	**Museum Assistant**, Fort Klapperkop.

Countries of work experience include:

Republic of South Africa, Botswana, Zimbabwe, Mozambique, Tanzania, The Democratic Republic of the Congo, Lesotho and Zambia.

SELECTED PROJECTS INCLUDE:

Archaeological Impact Assessments (Phase 1)

Heritage Impact Assessment Proposed Discharge Of Treated Mine Water Via The Wonderfontein Spruit Receiving Water Body Specialist as part of team conducting an Archaeological Assessment for the Mmamabula mining project and power supply, Botswana

Archaeological Impact Assessment Mmamethlake Landfill

Archaeological Impact Assessment Libangeni Landfill

Linear Developments

Archaeological Impact Assessment Link Northern Waterline Project At The Suikerbosrand Nature Reserve

Archaeological Impact Assessment Medupi – Spitskop Power Line,

Archaeological Impact Assessment Nelspruit Road Development

Renewable Energy developments

Archaeological Impact Assessment Karoshoek Solar Project

Grave Relocation Projects

Relocation of graves and site monitoring at Chloorkop as well as permit application and liaison with local authorities and social processes with local stakeholders, Gauteng Province.

Relocation of the grave of Rifle Man Maritz as well as permit application and liaison with local authorities and social processes with local stakeholders, Ndumo, Kwa Zulu Natal.

Relocation of the Magolwane graves for the office of the premier, Kwa Zulu Natal

Relocation of the OSuthu Royal Graves office of the premier, Kwa Zulu Natal

Phase 2 Mitigation Projects

Field Director for the Archaeological Mitigation For Booysendal Platinum Mine, Steelpoort, Limpopo Province. Principle investigator Prof. T. Huffman

Monitoring of heritage sites affected by the ARUP Transnet Multipurpose Pipeline under directorship of Gavin Anderson.

Field Director for the Phase 2 mapping of a late Iron Age site located on the farm Kameelbult, Zeerust, North West Province. Under directorship of Prof T. Huffman.

Field Director for the Phase 2 surface sampling of Stone Age sites effected by the Medupi – Spitskop Power Line, Limpopo Province

Heritage management projects

Platreef Mitigation project – mitigation of heritage sites and compilation of conservation management plan.

MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS:

- Association of Southern African Professional Archaeologists. Member number 159

  Accreditation:
  - Field Director — Iron Age Archaeology
  - Field Supervisor — Colonial Period Archaeology, Stone Age Archaeology and Grave Relocation
- Accredited CRM Archaeologist with SAHRA
- Accredited CRM Archaeologist with AMAFA
- Co-opted council member for the CRM Section of the Association of Southern African Association Professional Archaeologists (2011 – 2012)

PUBLICATIONS AND PRESENTATIONS

- A Culture Historical Interpretation, Aimed at Site Visitors, of the Exposed Eastern Profile of K8 on the Southern terrace at Mapungubwe.
  - J van der Walt, A Meyer, WC Nienaber
  - Poster presented at Faculty day, Faculty of Medicine University of Pretoria 2003
- 'n Reddingsondersoek na Anglo-Boereoorlog-ammunisie, gevind by Ifafi, Noordwes-Provinsie. South-African Journal for Cultural History 16(1) June 2002, with A. van Vollenhoven as co-writer.
- Fieldwork Report: Mapungubwe Stabilization Project.
  - WC Nienaber, M Hutten, S Gaigher, J van der Walt
  - Paper read at the Southern African Association of Archaeologists Biennial Conference 2004
- A War Uncovered: Human Remains from Thabantšho Hill (South Africa), 10 May 1864.
  - M. Steyn, WS Boshoff, WC Nienaber, J van der Walt
  - Paper read at the 12th Congress of the Pan-African Archaeological Association for Prehistory and Related Studies 2005
- Field Report on the mitigation measures conducted on the farm Bokfontein, Brits, North West Province .
  - J van der Walt, P Birkholtz, W. Fourie
  - Paper read at the Southern African Association of Archaeologists Biennial Conference 2007
- Field report on the mitigation measures employed at Early Farmer sites threatened by development in the Greater Sekhukhune area, Limpopo Province. J van der Walt
  - Paper read at the Southern African Association of Archaeologists Biennial Conference 2008

- Ceramic analysis of an Early Iron Age Site with vitrified dung, Limpopo Province South Africa.
    - J van der Walt. Poster presented at SAFA, Frankfurt Germany 2008

- Bantu Speaker Rock Engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga (*In Prep)*
    - J van der Walt and J.P Celliers
- Sterkspruit: Micro-layout of late Iron Age stone walling, Lydenburg, Mpumalanga. W. Fourie and J van der Walt. A Poster presented at the Southern African Association of Archaeologists Biennial Conference 2011
- Detailed mapping of LIA stone-walled settlements' in Lydenburg, Mpumalanga. J van der Walt and J.P Celliers
    - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
- Bantu-Speaker Rock engravings in the Schoemanskloof Valley, Lydenburg District, Mpumalanga. J.P Celliers and J van der Walt
    - Paper read at the Southern African Association of Archaeologists Biennial Conference 2011
- Pleistocene hominin land use on the western trans-Vaal Highveld ecoregion, South Africa, Jaco van der Walt.
    - J van der Walt. Poster presented at SAFA, Toulouse, France.
      Biennial Conference 2016

REFERENCES:

1. Prof Marlize Lombard Senior Lecturer, University of Johannesburg, South Africa
   E-mail: mlombard@uj.ac.za
2. Prof TN Huffman Department of Archaeology Tel: (011) 717 6040
   University of the Witwatersrand
3. Alex Schoeman University of the Witwatersrand
   E-mail:Alex.Schoeman@wits.ac.za