



NGT ESHS Solutions

PROJECT TITLE:

BASIC ASSESSMENT REPORT FOR THE PROSPECTING RIGHT AND ENVIRONMENTAL AUTHORISATION APPLICATION FOR VREDFORT WEST SITUATED IN THE FREE STATE PROVINCE

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Heritage Impact Assessment the prospecting right and environmental authorisation application for Vredefort West situated in the Free State Province.

NGT Holdings (Pty) Ltd

Registration: 2012/004322/07 V.A.T: 495073401

Tel: 011 888 0209

CEO – Nkosinathi Tomose

E-mail: nkosinathi@ngtholdings.co.za


Website: www.ngtholdings.co.za

Postal Address: PostNet Suite # 122, Private Bag X1, Northcliff, 2115

ACKNOWLEDGEMENT OF RECEIPT

CLIENT:	SHANGO SOLUTIONS (PTY) LTD
CONTACT PERSON	Ms. Zizo Siwendu
TELEPHONE NUMBER	011 678 6504
CELLPHONE	011 678 9731
FAX NUMBER	072 669 6250
E-MAIL ADDRESS:	zizo@shango.co.za

CONSULTANT:	NGT HOLDINGS (PTY) LTD
AUTHOR	Ms Cherene de Bruyn
REVIEW AND QUALITY CONTROL (INTERNAL)	Mr. Nkosinathi Tomose
TELEPHONE NUMBER	011 888 0209
CELL PHONE NUMBER	072 437 1430
E-MAIL ADDRESS:	cherene@ngtholdings.co.za

CONTACT PERSON:	CHIEF EXECUTIVE OFFICER AND PRINCIPAL CONSULTANT
HAND SIGN:	<p>P.P. </p>
CONTACT PERSON:	DIRECTOR- STRATEGY AND BUSINESS DEVELOPMENT
HAND SIGN:	

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DECLARATION OF INDEPENDENCE

Cherene de Bruyn for NGT has compiled this report. The views expressed in this report are entirely those of the author and no other interest was displayed during the decision-making process for the project.

CONSULTANT:	NGT Holdings (Pty) Ltd
SPECIALIST NAME	Cherene de Bruyn
QUALIFICATIONS	<ul style="list-style-type: none"> • MA Archaeology, University College London • BSc (Honours) Physical Anthropology, University of Pretoria • BA (Honours) Archaeology, University of Pretoria • BA General, University of Pretoria
ASSOCIATION/PROFESSIONAL BODY	Association of South African Professional Archaeologists (ASAPA): Professional Membership
YEARS OF EXPERIENCE IN THE INDUSTRY	1 Year
SIGNATURE (HAND SIGNATURE ON APPROVAL BY CLIENT)	

EXECUTIVE SUMMARY

NGT was appointed by Shango to conduct an HIA (inclusive of Palaeontological Desktop Assessment) study for the prospecting right and environmental authorisation application conducted by Shango for Vredefort West. The receiving environment is located in the Moqhaka Local Municipality (MLM) in the Fezile Dabi District Municipality (FDDM), situated in the Free State Province.

This HIA report forms part of the Basic Assessment Report (BAR) and it also informs the EMPr report on the management and conservation of cultural heritage resources. This study is conducted independently in terms of Section 38 (3) of the National Heritage Resources Act (NHRA), No. 25 of 1999.

The standard NGT HIA study process entailed conducting a detailed background information search of the receiving environment. The search assesses among other forms of data, previous studies conducted in and around the proposed study area or the development area. This also includes conducting an onsite investigation (survey) to identify and map out heritage resources on site and assess impacts of the proposed development on the identified heritage resources. Recommendations are then made with regards to how the identified heritage resources should be managed and/or mitigated to avoid being negatively impacted by development activities. Furthermore, recommendations are made on how the positive project benefits can be enhanced, to ensure a long-term strategy for the conservation and promotion of heritage resources, if any are found.

The receiving environment covers a total of 18 623.73 hectares and it involves a combination of invasive (drilling) and non-invasive prospecting activities. The survey of the proposed prospecting rights area or receiving environment covered two proposed trenches, although the literature review process covered the entire receiving environment and the surrounding area.

The two proposed trench sites on the Farm Mimosa Grove 491 was surveyed on Tuesday, 21 August. A second farm Rhebokfontein West 117 was also surveyed on the same day. The survey was conducted by Miss Cherene de Bruyn (Archaeologist and Heritage Consultant – NGT). Mr Burt Coetzee, one of the landowners accompanied Miss Cherene de Bruyn during the farm visits and survey of the sites. The survey was conducted on foot. A vehicle was also used to access the site.

In terms of the South African Heritage and Resources Agency (SAHRA) Paleontological Sensitivity Layer the area falls within a region a low to very high sensitivity area. Based on the results of literature review, field survey and the assessment of identified heritage resources the following conclusions and recommendations are made in terms of the National Heritage Act about the proposed development:

Conclusions:

Based on the results of literature review and the survey results the following conclusions are made:

- The project area near Vredefort West, is located in a region rich in archaeology and heritage resources.
- During the survey the following sites were identified:
 - Mim Gro Cem-01: A small cemetery containing 33 graves, dating to the Historical and Contemporary period, were located on the border of the farms Mimosa Groove 491 and Lindekfeesfontein 73. The graves are located approximately 700 m, north west of Trench 1 and fall just outside the 500 m zone of influence. However, it should be noted that the graves do fall within the proposed broader Vredefort West prospecting area.
 - Lindek Cem-01: A small cemetery containing 32 graves, dating to the Historical and Contemporary period, were identified on the farm Lindekfeesfontein 73. The graves are located approximately 2,4 km, north west of Trench 1, and fall just outside the 500 m zone of influence. However, it should be noted that the graves do fall within the proposed broader Vredefort West prospecting area.
 - Rhebok Cem-01: 14 graves dating to the Historical period were identified on the Rhebokfontein West 117. The graves are located approximately 21 km, south of Trench 1. However, they are located within the project boundary of Vredefort West.
 - Onreg Cem-01: 11 graves dating to the Historical period were identified on the farm Onreg 1032. The graves are located approximately 21 km, south of Trench 1. However, they are located outside the project boundary of Vredefort West, but within a 500 m of influence.
 - Site complex 01: Several collapsed stone walls, dating to the Late Iron Age were identified on the farm Rhebokfontein West 117. The stone walls are located approximately 19 km,

south of Trench 1. However, they are located within the project boundary of Vredefort West.

- The cemeteries and stone walls identified in the project area are of high/medium significance.
- No other archaeological or historical resources were identified in the project area.
- No other graves or burial grounds were identified in the project area. However, as graves are subterranean in nature and might not have been identified during the initial site visit and survey.
- In terms of SAHRA Paleontological Sensitivity Layer, the area is within a low to very high sensitivity area. According to the Palaeontological Impact Assessment (PIA) the two trench areas on the farm Mimosa Grove 491 falls on ancient non-fossiliferous rocks of the Witwatersrand Group (Government and Jeppestown Subgroups) while a section in the west occurs on sandstones and shales of the Vryheid Formation that could preserve fossil plants of the Glossopteris flora (early Permian) (See PIA report).

Recommendations:

- It is recommended that the cemeteries (Mim Gro Cem-01 and Lindek Cem-01) identified near the location of Trench 1 and 2 on the farms Mimosa Groove 491 and Lindekfeesfontein 73 should be fenced off from prospecting activities and a 10m buffer be established from each of the cemeteries. These areas should be considered as No-Go-Areas.
- Should the prospecting activities expand in the near future to include the farm Rhebokfontein West 117, the cemetery (Rhebok Cem-01) should also be fenced off from prospecting activities and a 10m buffer zone be established. This area will become a No-Go-Area, and prospecting and prospecting machinery and vehicles should avoid the area.
- Should the prospecting activities expand in the near future to include the farm Rhebokfontein West 117, a Phase II investigation of the stonewalls (Site Complex 01) on the Rhebokfontein West 117 should be conducted, where it is mapped, recorded and permit for alterations and demolition should be applied for in terms of Section 34 of the NHRA, No. 25 of 1999 with the provincial heritage authority i.e. Free State Provincial Heritage Authority (FSPHRA).
- Should the prospecting activities expand in the near future a buffer zone should be established around Onreg Cem-01 on the farm Onreg 1032 and it should be marled as a No-Go-Area.

- The historical graves identified were rated as high/medium significance and are protected as a in terms of Section 36) of the NHRA, No. 25 of 1999. As such it is recommended that no machinery or site office associated with the proposed prospecting activities should be established near the graves.
- However, it should be noted that some archaeological material, including artefacts and graves can be buried underground and as such, may not have been identified during the initial survey and site visits. In the case where the proposed development activities bring these materials to the surface, they should be treated as Chance Finds. Should such resources be unearthed it is recommended that, the prospecting activities be stopped immediately, and an archaeologist be contacted to conduct a site visits and make recommendations on the mitigation of the finds. SAHRA and NW-PHRA should also be informed immediately on such finds.
- In terms of the South African Heritage and Resources Agency (SAHRA) Paleontological Sensitivity Layer the area falls within a region defined as a low to very high sensitivity area. As such it is recommended that Fossil Chance Find Protocol is included in the EMPr. If fossils are found during the prospecting activities a palaeontologist should be called immediately to site to assess the fossils (See PIA report).
- The proposed development will not have impact on the heritage and archaeological resources in the broader Vredefort area.
- With regards to the limitations identified for the project, it is recommended that NGT engage in a Public Participation Programme that entails setting up a meeting between Shango, the specialists and the landowners along with the Farmers' Association, Free State Agriculture (Vrystaat Landbou) with the purpose of sharing information regarding the project as well as discussing the related environmental and heritage studies that need to be conducted.

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LIST OF ABBREVIATIONS

ACRONYMS	DESCRIPTION
AUTHORITIES	
ASAPA	Association of South African Professional Archaeologists
FDDM	Fezile Dabi District Municipality
FS-PHRA	Free State Provincial Heritage Resources Authority
MLM	Moqhaka Local Municipality
NGT	Nurture, Grow, Treasure
SADC	Southern African Developing Community
SAHRA	South African Heritage Resources Agency
DISCIPLINE	
AIA	Archaeological Impact Assessment
BAR	Basic Assessment Report
CMP	Cultural Management Plan
ESA	Early Stone Age
EIAs	Environmental Impact Assessment
EMPr	Environmental Management Programme
EIA	Early Iron Age
HCMP	Heritage Cultural Management Plan Report
HIA	Heritage Impact Assessment
LIA	Late Iron Age
LSA	Late Stone Age
MIA	Middle Iron Age
MSA	Middle Stone Age
PIA	Palaeontological Impact Assessment
LEGAL	
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act

TERMS AND DEFINITIONS

Archaeological resources

These include:

- Material remains resulting from human activities which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- Rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- Wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- Features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Palaeontological

This means any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial.

