



**DEPARTMENT: NGT HERITAGE MANAGEMENT
SOLUTIONS**

PROJECT TITLE:
WRE VENTERSBURG CONSOLIDATED PROSPECTING RIGHT
PROJECT

PROJECT NUMBER:
FS 30/5/1/1/3/2/1/10489 EM

DATE OF ISSUE:
07 MARCH 2018

SPECIALIST REPORT:

Heritage Impact Assessment for the WRE Ventersburg
Consolidated Prospecting Right Project, Free State
Province, South Africa

REVISION: 01

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ACKNOWLEDGEMENT OF RECEIPT

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NGT takes full liability for its specialists working on the project for all heritage related matters based on the information provided by the clients. NGT will not be liable for any changes in the type of mining application or changes in the environmental management process of the proposed project. Furthermore – any changes to the scope of works that may require significant amendments to the current heritage document will result in alteration of the fee schedule agreed upon with Shango Solutions.

DECLARATION OF INDEPENDENCE

Janishta Daya of 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.

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Signature	

EXECUTIVE SUMMARY

NGT has been appointed by Shango Solutions as an independent cultural resources management (CRM) firm to conduct an HIA (inclusive of a PIA) for the proposed WRE Ventersburg Consolidated Prospecting Right Project in the Free State, South Africa. This study is conducted independently in terms of Section 38 (3) of the National heritage Resources Act (NHRA), No. 25 of 1999. It forms part of a Basic Assessment Report (BAR) conducted by Shango Solutions in terms of the National Environmental Management Act (NEMA), No. 107 of 1998. The study aims to assess potential impacts of the proposed project on archaeological, general heritage and palaeontological resources within the receiving environment as determined by the background information search of this study and the fieldwork conducted by NGT. Some of the identified heritage resources in the background information search include: archaeology, burial grounds and graves, built environment and landscape features such a provincial heritage site in form of a Barn.

The physical survey of the project area (footprint) was conducted on Friday the 23rd February 2018 and it was carried out by Ms. Janishta Daya (Archaeologist and Heritage Consultant – NGT) and Mr. Nkosinathi Tomose (Principal Archaeologist and Heritage Consultant– NGT). The survey was conducted on foot and a vehicle was used to gain access to the farms and to the proposed six drill points for prospecting. Within the area of the proposed six drill points there were no archaeological, burial grounds and graves, built environment features or palaeontological resources (based on the palaeontological layer). The survey, however, identified two heritage sites within the broader study area, but these are located far from the proposed six drill points. The sites include:

- A family burial site with one grave with granite headstone and cement dressing on the farm Lekkerleven 2445.
- A Provincial graded Barn house – used as a guesthouse.

The family burial site is located northwest of the farmhouse on Farm Lekkerleven 2445. The site has been allocated the site reference number GY1. The second site is the built environment feature in form of a Barn. The Barn has a mansard roof and it resembles a typical European Barn. The Barn has been previously been documented and has been allocated the reference Smaaldeel 01 (its SAHRA Reference number is: SMA001, SITE ID 34894) (Dreyer 2005).

The two heritage sites are of high heritage significance but will not be impacted by the proposed prospecting activities. Based on these findings, the following conclusions and recommendations are made:

Conclusions:

- It is concluded that the grave site is located outside of the proposed six prospecting drill sites.
 - Activities related to the drilling will not negatively impact the grave site.
 - Prospecting is considered to be largely non-invasive and localised, in which case, no mitigation measures are required to safeguard the grave site at this stage of the project. If any mitigations are required, it will be during the mining right application and the establishment of mine infrastructure on site.
- The historical building (Barn house) is situated away from the six drill points associated with prospecting. Therefore, activities related to the prospecting drilling will not have any impacts on this site.
- All six drill points fall within an already transformed land - within active or seasonally active agriculture fields, on which no archaeological or heritage resources or sites have been identified.
- In terms of palaeontological sensitivity, the amended prospecting rights footprint falls outside the palaeontological sensitive area. There will therefore be no impacts of palaeontological resources.

Recommendations:

- It is recommended that SAHRA and FS-PHRA grant the project a Positive Review Comment and allow the proposed prospecting activities to proceed as planned.
- The nature of the current process is prospecting is largely non-invasive. The survey only covered the 6 drill points and it excluded archaeological and heritage potential yield areas such as areas within the broader study areas that show dense concentration of trees and small outcrops.
- If the mining right application is lodged in the future which will include a scoping and EIA processes, all areas that have the potential to yield archaeological and heritage resources will need to be surveyed during the mining right application process.

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ABREVIATIONS

ACRONYMS	DESCRIPTION
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
ARCH	Archaeological
BAR	Basic Assessment Report
BEL	Built Environment & Landscape
BGG	Burial Grounds & Graves
CeMPs	Cemetery Management Plans
CRM	Cultural Resource Management
DEDTEA	Department of Economic Development, Tourism and Environmental Affairs
DMR	Department of Mineral Resources
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EMPr	Environmental Management Programme
EIA	Environmental Impact Assessment
ESA	Early Stone Age
FS-PHRA	Free State Provincial Heritage Resources Authorities
GIS	Geographic Information System
GPS	Global Positioning System
HIA	Heritage Impact Assessment
ICOMOS	International Council on Monuments and Sites
Kya	Thousand Years Ago
LSA	Late Stone Age
LIA	Late Iron Age
MSA	Middle Stone Age
MIA	Middle Iron Age
NHRA	National Heritage Resources Act
NEMA	National Environmental Management Act
NGT	Nurture, Grow, Treasure
PHS	Provincial Heritage Site
SAHRA	South African Heritage Resources Agency

SAHRIS	South Africa Heritage Resources Information Systems
SPV	Special Purpose Vehicle
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VCP	Ventersburg Consolidated Project
WOM	Without Mitigation
WM	With Mitigation

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

GLOSSARY OF TERMS

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)

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 10 m 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.

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.
- 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 The Nature and Extent of the Proposed Area (Prospecting Rights and Environmental Authorisation for the Proposed Ventersburg Consolidated Project)

This study is an HIA (inclusive of a PIA report) study for the proposed WRE Ventersburg Consolidated Prospecting Right Project located within the Kroonstad, Ventersburg and Hennenman Magisterial Districts in the Free State Province of South Africa (*Figure 1*). The proposed project area is situated 8 kilometers (km) north of Ventersburg, 8 km east of Hennenman and 27 km south of Kroonstad and occupies an approximated 7 943.07 hectares (ha) of land. A total number of fifty three (53) farm portions fall within the proposed project area (Siwendu, 2018).

The objective of the proposed project is to explore and quantify the potential mineral resources in the area concerned. The HIA investigates the potential impacts of the proposed project activities on heritage resources within the receiving environment such as: burial grounds and a historical feature of the built environment. The overall objective of this HIA is to give advice on the management of heritage resources in and around the proposed project area in terms of known heritage resources management measures in line with prescripts of the NHRA, No. 25 of 1999.