Cultural significance

This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

Development

This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in the change to the nature, appearance or physical nature of a place or influence its stability and future well-being, including:

- Construction, alteration, demolition, removal or change in use of a place or a structure at a place;
- Carrying out any works on or over or under a place;

- Subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
- Constructing or putting up for display signs or boards; any change to the natural or existing condition or topography of land;
- And any removal or destruction of trees, or removal of vegetation or topsoil.

Heritage resources: This means any place or object of cultural significance.

1. INTRODUCTION

1.1. Background Information of Project

NGT was appointed by Shango to conduct an HIA (inclusive of Palaeontological Desktop Assessment) study for the prospecting right and environmental authorisation application conducted by Shango for Vredefort West. The receiving environment is located in the MLM in the FDDM, in the Free State Province, South Africa.

The area proposed for prospecting is located over 64 farms located to the west of Vredefort (*Figure. 1 and Table 1*). The total size of the area proposed for prospecting is 18 623.73 hectares. The objective of the proposed project is to explore and quantify the potential of mineral resources in the area. Two trenches holes were proposed and located on Portion 1 of the Farm Mimosa Grove 491 (*Figure. 2*). A second farm Rhebokfontein West 117 also located in the project area was also surveyed (*Figure.3*).

The HIA will investigate the potential impacts of the proposed prospecting activities on any heritage resources identified within the receiving environment such as archaeological artefacts, burial grounds and historical features of the built environment. The study will focus mainly on the area surrounding the two trenches on Portion 1 of the Farm Mimosa Grove and the archaeological resources found on the farm Rhebokfontein West 117. The overall objective of the HIA is to give advice on the management of the heritage resources in and around the proposed project area in terms of known heritage resources management measures in line with the NHRA, No. 25 of 1999.

1.2. Limitations

- During the initial HIA study of the entire project area several limitations were observed. It was found that the landowners whose properties are located in the proposed prospecting area, as identified by the Shango Landowner Database, are upset about the proposed prospecting activities.
- This resulted in specialists being unable to gain access to the properties to conduct the required studies. As such this HIA prioritised the Farm Mimosa Grove 491 in Vredefort where invasive prospecting is planned.

- The landowner of the farms Rhebokfontein West 117, agreed to accompany the Cherene de Bruyn, during the survey of his farm. The results of the site visit are also discussed in this HIA.

The HIA will investigate the potential impacts of the proposed project prospecting activities on any heritage resources identified within the receiving environment such as archaeological artefacts, burial grounds and historical features of the built environment. The overall objective of the HIA is to give advice on the management of the heritage resources in and around the proposed project area in terms of known heritage resources management measures in line with the NHRA, No. 25 of 1999.

1.3. Description of the Affected Environment

Description

- The project area is Vredefort West located in the Moqhaka Local Municipality in the Fezile Dabi District Municipality situated in the Free State Province (*Table.2*).
- Project area covers an area of approximately 18 623.73 hectares.
- Located in between the towns Viljoenskroon and Vredefort

Access

- Get on Francois Oberholzer Fwy/M2 from Von Wielligh St and Stott Rd (*Figure.4*).
- Take N1 to R59 in Free State. Take exit 498 from N1
- Continue on R59 to your destination

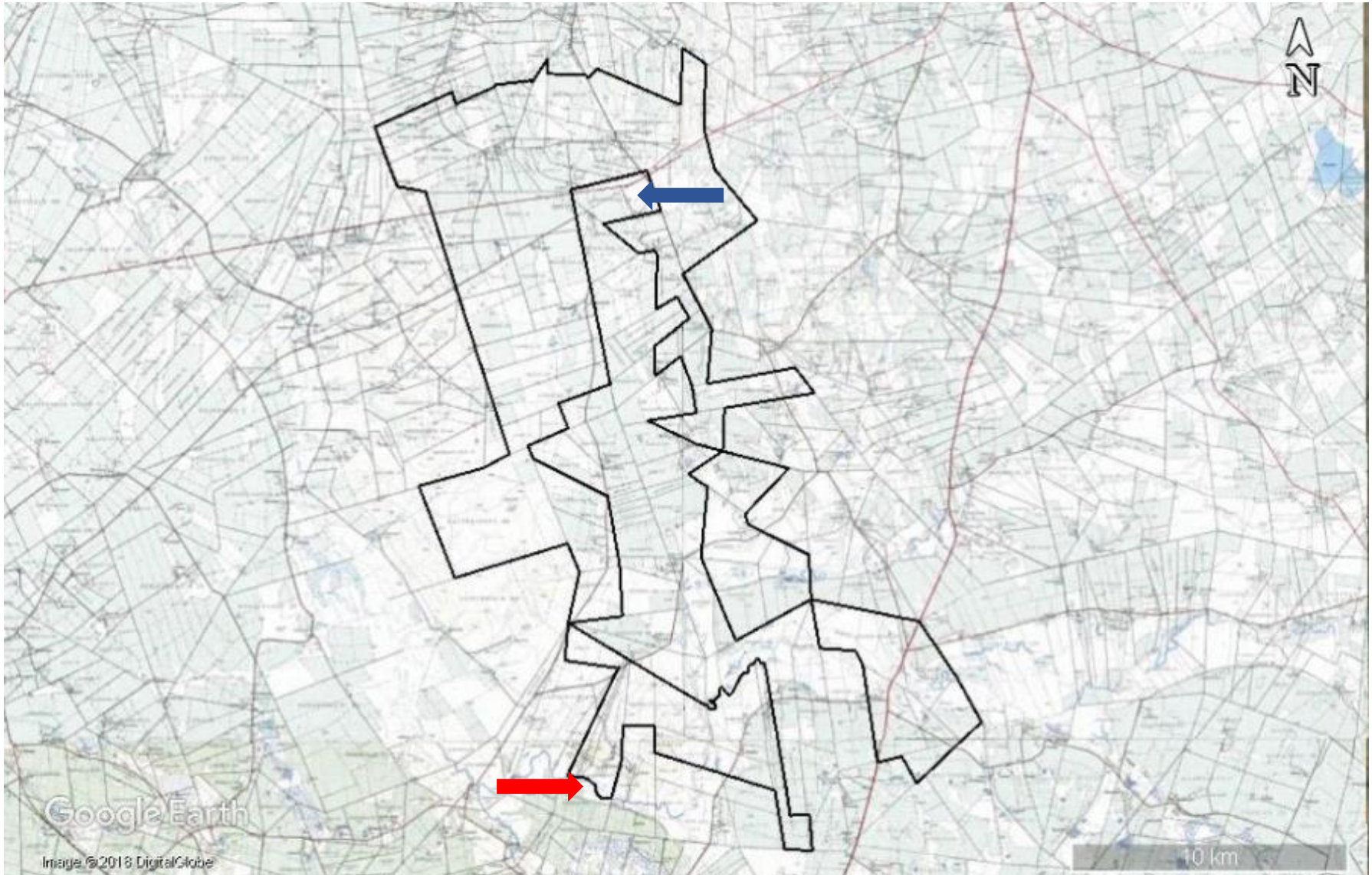


Figure 1: Google Earth Image with Topographic map (1:50000) overlay, indicating farms of the project area in Vredefort West. (Blue arrow indicates the farm Mimosa Grove and the red arrow indicates the farm Rhebokfontein).



Figure 2: Google Earth image of the Farm Mimosa Grove 491, with the proposed locations of the two trenches (in red).



Figure 3: Google Earth image of the farm Rhebokfontein West 117 in the Southern part of the project area

Table 1: Farms within the project area

Names of farms located in Vredefort West	
• Aberdeen B 974	• Lindekwees-Fontein 73
• Aprilskraal 217	• Maria 115
• Augustus Kraal 218	• Martha's Wil 797
• Baltespoort 998	• Maugwynheg 1136
• Bellary 724	• Mimosa Grove 491
• Bloemfontein 7	• Mooihoek 975
• Brakdam 494	• Mooiplaats A 852
• Bren 1031	• Mooiplaats B 853
• Cecilia 134	• Mooiuitsig 1216
• Cecilia 134	• Morgenzon 799
• Cyferkuil 634	• Mount Jackson 358
• Damplaats 626	• Mount Jackson 358
• De Put 289	• Mount Surprise 357
• De West Rust 230	• Palestina 635
• Dora 492	• Rhebokfontein 120
• Eendekuil 1057	• Rhebokfontein Wes 1172
• Engels Kuil 30	• Rhebokfontein-West 117
• Freda 1108	• Roodewal 119
• Geluksvlei 605	• Skaaplaas 1022
• Goedgedacht 504	• Smaldeel 493
• Goudini 742	• Smaragd 1173
• Goudrif 1218	• Stillehoogte 744
• Hercules 800	• Tevereden 374
• Jacoba's Rust 747	• Turfhoek 798
• Kinderbewys A 1044	• Uitkyk 1027
• Kinderbewys B 1045	• Uitsoek 1011 0
• Kingsley 622	• Verheugd 851
• Klipheuvel 739	• Vlakkuil 152
• Knapdaar 619	• Voordeel 1067
• Kroonvlei 766	• Vrugbaar 1107
• Leeuwdoorns 1215	• Windhuk 630
• Leeuwdoorns 350	• Witterand 103

Table 2: Site Location and Property Information

Location	
Name of affected property	Vredefort West
Erf or farm number/s	<ul style="list-style-type: none"> • Mimosa Grove 491 • Rhebokfontein West 117
Town	Vredefort
Responsible Local Authority	Moqhaka Local Municipality
Ward	25
Magisterial District	Fezile Dabi District Municipality
Region	Free state Province
Country	South Africa
Site centre GPS coordinates	<p>Mimosa Grove 491</p> <ul style="list-style-type: none"> • 27° 3'53.84"S • 27°14'7.07"E <p>Rhebokfontein West 117</p> <ul style="list-style-type: none"> • 27°15'25.35"S • 27°13'18.00"E