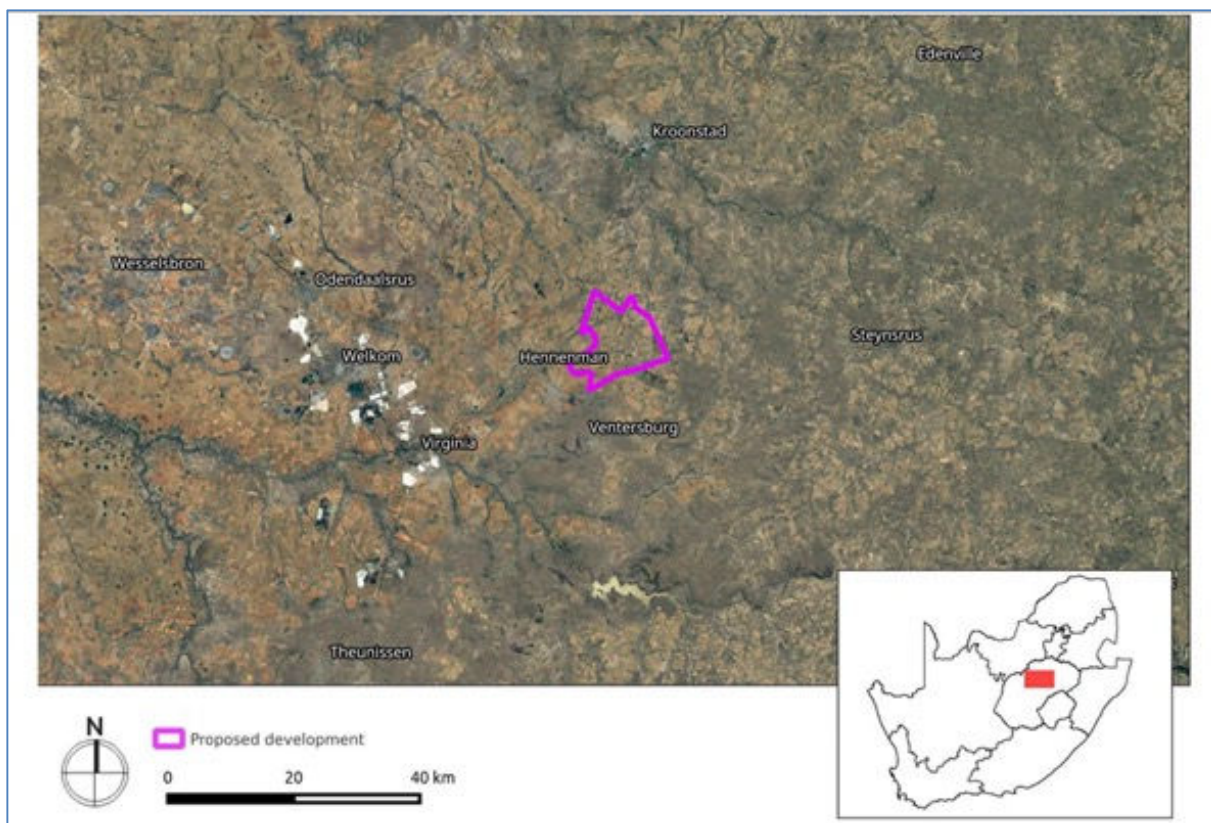


Figure 1 – Map depicting the general location of the project area.

1.2. Proposed Development Programme

The proposed development programme is divided into five phases which include both invasive and non-invasive activities presented in following sequence (Siwendu, 2018):

- Phase 1:
 - Investigate all sources for Historical Data
 - Obtain all relevant Historical Data
 - Desktop Study
- Phase 2:
 - Inventorise, capture and QA/QC all available historical data
 - Data synthesis and database creation
 - Definition of regional geological characteristics
- Phase 3:
 - Generate the initial geological model
 - Location of key historic borehole core, if available
 - Re-logging and re-sampling of historic boreholes
- Phase 4:
 - Drilling of four (4) diamond drill holes to a depth of 500 m
 - Logging and sampling of drill holes
 - Refinement of geological model
- Phase 5:
 - Drilling of two (2) diamond drill holes to a depth of 500 m
 - Logging and sampling of drill holes
 - Finalisation of 3D geological model
 - Resource estimation

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

The nature and the size of the proposed development and associated infrastructure exceeds more than two erf/stands and is over 5000m² in size. Developments taking place in an area that exceed two erf/stands and is over 5000m² in size requires that an HIA be conducted in terms of Section 38 (1) of the NHRA, No. 25 1999. The HIA is conducted in terms of Section 38 (3) of the NHRA, No. 25 of 1999. This prescript of the Act state that: “the responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2) (a): Provided that the following must be included:

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

- (b) An assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7.
- (c) An assessment of the impact of the development on such heritage resources.
- (d) An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development.
- (e) The 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.
- (g) Plans for mitigation of any adverse effects during and after the completion of the proposed development.”

Western Allen Ridge Gold Mines (Pty) Ltd has appointed Shango Solutions as the Environmental Assessment Practitioner (EAP) for this project. In turn, Shango Solutions appointed NGT as the lead and independent CRM consultant to conduct and manage the HIA (inclusive of a PIA) and apply for heritage permits. Janishta Daya, Candidate Archaeologist and Heritage Consultant of NGT conducted the HIA study for the proposed project. The appointment of NGT as an independent CRM firm is in terms of the NHRA, No. 25 of 1999.

1.4. Legal Requirements for Completion of the Study

The NHRA, No. 25 of 1999 sets the norms and standards for the management of heritage resources in South Africa. Section 38 (3) of the NHRA, No. 25 of 1999 informs the current HIA study. Other applicable sections of the NHRA, No. 25 of 1999 includes Section 36 (for the burial grounds and graves on site), Section 34 for built environment and landscape features in and around the proposed development area and Section 35 (for the management of historic and industrial archaeological resources on site as well as paleontological resources).