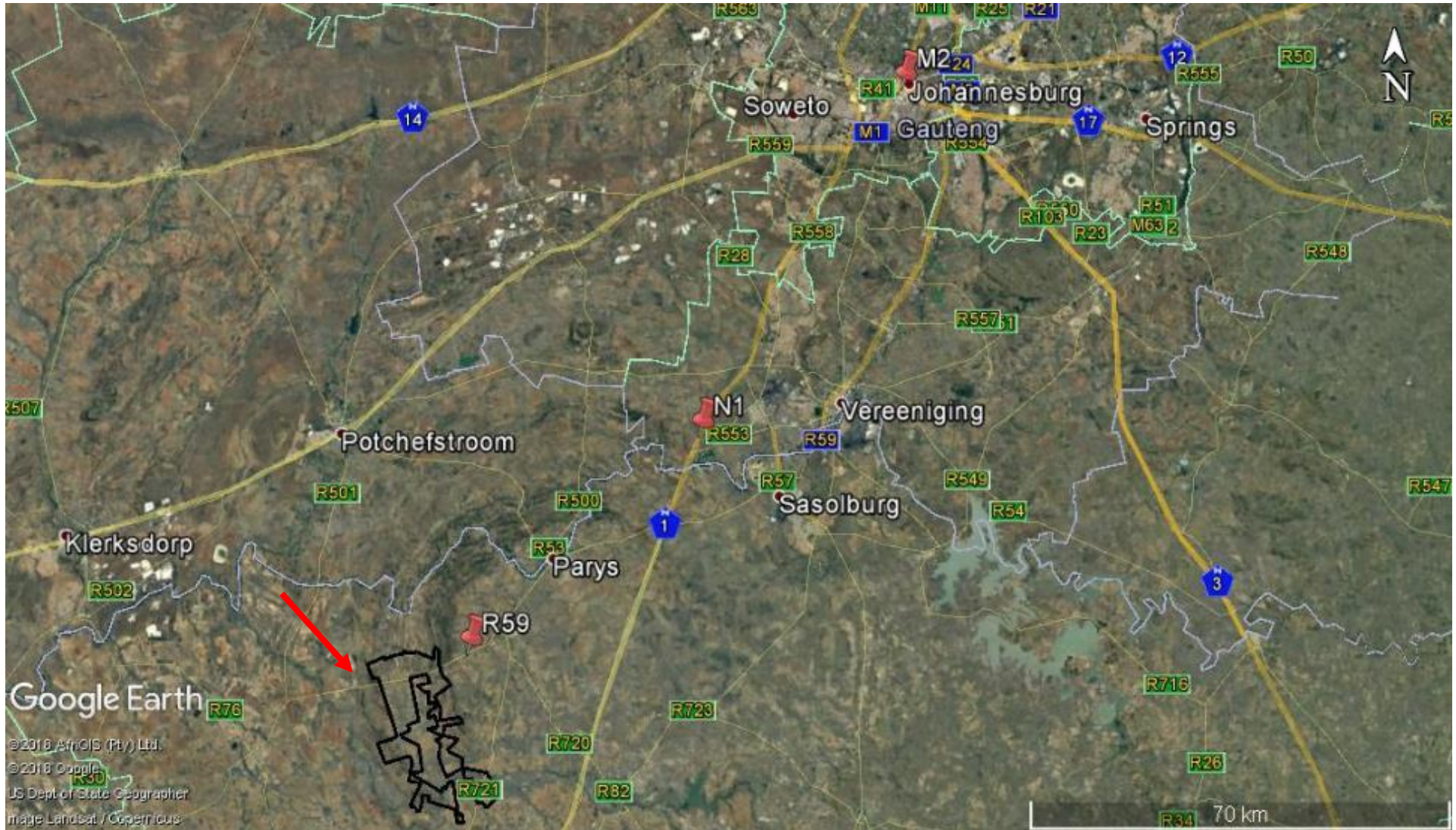


Figure 4: Google Earth image indicating access to site (red arrow) from Johannesburg

1.4. Terms of Reference for the Appointment of Archaeologist and Heritage Specialist

The HIA is conducted in terms of Sections 38 the NHRA, No. 25 of 1999. This prescript of the Act Section 38:

“the responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (3) (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 result 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.”

Shango appointed NGT as the lead cultural resources management (CRM) consultant to conduct and manage the HIA process. Cherene de Bruyn, Archaeologist and Heritage Consultant for NGT, conducted the HIA study for the proposed development. The appointment of NGT as an independent CRM firm is in terms of the NHRA, No. 25 of 1999.

1.5. Legal Requirements for Completion of the Study

The NHRA, No. 25 of 1999 sets norms and standards for the management of heritage resources in South Africa. Section 35 and 38 (3) of the NHRA, No. 25 of 1999 informs the current HIA study. Table 2 below gives a summary of all the relevant legislations that informed the current study.

Table 3-Legislation and relevance to this HIA Study

Legislation (incl. Policies, Bills and Framework)	
<i>Heritage</i>	<ul style="list-style-type: none"> • Heritage resources in South Africa are managed through the NHRA, No. 25 of 1999. This Act sets guidelines and principles for the management of the <i>nation estate</i>. • While Section 35 becomes relevant in terms of archaeology and palaeontology • Section 36 becomes relevant in terms of graves and burial grounds. • Section 38 of the Act becomes relevant in terms of nature of the proposed project in terms of developing the heritage impact assessment study.
<i>Environmental</i>	<ul style="list-style-type: none"> • The National Environmental Management Act (NEMA), No. 107 of 1998. • The cultural environment in South Africa is managed through Section 24 of the NEMA, No. 107 of 1998.

The following chapter outline the methodology used to assess the current site impacts and cumulative impacts that will result from the proposed project on the identified historic or archaeological sites.

2. METHODOLOGY

2.1. Approach to the Study

Cherene de Bruyn, Archaeologist and Heritage Consultant for NGT, is responsible for the compilation of the current HIA report. The Review and Quality Control (RQC) process involved reviewing the First Draft HIA (Revision 01) and revising the Second Draft (Revision 02); the RQC was completed by Mr Nkosinathi Tomose, Principal Archaeologist and Heritage Consultant for NGT. The RQC is a standard process at NGT; in the case that the Director and Principal Consultant is responsible for the report – another consultant has to undertake the RQC process. This HIA is conducted for a for the prospecting right and environmental authorisation application for Kroonstad South situated in the Free State Province, South Africa.

2.2. Step I – Literature Review (Desktop Phase)

Background information search for the proposed development took place following the receipt of appointment letter from the client. Sources used included, but not limited to published HIA studies, academic books, academic journal articles and the internet about the site and the broader area in which it is located. Interpretation of legislation (the NHRA, No. 25 of 1999) and local by-laws forms, form the backbone for the study.

2.3. Step II – Physical Survey

The physical survey of the project area (footprint) was conducted on Tuesday 21 August 2018. The survey was conducted by Miss Cherene de Bruyn (archaeology and Heritage Consultant – NGT). Mr Burt Coetzee, one of the landowners accompanied Miss Cherene de Bruyn during the farm visits and survey of the sites. During the survey several stonewalls were identified. These findings are discussed in detail in this HIA report.

The aim of the survey was to identify archaeological and heritage sites and resources within the area proposed for trenching and within the 500m radius;

- The survey of the proposed prospecting area was conducted on foot and the site was accessed using a bakkie;
- The aim of the surveys was to identify archaeological, burial grounds and graves, and built environment heritage sites and resources in and around the area proposed for development;
- To record and document the sites using applicable tools and technology;

The following technological tools were used for documenting and recording identified resources on site:

- Garmin GPS (i.e. Garmin 62s) – to take Latitude and Longitude coordinates of the identified sites and to track the site.
- Canon SLR – to take photos of the affected environment and the identified sites.

2.4. Step III – Report Writing and Site Rating

The final step involves compilation of the report using desktop research as well as the physical survey results. Archaeological resources, graves and sites found in the project area is rated according to the site significance classification standards as prescribed by SAHRA. The first draft of this report was produced in 2018.

2.5. Site Significance Rating

The following site significance classification minimum standards as prescribed by the SAHRA (2006) and approved by ASAPA for the Southern African Developing Community (SADC) region were used to grade the identified heritage resources or sites (*Table. 3*). Impact Significance Rating in will be completed and is guided by the requirements of the NEMA EIA Regulations (2014) (*Table., 4 -7*).

Table 4-Site significance classification standards as prescribed by SAHRA

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	High Significance	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	High Significance	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. A)	-	Low Significance	Destruction

Table 5– Table indicating the impact significance rating.

Alternative No	List Alternative Names	
Proposal	Development	
Alternative 1	Development Area 01	
Alternative 2	Development Area 02	
Nature	-1	Negative
	1	Positive
Extent	1	Activity (i.e. limited to the area applicable to the specific activity)
	2	Site (i.e. within the development property boundary),
	3	Local (i.e. the area within 5 km of the site),
	4	Regional (i.e. extends between 5 and 50 km from the site)
	5	Provincial / National (i.e. extends beyond 50 km from the site)
Duration	1	Immediate (<1 year)
	2	Short term (1-5 years),
	3	Medium term (6-15 years),
	4	Long term (the impact will cease after the operational life span of the project),
	5	Permanent (no mitigation measure of natural process will reduce the impact after construction).
Magnitude/ Intensity	1	Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected),
	2	Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected),
	3	Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way),
	4	High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease), or
	5	Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease).

Reversibility	1	Impact is reversible without any time and cost.
	2	Impact is reversible without incurring significant time and cost.
	3	Impact is reversible only by incurring significant time and cost.
	4	Impact is reversible only by incurring prohibitively high time and cost.
	5	Irreversible Impact
Probability	1	Improbable (the possibility of the impact materialising is very low as a result of design, historic experience, or implementation of adequate corrective actions; <25%),
	2	Low probability (there is a possibility that the impact will occur; >25% and <50%),
	3	Medium probability (the impact may occur; >50% and <75%),
	4	High probability (it is most likely that the impact will occur- > 75% probability), or
	5	Definite (the impact will occur),
Public feedback	1	Low: Issue not raised in public responses
	2	Medium: Issue has received a meaningful and justifiable public response
	3	High: Issue has received an intense meaningful and justifiable public response
Cumulative Impact	1	Low: Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.
	2	Medium: Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.
	3	High: Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/definite that the impact will result in spatial and temporal cumulative change.
Irreplaceable loss of resources	1	Low: Where the impact is unlikely to result in irreplaceable loss of resources.