2. ENVIRONMENTAL CONTEXT AND PRESENT IMPACT OF THE DEVELOPMENT SITE ON THE REGION

2.1. Project Location

The project footprint is located north of the town of Ventersburg and covers three Magisterial Districts, namely, Kroonstad, Ventersburg and Hennenman in the Free State Province. The dominant land use of the area is dryland commercial agriculture and it includes crop and livestock farming (Wiltshire 2018). Table 1 below indicates a detailed description of the project footprint, the affected municipalities and it includes Global Positioning System (GPS) coordinates for the site and the names and farm numbers that fall within the proposed project area. Figure 1 is the map of the study area and it includes a Google Earth spot image showing the development footprint.

Table 1: Site Location and Property Information

Location of the Project	
Name of affected properties (Bore hole drilling)	<ul style="list-style-type: none"> • Rietspruit 2450 • Wonderboom 1100 • Damleegte 323 • Lekkerleven 2442 • Twistniet 565 (portion 2) • Twistniet 565 (portion 3)
Access	<p>The development footprint can be accessed via the following roads:</p> <ul style="list-style-type: none"> • N1 Highway which divides the proposed area in half (<i>Figure 2</i>).
Erf or farm number/s that fall within the VCP	<p>A total number of 53 farms are covered:</p> <ul style="list-style-type: none"> • Smaldeel 202; Kalklaagte 434; Kalklaagte 434; Rosebank 903; Wonderboom 1100; Eendoorn 2440; Brakvlei 2441; Brakvlei 2442; Mooiplaats 2443; Welkom 2444; Lekkerleven 244; Johannesrust 2446; Johannesrust 2446; Rondebult 2447; Rondebult 2447; Groenkol 2448; Johannesrust 2449; Rietspruit 245; Rietspruit 2450; Geschigt 38; Desiderlus 39; Multa Tuli 40; Vrede oord 41; Persevero 42; Persevero 42; Eerste Geluk 51; Protest 63; Wachteenbeetje 76; Styns Rust 82; Moidam 102; Excelsior 122; Victoria Spruit 137; Victoria Spruit 137; Twistniet 175; Geluk 183; Kleinfontein 210;

	<p>Kleinfontein 210; Lan Kuil 225; Klein Vrede Oord 228; La Rochette 231; Vlakspruit 234; Eendracht 259; Dispuut Spruit 272; Kalkfontein 29; Langverwacht 302; Langverwacht 302; Langverwacht 30; Vaderdeel 32; Moederserf 322; Damleegte 323; Beginsel 384; Smaldeel 41l Armoedspruit 416; Kalklaagte 43; Kalklaagte 434; Kalklaagte 434; Kalklaagte 434; Kromspruit 476; Rustoord 508; Driehoek 526; Voorspoed 52; Voorspoed 527 ; Twistniet 56; Twistniet 55; Twistniet 56; Twistniet 56; Twistniet 56; Twistniet 56; Wolzak 56; Stillewoning 58; Burnett-Holmes 59; Dispuut Spruit 72; Moederseel 739; Stillewoning 757</p> <p>Refer to Appendix for tabulated data</p>
Towns or Suburbs or District	Ventersburg, Hennenman, Kroonstad
Responsible Local Authority	Matjhabeng and Moqhaka Local Municipalities
Region	Free State Province
Country	South Africa
Site GPS coordinates	S -27.942220° E 27.186903°