	2	Medium: Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.
	3	High: Where the impact may result in the irreplaceable loss of resources of high value (services and/or functions).
Degree of Confidence	Low	<30% certain of impact prediction
	Medium	>30 and < 60% certain of impact prediction
	High	>60% certain of impact prediction
Priority	Ranking	Prioritisation Factor
3	Low	1,00
4	Medium	1,17
5	Medium	1,33
6	Medium	1,50
7	Medium	1,67
8	Medium	1,83
9	High	2,00
Phase		
Planning		
Construction		
Operation		
Decommissioning		
Rehab and closure		

Table 6-Impact Rating table with impact mitigation

IMPACT DESCRIPTION		PRE – MITIGATION							POST – MITIGATION							IMPACT PRIORITISATION			
Impact	Phase	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Pre-mitigation ER	Nature	Extent	Duration	Magnitude	Reversibility	Probability	Post-mitigation ER	Confidence	Public response	Cumulative Impact	Irreplaceable loss
1. Heritage Impact Ratings	Planning	-1	3	2	2	2	5	-11,25	-1	3	1	2	2	4	-8	High	1	2	1
								0	-1						0				
								0							0				

Table 7-Risk assessment

1. Select Impact from Dropdown List (C2:H2)	A. 1. Transformation of cultural/heritage resource – Proposal					
2. (C4:H24)	Impact Name		Heritage Impact Assessment			
	Alternative		Proposal			
	Phase		Planning			
	Environmental Risk					
	Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
	Nature of Impact	-1	-1	Magnitude of Impact	2	2
	Extent of Impact	3	3	Reversibility of Impact	2	2
	Duration of Impact	2	1	Probability	5	4
	Environmental Risk (Pre-mitigation)					-11,25
	Mitigation Measures					
	Heritage Risks					
	Heritage Risk (Post-mitigation)					-8,00
	Degree of confidence in impact prediction:					High
	Impact Prioritisation					
	Public Response					1
	<i>Low: Issue not raised in public responses</i>					
	Cumulative Impacts					2
	<i>Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.</i>					
Degree of potential irreplaceable loss of resources					1	
<i>The impact is unlikely to result in irreplaceable loss of resources.</i>						
Prioritisation Factor					1,17	
Final Significance					-9,33	

3. BACKGROUND LITERATURE REVIEW: ARCHAEOLOGY

In southern Africa, archaeology is divided into the Stone Age, Iron Age and the Historical Period. During these periods diverse groups of people settled on the southern African landscape. Several archaeological sites have been identified in the Free State Province. Most of the research on the culture, archaeology and rock art in and around the Free state Province has been conducted by Churchill *et al.*, (2000); Coplan (2000); Dreyer (1996, 2000); Huffman (2002, 2007); Mason (1968, 1982, 1986); Taylor (1979) and Wadley (2000). Previous HIA's and AIA's of the Vredefort region and broader Free State Province have been conducted by Dreyer (2005; 2006); Pelsler (2000); Roodt (2011); Rossouw (2017); Sampson (1972); Seliane (2011) Van der Walt (2013a; b) and Van Vollenhoven (2011).

3.1. Stone Age

The Stone Age is divided into three periods. The Early Stone Age (ESA) (2 million to 250 000 years ago), the Middle Stone Age (MSA) (250 000 – 22 000 years ago) and the Later Stone Age (LSA) (25 000 to 200 years ago). The ESA is comprised of the Oldowan stone tool complex (2 and 1.7-1.5 million years ago), and the Acheulean stone tool complex (1.7-1.5 million years ago and 250-200 thousand years ago) (Klein 2000; Mitchell 2002). Approximately 2000 million years ago a meteorite collided with the Earth (Gibson & Reimold 2000; Lana *et al.*, 2003). The impact crater is located south east of Vredefort in the Free State Province (Gibson & Reimold 2000; Lana *et al.*, 2003). The Vredefort dome was declared a UNESCO World Heritage site in 2005.

The ESA is comprised of the Oldowan stone tool complex (2 and 1.7-1.5 million years ago), and is characterized by small flakes, flaked cobbles and percussive tools (Klein 2000; Mitchell 2002; Diez-Martín *et al.*, 2015; De La Torre 2016). The Acheulean stone tool complex included large hand axes and cleavers (1.7-1.5 million years ago and 250-200 thousand years ago) (Klein 2000; Mitchell 2002; Diez-Martín *et al.*, 2015; De La Torre 2016).

The transition from the Early to Middle Stone Age includes a change in technology from large stone tools to smaller blades and flakes. The MSA stone tool assemblage include blades, flakes, scrapers and pointed tools that could have been hafted and used as spears or arrowheads and is associated with anatomically modern humans (Wadley, 2007). In the Free State Province, MSA and LSA sites are mainly located near

river drainages such as Doring Spruit north of Kroonstad and the Vals River, as well as the Sand River to the south of Ventersburg (Rossouw 2012a; Kruger 2018). MSA artefacts have been found to the south west of Kroonstad at Allanridge (Rossouw 2012a) while LSA and MSA tools have also been found at the Vredefort Dome (Mitchell 2002). At Erfkroon, a site dating to the MSA and LSA located 60 km from Bloemfontein, animal bone and stone tools have been found (Churchill *et al.*, 2000). While the skull of an archaic Homo Sapiens was found in the MSA layers at Florisbad, an open-air site near Bloemfontein (Mitchell 2002). MSA and LSA stone tool assemblages have been found at Rose Cottage cave, which is located a few kilometres from Ladybrand to the south of Kroonstad (Wadley 1995, 1997, 2000). Holkrans Rock Shelter located in the Vredefort Dome, was excavated in 2008 by Karim Sadr and contains evidence of occupation during the LSA from about 2000 years ago (Witelson 2016).

3.2. Iron Age

The Iron Age is typically referred to the period when the first Bantu speakers started migrating south from western Africa (Coplan 2000). The Iron Age, according to Huffman (2007) can be divided into the Early Iron Age (EIA) (AD 200 – 900); the Middle Iron Age (MIA) (AD 900 – 1300); and the Late Iron Age (LIA) (AD 1300 – 1840). The Iron Age is characterized by farming communities who domesticated animals, produced various ceramic vessels, smelted iron for weapons and manufactured tools.

The EIA communities throughout eastern and southern Africa share a similar Iron Age culture called the Chifumbaze complex (Phillipson 1994; Huffman 2007). The Chifumbaze complex contains evidence of the first farmers who cultivated crops, herded domestic animals, used iron, and who made pots (Phillipson 1994). It can furthermore be divided into the Kalundu and Urewe Traditions (Huffman 2007). The Kalundu Tradition is also referred to as the western stream, while the Urewe Tradition is known as the eastern stream (Huffman 2007). The Kalundu Tradition can be found in southern Africa where the makers of these pots lived on wetter and more arable land (Mitchell 2013). In the Orange River Scheme region Sampson (1972) found Iron Age ceramics (dating from before AD 730 to after AD 1520 or 1620) associated with stone tools (Thorp 1996). Historically this has been linked to contact between hunter-gather groups and Bantu-speaking farming groups who migrated into the Free State region (Beaumont & Vogel 1984).

During the climatic conditions in southern and eastern Africa, Moloko people migrated from east Africa to southern Africa (Boeyens 2003). It is argued that these people moved to southern Africa due to drought

in eastern Africa (Taylor *et al.*, 2003). These Sotho-Tswana speaking people migrated north-westwards until they settled in the Limpopo Province (Taylor *et al.*, 2003). Moloko type ceramics of the Sotho-Tswana people, replaced earlier Eiland ceramics (AD 1000 – 1300), in the Limpopo Province as well as in Botswana (Evers 1983; Klapwijk & Evers 1987; Boeyens 2003). The Sotho-Tswana people can be divided into four clusters; the Fokeng, the Hurutshe, the Kgatla and the Rolong (Huffman 2002, 2007). However, Huffman later identified that ceramics of the Fokeng cluster do not form part of the Sotho-Tswana tradition, and that the Fokeng were actually Nguni speakers (Huffman 2007; Sadr & Rodier, 2012).

The Rolong, one of the Sotho Tswana clusters arrived in southern Africa between AD 1200 and 1350 and includes the Tlhaping groups (Huffman 2002; Boeyens 2003). The Rolong settled in the region between the Magaliesberg to the Vaal (Huffman 2002; Giliomee & Mbenga 2007; Huffman 2007). Extensive stone wall sites have also been found to the west of Kroonstad, on the farm Boschpunt 2218 A (Dreyer 2006a). These sites are associated with Sotho-Tswana speakers (Tlhaping and Rolong) who occupied the site from around 16th century.

The second migration of Sotho-Tswana people was in AD 1350-1450 and is associated with the migration of Kwena-Hurutshe (Huffman 2002; Boeyens 2003; Taylor *et al.*, 2003). The Hurutshe cluster (includes the Kwena, Ngwato, Ngwaketse and Tawana) are the descendants of those who claim lineage from Malope and his father Masilo (who originated from the Lowa waterhole in Botswana) who lived at Rathateng near Marico and Crocodile confluence in AD 1440 and 1560 (Huffman 2002, 2007). The oral traditions of the Hurutshe indicates that they settled in the Marico region of the North West Province during the 15th century AD (Coplan 2000; Boeyens 2003). The Hurutshe exiled the Rolong from the Mosega area south of Zeerust (Huffman 2002). Around AD 1550 and 1650 the Kwena-Hurutshe migrated south east across the Vaal river to Ntsuanatsati hill in the Free State Province (Huffman 2007).

During the 16th to 18th century AD, Sotho-Tswana speaking groups migrated across the Vaal river into the southern Highveld in the Free State Province (Thorp 1996). During this time the Sotho-Tswana speaking groups came in contact with LSA hunter-gatherer groups in the region. Archaeological evidence suggesting contact between these two groups have been found at Rose Cottage Cave, Roosfontein, Mauermanshoek (near Winburg), Rooikrans (near Ladybrand) and Westbury (near Ficksburg), and Tandjiesberg Rock Shelters (Thorp 1996). The ceramics found at Rooikrans Rock Shelter dates to the 16th to 19th century AD, while the ceramic assemblage from Tandjiesberg Rock Shelter was dated to the 11th and 13th century AD

suggesting an earlier Iron Age occupation (Thorp 1996). (Thorp 1996). Several occupational layers have been observed at Rose Cottage Cave (Wadley 1991; Thorp 1996). Apart from the post-classic Wilton stone tool assemblages, ceramics found at the site suggests occupation of the site during the 14th Century AD, the 15th century AD and later during the 19th and 20th century AD (Thorp 1996).

Apart from ceramic being discovered in the Free State Province, several sites also contain large stone walled settlements. In 1984, Dreyer (1999) concluded excavations at the LIA site found on the farm Doornpoort 19, near Winburg. LIA stone wall settlements are located on flat topped ridges and hills can be found throughout the Free State and North West Province. Studies conducted on the LIA classification of stone wall settlement patterns have been done by Maggs (1976) and Mason (1986). Mason (1968) focused his research on stone wall sites located in the Magaliesberg and Johannesburg region, it is also in this area that the 19th century Tswana town, Marothodi is located (Anderson 2009). Mason (1986) published a review of his stone wall settlement types following more research that was conducted in the area. His classifications indicated the general chronological development of Sotho-Tswana Settlement style. According to Mason (1986) earlier Sotho-Tswana settlements had a simple layout that became more complex during the later periods. Maggs (1976) research focused on stone walls found in the Free State Province, where his approach included linking the different site types to Sotho oral traditions, history and identities. Maggs (1976) stone wall types included Type N (associated with the Early Fokeng and Kwena), V (attributed to the Sotho speaking groups collectively), Z (Kabung, a branch of the Rolong) and R (associated with bushman pastoralists).

Type N walling, the earliest stone walling south of the Vaal river, is named after Ntsuanatsati hill (Huffman 2007). According to Huffman (2007) Type N walling consists of cattle kraals linked to other walls in the centre of the settlement surrounded by an outer wall and is associated with the Fokeng cluster. The Fokeng cluster found at Ntsuanatsatsi Hill in the Free State Province, formed out of the Kwena (of the Hurutshe cluster) who migrated southeast across the Vaal in AD 1550 and 1650 (Huffman 2002, 2007). Ceramics of the Ntsuanatsatsi facies (AD 1450 to 1650) of the Blackburn Branch and Urewe Tradition, have been found around the Vaal River region (Mason 1986; Dreyer 1992; Huffman 2007). The Ntsuanatsatsi facies is closely related to the oral histories of the Early Fokeng and represent the movement of Nguni-speaking people out of Kwazulu-Natal into the interior of South Africa. Ceramics of the Ntsuanatsatsi facies are characterised by broad bands of stamping located mostly around the neck of the pot, as well as stamped arcades on the shoulder (Huffman 2007). In the Vredefort Dome, several LIA stone walled

settlements, most likely related to Fokeng settlements have been identified dating to AD 1450 – 1650 (Pelsers 2005; Huffman 2007; Van Vollenhoven 2016). Stone walled settlements dating to AD 1400 – 1800 have also been located at Askoppies and Buffelskloof near the Vredefort Dome (Van Vollenhoven 2011; Rossouw 2017). The stonewalled settlement located at Askoppies, located on the north-western edge of the Vredefort Dome has been linked to Sotho-Tswana occupation, specifically Rolong occupation (Pelsers 2003; Byrne 2012). A later occupation from AD 1700-1840 also occurred in this region (Huffman 2007). At Holkrans Rock shelter evidence of contact with farming communities dating to around AD 1500 have been found as several Iron age settlements have been identified (Pelsers 2003; Bradfield & Sadr 2011; Witelson 2016).

Type V stone walls, named after Vegkop located near the town of Heilbron, developed from Type N walling (Laidler 1935; Huffman 2007). Heilbron is located to the north-east of Kroonstad. Type V walling is characterised by cattle kraals surrounded by huts and grain bins enclosed by an outer wall (Huffman 2007). Ceramics associated with this type of walling are the Makgwareng facies, which is characterised by comb-stamped triangles and finger pinching (Huffman 2007). The Makgwareng facies dates to AD 1700 – 1820 (Huffman 2007).

The Uitkomst facies (AD 1650 – 1820) the Blackburn Branch is seen as the successors to the Ntsuanatsatsi facies and contains elements of both Nguni (Ntsuanatsatsi facies) and Sotho-Tswana speakers (Olifantspoort facies) pottery styles (Huffman, 2007). This represents contact between these two groups. Ceramics of the Uitkomst facies have been found mostly in the Gauteng Province as well as in the northern part of the Free State Province (Huffman 2007). Olifantspoort facies (AD 1500-1700) and Thabeng facies (AD 1700-1840) of the Moloko Branch have been found at Iron age sites to the south of Potchefstroom and in the Free state Province, around the Vaal River region (Mason 1986; Mitchell 2002; Huffman 2007). Olifantspoort pottery is characterised by “multiple bands of fine stamping and narrow incision separated by colour” (Huffman 2007). Thabeng facies is characterised by “incised triangles, coloured chevrons and arcades” and is associated with Type Z stone walling (Huffman 2007). Type Z walling, which is characterized by “bilobial huts” that surround the core of the settlement and dates to the 18th – 19th centuries (Huffman 2007).

The presence of Moloko type ceramics in the region around the Vaal river suggests a Sotho-Tswana occupation of the area from AD 1550. While the presence of ceramics of the Ntsuanatsatsi facies and N-

Type walling also suggests the preens of Nguni speakers in the Free State from AD 1450 to 1650. The presence of ceramics of the Olifantspoort facies (AD 1500-1700) and Thabeng facies (AD 1700-1840) around the Vaal River region also provide evidence of the contact between Nguni and Sotho-Tswana speaking groups during the LIA.

3.3. Historical Period

The Historical Period dates from AD 1600 and is generally the period related to colonial settlement in South Africa. During the Anglo-Boer war several battles took place in and around the Kroonstad region.

The Korana were a nomadic Khoikhoi group who left the Cape region during 1661-1668 (Erasmus 2005). During the 18th century they settled in the Free State region (Van Vollenhoven 2016). Korana rock art is found scattered at sites in the eastern Free State Province (Ouzman 2005). The rock art is characterized by their painting techniques which include the use of fingers, macerated sticks or grass bundles (Ouzman 2005). In Korana rock art horses, guns, hunts, human figures, snakes, geometric shapes and smears and splatters are often depicted (Ouzman 2005).

During 1815 to 1840 Mzilikazi, a Zulu who departed from Shaka Zulu, migrated with his followers north and invaded the interior of South Africa. This led to a series of battles and wars between the Zulu's, Voortrekkers and Sotho-Tswana communities in the Orange Free State and southern Transvaal (Gutteridge 2008). Due to the political and climate conditions of the 17th century, the Transvaal Ndebele (Mzilikazi and his followes) migrated from KwaZulu-Natal (Van Warmelo 1930; Huffman 2007; Skohosana 2009). The migration of Mzilikazi resulted in period filled with turmoil from the battles and wars of Mzilikazi, other indigenous groups and the Voortrekkers who settled in the interior of South Africa. This period is called the Mfecane. Nguni speaking groups, related to Hlubi arrived in the Free State region during 1823 and settled near Caledon (Legassick 1969; Byrne 2012). The Ndebele under the leadership of Mzilikazi settled in the region of the Vredefort Dome where they raided the neighboring groups around them (Loubser 1985). The arrival of the Hlubi sparked several raids and battles with neighboring communities including the Sotho-Tswana groups and the Tlokwa (Byrne 2012). Many of the groups fled from the region or were absorbed into the Hlubi or Tlokwa (Byrne 2012). The Mfecane (AD 1790–1840) left many groups displaced as they fled the region (Loubser 1985).

Following disputes with the British the Dutch-speaking Voortrekkers migrated north into the interior of southern Africa from the Cape Colony in 1836's in search of creating a homeland, independent of British rule. This migration of approximately 12000 – 140000 Voortrekkers is referred to as the Great Trek. The Voortrekkers migrated north and east into a region that was later called the Orange Free State (Hodge 2008). Under the leadership of Andries Hendrik Potgieter, the Voortrekkers settled near the Vet River, located south east of the Vredefort Dome (Naude 2005, Byrne 2012). Several battles and wars were fought between the Voortrekkers, the Bantu speaking groups and the British in the region. In October 1836, the Voortrekkers engaged in a battle with 3000 of Mzilikazi's warriors on Vegkop hill (Zvobgo 2009). The Voortrekkers who were assisted by the Sotho-Tswana and Griqua groups defeated Mzilikazi's Matabele, who fled to the Limpopo Province and settled in Zimbabwe (Zvobgo 2009). The region between the Orange and Vaal Rivers was proclaimed as British Possession by Sir Harry Smith in 1848 (Scott-Keltie & Epstein 1925).

The town of Vredefort was established in 1876 and was laid out on the farm Vischgat, which belonged to Jacobus Johannes Scheepers (Van Eeden. & Motumi 1998). Vredfort received mucipla status in 1890 (Van Eeden. & Motumi 1998). Reverend Kingstone Derry established the Wesleyan Mission Station on the banks of the Vaal River near Parys, 19 km north east of Vredefort in 1894 (Van Eeden. & Motumi 1998). During the Anglo-Boer war (1899-1902) women and children from the Vredefort and Parys regions were sent to the Vredefort Road concentration camp locate near Parys by the British (Fleminger 2006).

3.4. Conclusions on Literature Review

It is concluded that the proposed study area is located in a region rich in archaeology, history and heritage. Several groups have settled in the region, which lead to several conflicts and battles. Vredefort is particularly well known for heritage resources related to the Iron Age and Historical Period. Throughout the Free State Iron Age stone-walled sites and ceramics can be found along flat-topped ridges and hills. These settlement types and ceramics indicate that the region was occupied by Sotho-Tswana speaking communities from AD 1200 and that Nguni speaking groups later moved into the region. During the 19th century traders, explorers and missionaries settled in the region. One of these groups were the Voortrekkers who were moving north away from the control of the Cape Colony.

4. STUDY RESULTS

The background information yielded information about known archaeological and heritage resources located in the Free State Province, and particularly the Vredefort region. The physical survey focused on the area proposed for the prospecting right and environmental authorisation application for Kroonstad South situated in the Free State Province. The broader Free State Province has a long history with Sotho-Tswana speaking people migrating and settling in the area during the Iron Age. Vredefort and the surrounding areas are rich in archaeology and history which played a role in documenting the lives of the Voortrekkers, the British and the Sotho-Tswana speaking people during the historical period.

The physical survey focused on the area proposed for the prospecting right and environmental authorisation application in Vredefort West situated in the Free State Province. The survey specifically focussed on the areas proposed for the two trenches on Portion 1 of the Farm Mimosa Grove 491 and the 500m zone of influence. No archaeological resources, including artefacts, graves or structures were identified in the areas directly surrounding the proposed trench locations or the 500m zone of influence. The proposed locations for the two trenches were situated within the current or previous agricultural fields, which meant that the areas were disturbed by agricultural activities (*Figure. 5-6*).

The study then assessed the region surrounding the proposed development footprint. Two cemeteries (Mim Gro Cem-01 and Lindek Cem-01) were identified near the two trench areas. Mim Gro Cem-01 is located 750m to the north west from Trench 1, while Lindek Cem-01 is located 2,4 km north west of Trench 1 (*Figure.7*). On the farm Rhebokfontein West 117 a cemetery (Rhebok Cem-01) and an Iron Age stone wall site (Site complex 1) was identified. These two sites fall within the proposed prospecting area. As such the significance and impact of these sites were rated according to their location within the broader project area. A fourth cemetery (Onreg Cem-01) was also identified on the farm Onreg but is located outside the project area (*Figure. 8*). All of the sites identified in this HIA fall outside the 500m zone of influence, but it should be noted that they are still located within the broader Vredefort West prospecting area.



Figure 5: General view of location of Trench 1



Figure 6: General view of location of Trench 2



Figure 7: Google Image showing survey of area, the location of the trenches and sites identified.