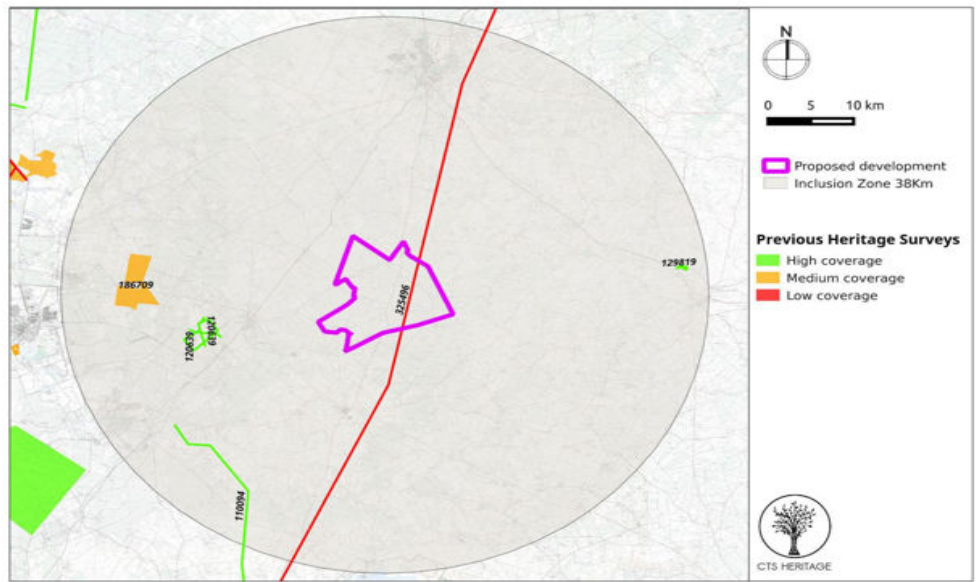


Figure 2 – Map depicting the national road which dissects the study area together with the location where previous heritage surveys have been conducted

2.2. Description of the Affected Environment

The study area as indicated in figure 1 (above) is predominantly used for agricultural purposes with focus being on crop (mainly maize) and livestock (mainly cattle) (Siwendu, 2018). Other major economic channels which dominate in the area include tourism, ancillary facilities as well as gold mining (Wiltshire, 2018). The landscape is predominantly flat with gentle sloping hills, furthermore, it is characterised by grassy plains with a random scatter of clustered trees. The study area can be accessed by means of the N1 which intercepts the area, connecting Johannesburg and Bloemfontein (Wiltshire, 2018).

3. METHODOLOGY

3.1. Approach to the Study

Janishta Daya, Candidate Archaeologist and Heritage Consultant of NGT compiled this HIA report. It is conducted for the prospecting right and environmental authorisation for the proposed WRE Ventersburg Consolidated Prospecting Right Project. The steps involved are as follows:

3.1.1. Step I – Literature Review (Desktop Phase)

Background information search for the proposed development took place following the receipt of the appointment letter from the client. Sources used included, but were not limited to previously published HIA studies, municipal strategic documents, academic books and the Internet and archival material about the site and the broader area in which it is located. This includes the interpretation of relevant legislation (i.e. the NHRA, No. 25 of 1999).

3.1.2. Step II – Physical Survey

A physical survey of the project area was conducted on Friday the 23rd February 2018. It was conducted by Janishta Daya and Nkosinathi Tomose of NGT. The survey focused on the areas in and around the proposed 6 drill points aimed at gathering information about the heritage fabric of the receiving environment. Part of the survey also covered a Heritage feature situated north of the outlined project area as indicated in *Figure 4*. The feature is an old structure which bears resemblance to a European Band has been graded as a provincial site of the Free State (Dreyer, 2005).

3.1.3. Step III - Assessment of Site Significance in Terms of Heritage Resources Management Methodologies

The significance of the identified heritage resources sites would be based on four main criteria:

- Site integrity (i.e. primary vs. secondary context).

- Amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures).
- Density of scatter (dispersed scatter).
- Low - <math><10/50\text{m}^2</math>.
- Medium - 10-50/50m².
- High - >50/50m².
- Uniqueness.

Based on the site integrity, amount of deposits and uniqueness, the identified resources were assessed in terms of the potential to answer research questions in the field of archaeology and heritage resources management sector.

Management actions and recommended mitigation, which will result in a reduction on the impact on the sites, expressed as follows:

- A - No further action necessary.
- B - Mapping of the site and controlled sampling required at a Phase 2 Level (e.g. mapping and destruction of a historic building or an archaeological site).
- C - No-go or reduce size of area concerned.
- D - Preserve site, or extensive data collection and mapping of the site.
- E - Preserve site.

Impacts on these sites by the development were evaluated as follows:

3.1.4. Step IV - Site Significance Rating in Accordance to Heritage Management Standards Established by SAHRA

The following site significance classification minimum standards as prescribed by the South African Heritage Resources Agency (SAHRA) (2006) and approved by the Association of Southern African Professional Archaeologists (ASAPA) for the Southern African Developing Community (SADC) region were used to grade the identified heritage resources or sites.