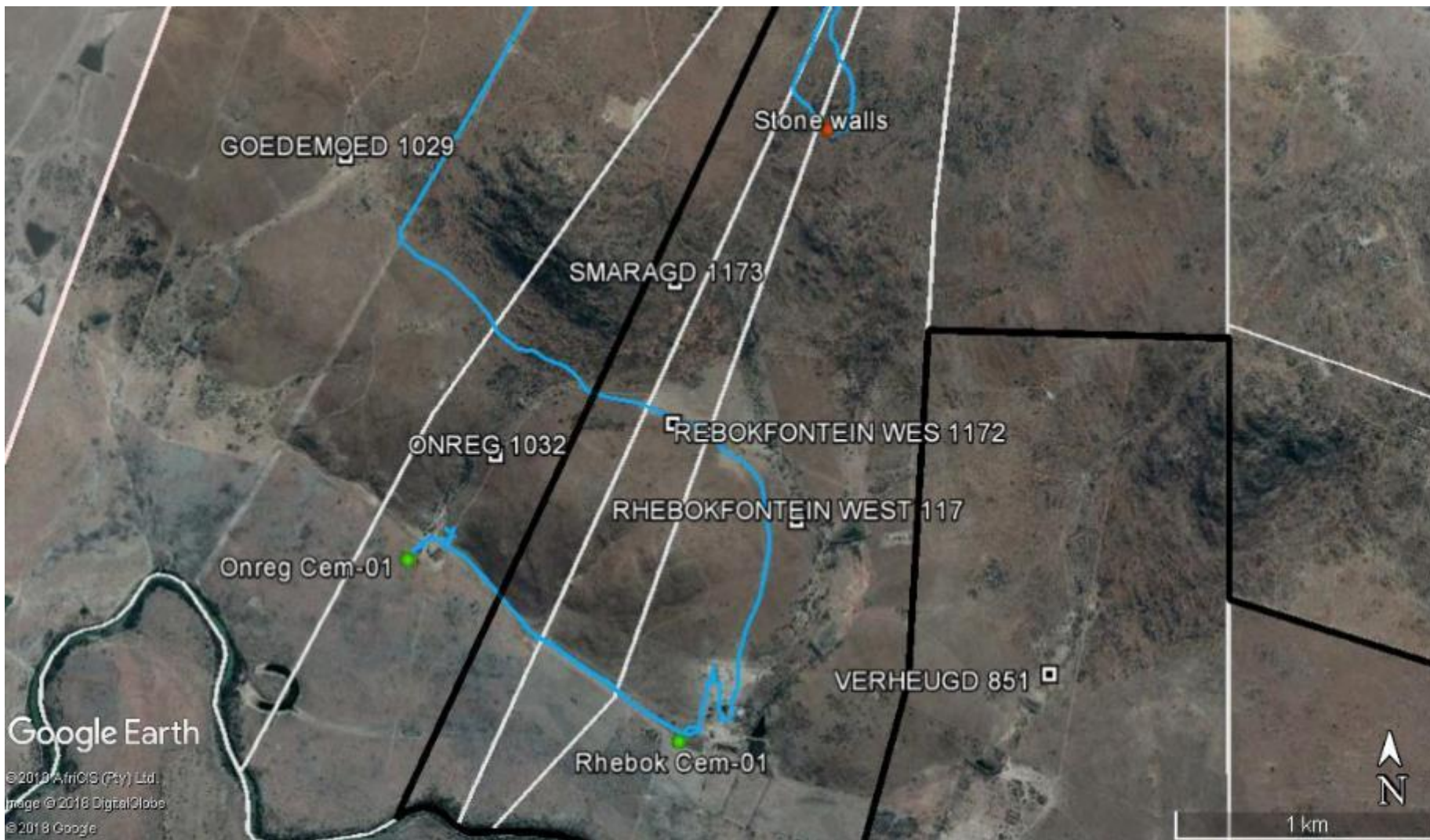


Figure 8: Google Image showing survey of area, the location of the sites identified.

4.1. Archaeological sites

Table 8: Site Complex- 01

Site Name:	Site Complex - 01
Type:	Stone wall site
Density:	Low/Medium density
Location/GPS Coordinates:	<ul style="list-style-type: none"> • 27° 14' 20.46" S • 27° 13' 26.15" E
Approximate Age:	Late Iron Age
Applicable Sections of the Relevant Acts:	<ul style="list-style-type: none"> • Section 35 of the NHRA, No. 25 of 1999
Description:	
<p>Shallow and collapsed stone walling were recorded on the farm Rhebokfontein West 117 (<i>Figure.9-11</i>). The stone walled structures are clustered together to form a settlement. The stone walls form semi-circular structures. There is evidence of damage at several places, which is most likely due to natural processes and vegetation. Multiple shallow stone walls where rocks of unequal size were stacked on to each other were found on the site. The stone walls are between 0.8 m - 0.9 m in width and 0.3 m – 0,7 m in height.</p> <p>The area was overgrown with vegetation, which most likely contributed to the collapsed nature of the stonewalls. Walling most likely dates to the Late Iron Age / Early Historical Period occupation by Sotho-Tswana speaking people.</p> <p>No ash middens, typically found at stone walled settlements sites were recorded, were observed. No other archaeological material was identified at the site.</p>	



Figure 9: General view of site.



Figure 10: Stone walls found on site



Figure 11: Width of stone wall

Table 9: Impact and risk assessment rating for project Planning, Construction and Operational phases in relation to the identified site (Site Complex 1)

1. Select Impact From Dropdown List (C2:H2)	A. 1. Transformation of natural vegetation/ habitat - Proposal					
2. Copy and Paste Impact Table into Report (C4:H24)	1. Heritage Impact Assessment					
	Impact Name					
	Alternative					
	Phase					
	Planning					
	Environmental Risk					
	Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
	Nature of Impact	-1	1	Magnitude of Impact	4	2
	Extent of Impact	2	2	Reversibility of Impact	3	2
	Duration of Impact	3	3	Probability	3	2
	Environmental Risk (Pre-mitigation)				-9,00	
	Mitigation Measures					
	Site Complex 1 is of high/medium significance and have heritage value. As such it is recommended that if future prospecting activities take place in the area: <ul style="list-style-type: none"> • Prospecting activities and machinery should completely avoid the stonewalls, as it is a No-Go-Area; • Subject to approval from SAHRA a Phase II Heritage study (including recording and mapping of site) should be conducted before its destruction. 					
	Environmental Risk (Post-mitigation)				4,50	
	Degree of confidence in impact prediction:				High	
	Impact Prioritisation					
	Public Response				1	
<i>Low: Issue not raised in public responses</i>						
Cumulative Impacts				2		
<i>Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.</i>						
Degree of potential irreplaceable loss of resources				2		
<i>The impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.</i>						
Prioritisation Factor				1,33		
Final Significance				6,00		

4.2. Built Environment Features

No buildings were identified during the survey and site visit.

4.3. Burial Grounds and Graves

Table 10: Mim Gro Cem-01

Site Name:	Mim Gro Cem-01
Type:	Graves
Density:	Medium density
Location/GPS Coordinates:	<ul style="list-style-type: none"> • 27° 3' 28.94" S • 27° 13' 41.86" E
Approximate Age:	Historical and Contemporary
Applicable Sections of the Relevant Acts:	<ul style="list-style-type: none"> • Section 36 of the NHRA, No. 25 of 1999
Description:	
<p>Mim Gro Cem-01 is located on the border of the farms Mimosa Groove 491 and Lindekfeesfontein 73. The graves are located approximately 700 m, north west of Trench 1, approximately 100 m north of several worker houses and east of a small rock outcrop (<i>Figure. 12 and 13</i>).</p> <p>During the survey 33 graves were identified. A small stone wall that once surrounded the cemetery was also observed, but it has since collapsed (<i>Figure. 14</i>).</p> <p>Of these graves three had cement dressing (<i>Figure 15-17</i>), seven had headstones (<i>Figure. 18-24</i>) and 23 graves of unknown individuals covered in packed stones (<i>Figure. 25-47</i>). The graves were numbered from A1-A33.</p> <p>On grave A5 the following was engraved on the headstone (<i>Figure. 19</i>):</p> <p style="text-align: center;"><i>'Abram Phelane Sothoane ohlokahetse Ka 2 December 1961 Ale dilemod 95 Robalakakgotso'</i></p> <p>On grave A7 the following was engraved on the headstone (<i>Figure. 21</i>):</p>	

*'Radebe Martha
17. 01. 1918
19.08. 1976
21. 08. 1976
Rest in Peace'*

On grave A9 the following was engraved on the headstone (*Figure. 23*):

*'Kelibone Welhemina
Masilo
25 11 1956
25 9 1979
Rest in Peace'*

On grave A10 the following was engraved on the headstone (*Figure. 24*):

*'Piekanin Radebe
1942'*



Figure 12: General view of the site



Figure 13: Small rock outcrop to the east of the graves



Figure 14: Collapsed stone wall that once surrounded the cemetery.



Figure 15: Grave A1 with cement dressing.



Figure 16: Grave A2, with cement dressing. The name 'Makgetla' was engraved into the cement



Figure 17: Grave A3, with cement dressing. The name 'Mamotutla Dothoan' was engraved into the cement.



Figure 18: Grave A4. No engraving is visible on the headstone



Figure 19: Grave A5 with the name 'Abram Phelane' engraved on it.



Figure 20: Grave A6, with a heart shaped headstone. No engravings were visible



Figure 21: Grave A7, the grave of 'Martha Radebe'.



Figure 22: Grave A8. No engraving is visible on the headstone



Figure 23: Grave A9, the grave of Kelibone Welhemina Masilo'.



Figure 24: Grave A10, the grave of 'Piekanin Radebe'.



Figure 25: Grave A11.



Figure 26: Grave A12



Figure 27: Grave A13.



Figure 28: Grave A14.



Figure 29: Grave A15.



Figure 30: Grave A16.



Figure 31: Grave A17.



Figure 32: Grave A18.



Figure 33: Grave A19.



Figure 34: Grave A20.



Figure 35: Grave A21.



Figure 36: Grave A22



Figure 37: Grave A23.



Figure 38: Grave A24.



Figure 39: Grave A25.



Figure 40: Grave A26.



Figure 41: Grave A27.



Figure 42: Grave A28.



Figure 43: Grave A29.



Figure 44: Grave A30.



Figure 45: Grave A31.



Figure 46: Grave A32.



Figure 47: Grave A33.

Table 11: Impact and risk assessment rating for project Planning, Construction and Operational phases in relation to the identified site (Mim Gro Cem-01)

1. Select Impact From Dropdown List (C2:H2)	A. 1. Transformation of natural vegetation/ habitat - Proposal					
2. Copy and Paste Impact Table into Report (C4:H24)	Impact Name		1. Heritage Impact Assessment			
	Alternative					
	Phase		Planning			
	Environmental Risk					
	Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
	Nature of Impact	-1	1	Magnitude of Impact	3	1
	Extent of Impact	3	2	Reversibility of Impact	3	1
	Duration of Impact	3	3	Probability	3	2
	Environmental Risk (Pre-mitigation)					-9,00
	Mitigation Measures					
	<p>It is proposed that:</p> <ul style="list-style-type: none"> Prospecting activities and machinery should completely avoid the cemetery and graves as it is a No-Go-Area; Although it is situated 750 m away of the location for Trench 1, the boundaries of the cemetery should be marled off, indicating that it is an area that should be avoided; If future prospecting activities are proposed for the area surrounding the cemetery a Phase II Heritage study (including recording and mapping of site) should be conducted subject to approval from SAHRA. 					
	Environmental Risk (Post-mitigation)					3,50
	Degree of confidence in impact prediction:					High
	Impact Prioritisation					
	Public Response					1
	<i>Low: Issue not raised in public responses</i>					
	Cumulative Impacts					2
<i>Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.</i>						
Degree of potential irreplaceable loss of resources					2	
<i>The impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.</i>						
Prioritisation Factor					1,33	
Final Significance					4,67	

Table 12: Lindek Cem-01

Site Name:	Lindek Cem-01
Type:	Graves
Density:	Medium density
Location/GPS Coordinates:	<ul style="list-style-type: none"> • 27° 2' 43.47" S • 27° 13' 11.52" E
Approximate Age:	Historical and Contemporary
Applicable Sections of the Relevant Acts:	<ul style="list-style-type: none"> • Section 36 of the NHRA, No. 25 of 1999
Description:	
<p>Lindek Cem-01 is located on the farm Lindekfeesfontein 73 (Figure. 48-49). The graves are located approximately 2,4 km, north west of Trench 1.</p> <p>During the survey 32 graves were identified. Of these graves eight had headstones and dressings (Figure. 50-57) and 24 are the graves of unknown individuals, which are covered in packed stones (Figure.58-81). The graves were numbered from A1-A32.</p> <p>On grave A1 the following was engraved on the headstone (Figure. 50):</p> <p style="text-align: center;"><i>'Jeck Fwearana Mxonteni O hla le ka 27 5 1900'</i></p> <p>On grave A2 the following was engraved on the headstone (Figure. 51):</p> <p style="text-align: center;"><i>'A le na hlapo O hla hleka 1981 a da meleka 15 Acotes 1966'</i></p> <p>On grave A3 the following was engraved on the headstone (Figure. 52):</p> <p style="text-align: center;"><i>'Mohapi Martha Pakeng 1910 05 06 1916 05 06 Robala ka kgotso Mokwena wa rona'</i></p>	

On grave A4 the following was engraved on the headstone (Figure. 53):

*'Jonn – Hla pho – o hlahile
Ka 1888 = a ti melakali – 10
Febroari – 1963'*

On grave A5 the following was engraved on the headstone (Figure. 54):

*'Julia Nkomo
O hlarile
Kali 9 Dec '61
A hlakaha
Kali
9 April 1962'*

On grave A6 the following was engraved on the headstone (Figure. 55):

*'Welite Nkomo
O hlahile
May 1960
Robala
Ka
Khotse'*

On grave A7 the following was engraved on the headstone (Figure. 56):

*'Elias – Hlapho
Ohlahile ka 1888
At melaka 19 Novemba 1963'*

On grave A8 the following was engraved on the headstone (Figure. 57):

*'Elieas- Hlapho ohlekahe
Tseka – 25 Tsau Juna Bol
Koa ka le 1 Julea 1964'*



Figure 48: General view of site.



Figure 49: General view of site from road



Figure 50: Grave A1. The name 'Jeck Fwearana Mxonteni' engraved on the headstone.



Figure 51: Grave A2.



Figure 52: Grave A3, the grave of Martha Pakeng Mohapi.



Figure 53: Grave A4, the grave of Jonn.



Figure 54: Grave A5, the grave of 'Julia Nkomo'.



Figure 55: Grave A6, the grave of 'Welite Nkomo'.



Figure 56: Grave A7, the grave of 'Elias Hlapho'.



Figure 57: Grave A8, the grave of 'Elieas'.



Figure 58: Grave A9.



Figure 59: Grave A10.



Figure 60: Grave A11.



Figure 61: Grave A12.



Figure 62: Grave A13.



Figure 63: Grave A14.



Figure 64: Grave A15.



Figure 65: Grave A16.



Figure 66: Grave A17.



Figure 67: Grave A18.



Figure 68: Grave A19.



Figure 69: Grave A20.



Figure 70: Grave A21.



Figure 71: Grave A22.



Figure 72: Grave A23.



Figure 73: Grave A24.



Figure 74: Grave A25.



Figure 75: Grave A26.



Figure 76: Grave A27.



Figure 77: Grave A28.



Figure 78: Grave A29.



Figure 79: Grave A30.



Figure 80: Grave A31.



Figure 81: Grave A32.

Table 13: Impact and risk assessment rating for project Planning, Construction and Operational phases in relation to the identified site (Lindek Cem-01)

1. Select Impact From Dropdown List (C2:H2)	A. 1. Transformation of natural vegetation/ habitat - Proposal					
2. Copy and Paste Impact Table into Report (C4:H24)	Impact Name		1. Heritage Impact Assessment			
	Alternative					
	Phase		Planning			
	Environmental Risk					
	Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
	Nature of Impact	-1	1	Magnitude of Impact	3	1
	Extent of Impact	3	2	Reversibility of Impact	3	1
	Duration of Impact	3	3	Probability	3	2
	Environmental Risk (Pre-mitigation)					-9,00
	Mitigation Measures					
	<p>It is proposed that:</p> <ul style="list-style-type: none"> Prospecting activities and machinery should completely avoid the cemetery and graves as it is a No-Go-Area; Although it is situated 2,4 km, north west of Trench 1, the boundaries of the cemetery should be marled off, indicating that it is an area that should be avoided; If future prospecting activities are proposed for the area surrounding the cemetery a Phase II Heritage study (including recording and mapping of site) should be conducted subject to approval from SAHRA. 					
	Environmental Risk (Post-mitigation)					3,50
	Degree of confidence in impact prediction:					High
	Impact Prioritisation					
	Public Response					1
	<i>Low: Issue not raised in public responses</i>					
	Cumulative Impacts					2
<i>Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.</i>						
Degree of potential irreplaceable loss of resources					2	
<i>The impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.</i>						
Prioritisation Factor					1,33	
Final Significance					4,67	

Table 14: Rhebok Cem-01

Site Name:	Rhebok Cem-01
Type:	Graves
Density:	Medium density
Location/GPS Coordinates:	<ul style="list-style-type: none"> • 27° 15' 33.38" S • 27° 13' 5.47" E
Approximate Age:	Historical
Applicable Sections of the Relevant Acts:	<ul style="list-style-type: none"> • Section 36 of the NHRA, No. 25 of 1999
Description:	
<p>Rhebok Cem-01 is located on the farm Rhebokfontein West 117. The graves are located approximately 22 km, south of Trench 1. However, they are located within the project boundary of Vredefort West.</p> <p>During the survey 14 graves were identified. Of these graves 2 had headstones (<i>Figure. 82-83</i>), 1 had a cement dressing (<i>Figure. 84</i>) and 11 graves were of unknown individuals, which are covered in packed stones (<i>Figure.85-95</i>). The graves were numbered from A1-A14. The area were the graves are located is overgrow and poorly maintained. Some of the graves were covered in vegetation, while bushes and trees had grown on the graves.</p> <p>On grave A2 the following was engraved on the headstone (<i>Figure. 83</i>):</p> <p style="text-align: center;"> <i>1899-1902</i> <i>“Vir Vryheid en vaderland”</i> <i>Jan Johannes Joubert</i> <i>Gesnuwel 17 Aug 1901</i> </p>	



Figure 82: Headstone of Grave A1, has collapsed. No engravings were visible.



Figure 83: Grave A2, grave of 'Jan Johannes Joubert'.



Figure 84: Grave A3, with cement mount dressing.



Figure 85: Grave A4.



Figure 86: Grave A5.



Figure 87: Grave A6.



Figure 88: Grave A7.



Figure 89: Grave A8.



Figure 90: Grave A9.



Figure 91: Grave A10.



Figure 92: Grave A11.



Figure 93: Grave A12.



Figure 94: Grave A13.



Figure 95: Grave A14.

Table 15: Impact and risk assessment rating for project Planning, Construction and Operational phases in relation to the identified site (Rhebok Cem-01)

1. Select Impact From Dropdown List (C2:H2)	A. 1. Transformation of natural vegetation/ habitat - Proposal					
2. Copy and Paste Impact Table into Report (C4:H24)	Impact Name		1. Heritage Impact Assessment			
	Alternative					
	Phase		Planning			
	Environmental Risk					
	Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
	Nature of Impact	-1	1	Magnitude of Impact	3	1
	Extent of Impact	3	2	Reversibility of Impact	3	1
	Duration of Impact	3	3	Probability	3	2
	Environmental Risk (Pre-mitigation)					-9,00
	Mitigation Measures					
	<p>It is proposed that:</p> <ul style="list-style-type: none"> • Prospecting activities and machinery should completely avoid the cemetery and graves as it is a No-Go-Area; • Although it is situated 22 km south of Trench 1, the boundaries of the cemetery should be marled off, indicating that it is an area that should be avoided; • If future prospecting activities are proposed for the area surrounding the cemetery a Phase II Heritage study (including recording and mapping of site) should be conducted subject to approval from SAHRA. 					
	Environmental Risk (Post-mitigation)					3,50
	Degree of confidence in impact prediction:					High
	Impact Prioritisation					
	Public Response					1
	<i>Low: Issue not raised in public responses</i>					
	Cumulative Impacts					2
<i>Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.</i>						
Degree of potential irreplaceable loss of resources					2	
<i>The impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.</i>						
Prioritisation Factor					1,33	
Final Significance					4,67	

Table 16: Onreg Cem-01

Site Name:	Onreg Cem-01
Type:	Graves
Density:	Medium density
Location/GPS Coordinates:	<ul style="list-style-type: none"> • 27° 15' 11.69" S • 27° 12' 27.91" E
Approximate Age:	Historical
Applicable Sections of the Relevant Acts:	<ul style="list-style-type: none"> • Section 36 of the NHRA, No. 25 of 1999
Description:	
<p>Onreg Cem-01 is located on the farm Onreg 1032. The graves are located approximately 19 km, south of Trench 1. However, they are located outside the project boundary of Vredefort West, but within a 500m zone of influence.</p> <p>During the survey 12 graves were identified (<i>Figure. 96</i>). Of these graves 5 had headstones (<i>Figure. 97-101</i>) and 6 were graves of unknown individuals, which were covered in packed stones (<i>Figure.102-108</i>). The graves were numbered from A1-A12. The area where the graves are located is overgrown and poorly maintained. Some of the graves were covered in vegetation, while bushes and trees had grown on the graves.</p> <p>On grave A1 the following was engraved on the headstone (<i>Figure. 97</i>):</p> <p style="text-align: center;"> <i>'Khotlele Maria Molelengoane 1916 1987 From your children RIP'</i> </p> <p>On grave A2 the following was engraved on the headstone (<i>Figure. 98</i>):</p> <p style="text-align: center;"> <i>'John Khotlele Thaho 1912 Thoka halo 1983 RIP'</i> </p>	

On grave A3 the following was engraved on the headstone (*Figure. 99*):

*'Agnes Khotlele ... Aso
Aki Tlhaho 1890
Tlhoka halo 1981 July 10
Diyemo 91
..... Ka Khotso'*

Parts of this inscription on the grave were not clear and could not be determined.