Table 2: 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

3.1.5. Impact Significance Rating in Accordance to Environmental Requirement (Shango Solutions Methodology):

Table 3 – Table indicating the impact significance rating for the client Shango Solutions.

Alternatives	Proposal	
	Alternative 1	
	Alternative 2	
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)
	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)
	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
4	Medium	1,17
5	Medium	1,33
6	Medium	1,5
7	Medium	1,67
8	Medium	1,83
9	High	2
Phases	Planning	
	Construction	
	Operations	
	Decommissioning	
	Rehabilitation and closure	

Table 4- 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
								0											
								0							0				
								0							0				

Table 5- Risk assessment

Impact Assessment						
	Impact Name					
	Alternative					
	Phase					
	Environmental Risk					
	Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
	Nature of Impact			Magnitude of Impact		
	Extent of Impact			Reversibility of Impact		
	Duration of Impact			Probability		
	Environmental Risk (Pre-mitigation)					
	Mitigation Measures					
	Heritage Risk (Post-mitigation)					
	Degree of confidence in impact prediction:					
	Impact Prioritisation					
	Public Response					
	Cumulative Impacts					
	Degree of potential irreplaceable loss of resources					
Prioritisation Factor						
Final Significance						

3.1.6. Step III – Data Consolidation and Report Writing

The final step involved the consolidation of the data collected using the various sources as described above and the results of the evaluation and assessment process:

- This involves the manipulation of Shapefiles/KMZ files through Arc GIS to develop maps.
- Evaluation and grading of sites/resources significance.
- Assessing potential impacts of the project on the identified heritage resources.
- Discussing the findings and concluding on whether or not there will be negative or positive impacts on the cultural resources resulting from the proposed project.
- Making recommendations on management and mitigation measures that should be applied to mitigate or minimize impacts on heritage resources.

4. LITERATURE REVIEW

This chapter provides insights on the archaeology and cultural heritage of the receiving environment as described in Chapter 2 of this report and illustrated by Figure 1 above. Where necessary, reference is made to archaeology and other heritage resources found within the broader region of the Free State Province and in areas located in close proximity to the receiving environment for the proposed Ventersburg Consolidated Project. The objective of making such references is to enable heritage-grading processes and for comparative analysis. For example, should heritage resources be found within the project area unique to the project area or are found elsewhere in the province and the implications of this to broader heritage conservation management principles. The heritage scoping process is arranged into three sub-chapters; the first sub-chapter discusses the archaeology and rock art, the second sub-chapter discusses heritage of the built environment and the third sub-chapter discusses the palaeontology.

4.1. Archaeology and Rock Art

The area in focus was first occupied by hunter-gatherers from the Early, Middle and later Stone Age periods, succeeded by the occurrence of Khoekhoen pastoralists who occupied the landscape from around 2000 years ago. Iron Age farmers who share lineage to modern day Sotho and Tswana people of South Africa later occupied the area. The 19th Century bore witness to the exploitation of the land by the Griqua and White colonial farmers through practices of trade, farming and hunting. Land occupation by indigenous people was eradicated around the mid 19th Century and the area was incorporated into what was then known as the Orange Free State Republic. The 1870s and the 1880s marked an

important part in history making reference to the first and second Anglo-Boer war brought about by the diamond rush at Kimberly and the gold rush along the Witwatersrand post British colonisation. The occurrence of racial segregation and marginalisation of the native South African populace around 1910, resulted in many locals being forced to engage in labor intensive work in small towns, live in reserves or pursue an occupation as a farmworker in the Free State (Wiltshire, 2018).

The study area does not contain Heritage Impact Assessments which draw specific focus to the archaeological resources of the area. Archaeological resources may have been previously lost to disturbances caused by the practice of crop (maize) and cattle farming in the area extending over generations. However, areas along the banks and floodplains of the Rietspruit (which passes through the study area) as well as other smaller tributaries may contain portions of mildly disturbed archaeological sites. A vast number of archaeological sites pertaining to Iron Age settlements, stone walled structures, fairly recent burial grounds and graves as well as cultural landscapes can be encountered through surveying on foot (Wiltshire, 2018).