On grave A4 the following was engraved on the headstone (*Figure. 100*):

*'Edwat Khotlele
Tlhaho 1921
Thlokalo 1975'*

On grave A5 the following was engraved on the headstone (*Figure. 101*):

*'Ephraim
Khotlele
Hlaho 19 N 1952
Afeta 12 Ok 1975'*



Figure 96: General view of site.



Figure 97: Grave A1, the grave of 'Maria Molelengoane Khotlele'.



Figure 98: Grave A2, the grave of 'John Khotlele'.



Figure 99: Grave A3. the grave of 'Agnes Khotlele'.



Figure 100: Grave A4, the grave of 'Edwat Khotlele'.



Figure 101: Grave A5, the grave of 'Ephraim Khotlele'.



Figure 102: Grave A6.



Figure 103: Grave A7.



Figure 104: Grave A8.



Figure 105: Grave A9.



Figure 106: Grave A10.



Figure 107: Grave A11.



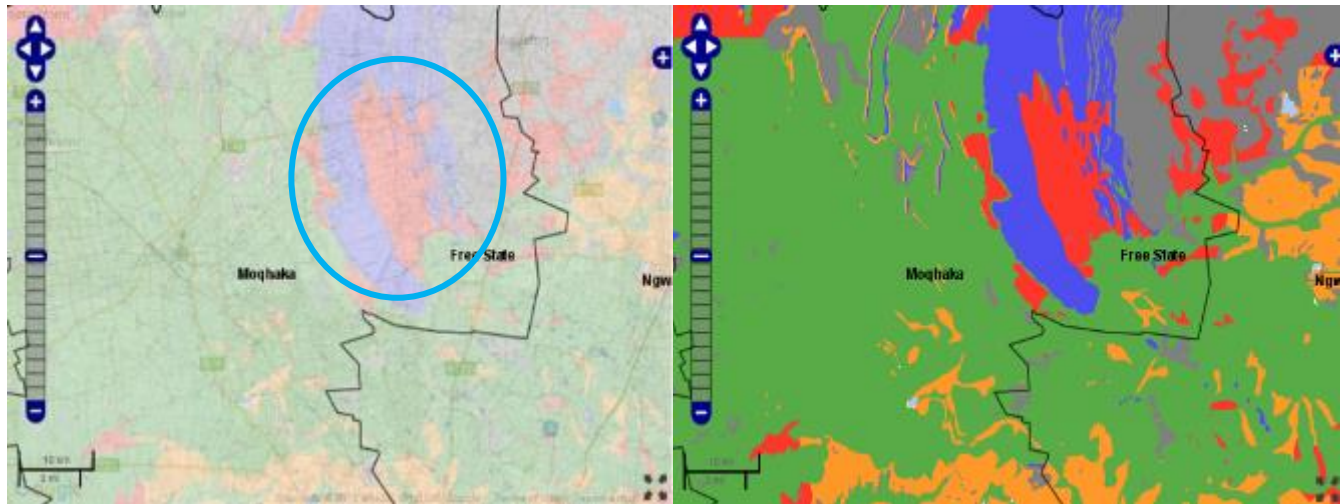
Figure 108: Grave A12.

Table 17: Impact and risk assessment rating for project Planning, Construction and Operational phases in relation to the identified site (Onreg Cem-01)

1. Select Impact From Dropdown List (C2:H2)	A. 1. Transformation of natural vegetation/ habitat - Proposal					
2. Copy and Paste Impact Table into Report (C4:H24)	Impact Name		1. • Socio-economic perceptions and expectations of I&APs			
	Alternative		Proposal			
	Phase		Planning			
	Environmental Risk					
	Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
	Nature of Impact	-1	1	Magnitude of Impact	3	2
	Extent of Impact	2	2	Reversibility of Impact	3	2
	Duration of Impact	3	2	Probability	2	1
	Environmental Risk (Pre-mitigation)				-5,50	
	Mitigation Measures					
	It is proposed that: <ul style="list-style-type: none"> • Prospecting activities and machinery should completely avoid the cemetery and graves as it is a No-Go-Area; • Although it is situated 19 km, south of Trench 1, the boundaries of the cemetery should be marled off, indicating that it is an area that should be avoided; • If future prospecting activities are proposed for the area surrounding the cemetery a Phase II Heritage study (including recording and mapping of site) should be conducted subject to approval from SAHRA. 					
	Environmental Risk (Post-mitigation)				2,00	
	Degree of confidence in impact prediction:				High	
	Impact Prioritisation					
	Public Response				1	
	<i>Low: Issue not raised in public responses</i>					
	Cumulative Impacts				2	
	<i>Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.</i>					
Degree of potential irreplaceable loss of resources				2		
<i>The impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.</i>						
Prioritisation Factor				1,33		
Final Significance				2,67		

4.4. Paleontological Sensitivity

The SAHRA Palaeo-Sensitivity Layer (*Figure. 16*) shows that the project area is in a low to very high sensitivity area. As such a field assessment and protocol for finds is required.



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

Figure 109: Palaeo-Sensitivity layer of Vredefort West (Blue circle) in the Moqhaka Local Municipality within the Fezile Dabi District Municipality, Free State Province.

4.5. Site Ratings of sites identified

Table 18: Site significance classification and ratings for the buildings located in the project area

FEATURE	FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
Site complex 01	Generally Protected A (GP. A)	-	High / Medium Significance	Mitigation before destruction
Mim Gro Cem-01	Generally Protected A (GP. A)	-	High / Medium Significance	Mitigation before destruction
Lindek Cem-01	Generally Protected A (GP. A)	-	High / Medium Significance	Mitigation before destruction
Rhebok Cem-01	Generally Protected A (GP. A)	-	High / Medium Significance	Mitigation before destruction
Onreg Cem-01	Generally Protected A (GP. A)	-	High / Medium Significance	Mitigation before destruction

5. CONCLUSION AND RECOMMENDATIONS

Based on the results of literature review and the survey results the following conclusions are made:

- The project area near Vredefort West, is located in a region rich in archaeology and heritage resources.
- During the survey the following sites were identified:
 - Mim Gro Cem-01: A small cemetery containing 33 graves, dating to the Historical and Contemporary period, were located on the border of the farms Mimosa Groove 491 and Lindekfeesfontein 73. The graves are located approximately 700 m, north west of Trench 1 and fall just outside the 500 m zone of influence. However, it should be noted that the graves do fall within the proposed broader Vredefort West prospecting area.
 - Lindek Cem-01: A small cemetery containing 32 graves, dating to the Historical and Contemporary period, were identified on the farm Lindekfeesfontein 73. The graves are located approximately 2,4 km, north west of Trench 1, and fall just outside the 500 m zone of influence. However, it should be noted that the graves do fall within the proposed broader Vredefort West prospecting area.
 - Rhebok Cem-01: 14 graves dating to the Historical period were identified on the Rhebokfontein West 117. The graves are located approximately 21 km, south of Trench 1. However, they are located within the project boundary of Vredefort West.
 - Onreg Cem-01: 11 graves dating to the Historical period were identified on the farm Onreg 1032. The graves are located approximately 21 km, south of Trench 1. However, they are located outside the project boundary of Vredefort West, but within a 500 m of influence.
 - Site complex 01: Several collapsed stone walls, dating to the Late Iron Age were identified on the farm Rhebokfontein West 117. The stone walls are located approximately 19 km, south of Trench 1. However, they are located within the project boundary of Vredefort West.
- The cemeteries and stone walls identified in the project area are of high/medium significance.
- No other archaeological or historical resources were identified in the project area.
- No other graves or burial grounds were identified in the project area. However, as graves are subterranean in nature and might not have been identified during the initial site visit and survey.

- In terms of SAHRA Paleontological Sensitivity Layer, the area is within a low to very high sensitivity area. According to the Palaeontological Impact Assessment (PIA) the two trench areas on the farm Mimosa Grove 491 falls on ancient non-fossiliferous rocks of the Witwatersrand Group (Government and Jeppestown Subgroups) while a section in the west occurs on sandstones and shales of the Vryheid Formation that could preserve fossil plants of the Glossopteris flora (early Permian) (See PIA report).

Recommendations:

- It is recommended that the cemeteries (Mim Gro Cem-01 and Lindek Cem-01) identified near the location of Trench 1 and 2 on the farms Mimosa Groove 491 and Lindekfeesfontein 73 should be fenced off from prospecting activities and a 10m buffer be established from each of the cemeteries. These areas should be considered as No-Go-Areas.
- Should the prospecting activities expand in the near future to include the farm Rhebokfontein West 117, the cemetery (Rhebok Cem-01) should also be fenced off from prospecting activities and a 10m buffer zone be established. This area will become a No-Go-Area, and prospecting and prospecting machinery and vehicles should avoid the area.
- Should the prospecting activities expand in the near future to include the farm Rhebokfontein West 117, a Phase II investigation of the stonewalls (Site Complex 01) on the Rhebokfontein West 117 should be conducted, where it is mapped, recorded and permit for alterations and demolition should be applied for in terms of Section 34 of the NHRA, No. 25 of 1999 with the provincial heritage authority i.e. Free State Provincial Heritage Authority (FSPHRA).
- Should the prospecting activities expand in the near future a buffer zone should be established around Onreg Cem-01 on the farm Onreg 1032 and it should be marled as a No-Go-Area.
- The historical graves identified were rated as high/medium significance and are protected as a in terms of Section 36) of the NHRA, No. 25 of 1999. As such it is recommended that no machinery or site office associated with the proposed prospecting activities should be established near the graves.
- However, it should be noted that some archaeological material, including artefacts and graves can be buried underground and as such, may not have been identified during the initial survey and site visits. In the case where the proposed development activities bring these materials to the

surface, they should be treated as Chance Finds. Should such resources be unearthed it is recommended that, the prospecting activities be stopped immediately, and an archaeologist be contacted to conduct a site visits and make recommendations on the mitigation of the finds. SAHRA and NW-PHRA should also be informed immediately on such finds.

- In terms of the South African Heritage and Resources Agency (SAHRA) Paleontological Sensitivity Layer the area falls within a region defined as a low to very high sensitivity area. As such it is recommended that Fossil Chance Find Protocol is included in the EMPr. If fossils are found during the prospecting activities a palaeontologist should be called immediately to site to assess the fossils (See PIA report).
- The proposed development will not have impact on the heritage and archaeological resources in the broader Vredefort area.

With regards to the limitations identified for the project, it is recommended that NGT engage in a Public Participation Programme that entails setting up a meeting between Shango, the specialists and the landowners along with the Farmers' Association, Free State Agriculture (Vrystaat Landbou) with the purpose of sharing information regarding the project as well as discussing the related environmental and heritage studies that need to be conducted

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