4.2. Built Environment Heritage

Previous HIA study conducted in the area and as indicated by Dreyer (2005) notes the presence of a historical structure (reference Id 34894) within the study area (*depicted in Figure 3*). The structure was documented as a European styled Barn of high local significance. The Barn is described to bear resemblance to features such as a Mansard Roof, which is defined as “a covering that has a steep lower part and a not so steep upper part on all four sides” (Wiltshire 2018) with only a possibility of two or three other such structures in the country.

The site has been incorporated into the tourism economy of the area and is more commonly referred to as the Barn Guesthouse. It is highly likely that other such structures, farmhouses and complexes of significant value exist on farm properties which fall within the inclusion zone that have yet to be documented and graded on the National Inventory (*Figure 4*). In this regard, sites which have been documented, namely, The Ferreirasrust farmhouse in Hennenman (9/2/318/0001, SAHRIS SITE ID 26467) is a Provincial Heritage Site (PHS) as well as the old police station (9/2/340/0005, SAHRIS SITE ID 26391), town hall (9/2/340/0003, SAHRIS SITE ID 26396), Dutch Reformed church (9/2/340/0001, SAHRIS SITE ID 26399) and the Skanskraal and Voortrekkers graves in Ventersburg (9/2/340/0004, SAHRIS SITE ID 26394) are located within the neighboring towns (*Figure 5*) (Wiltshire, 2018).

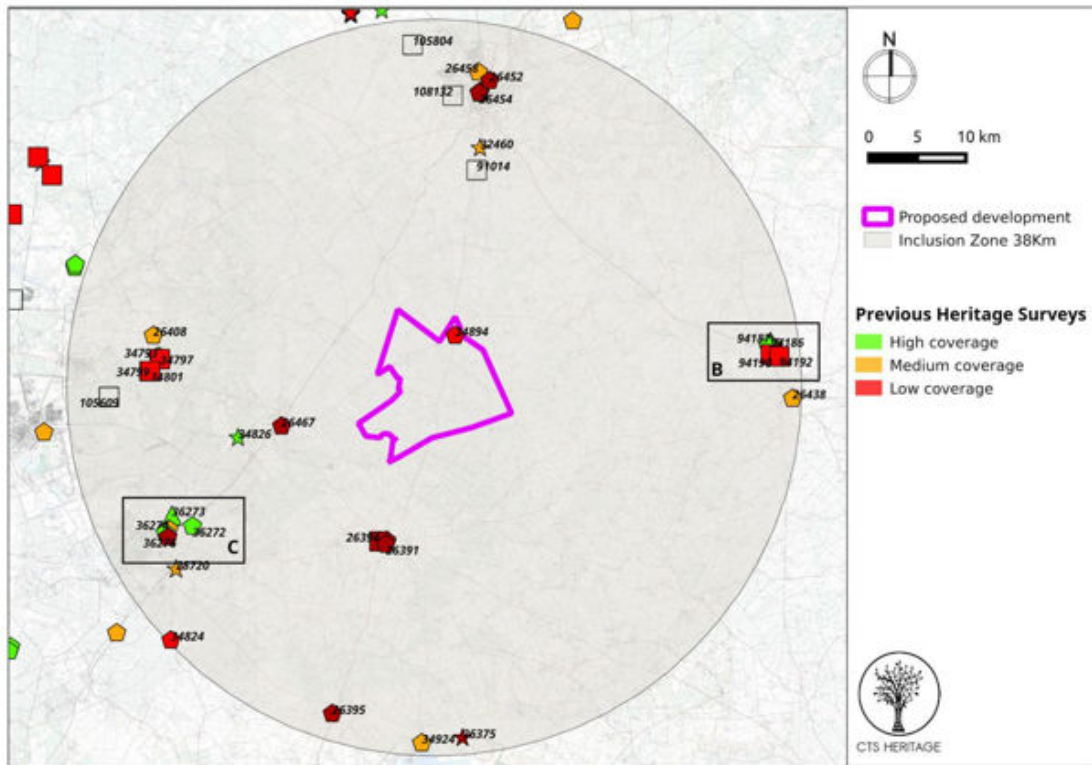


Figure 3 - Distribution of archaeological and heritage resources site in and around the proposed development area.

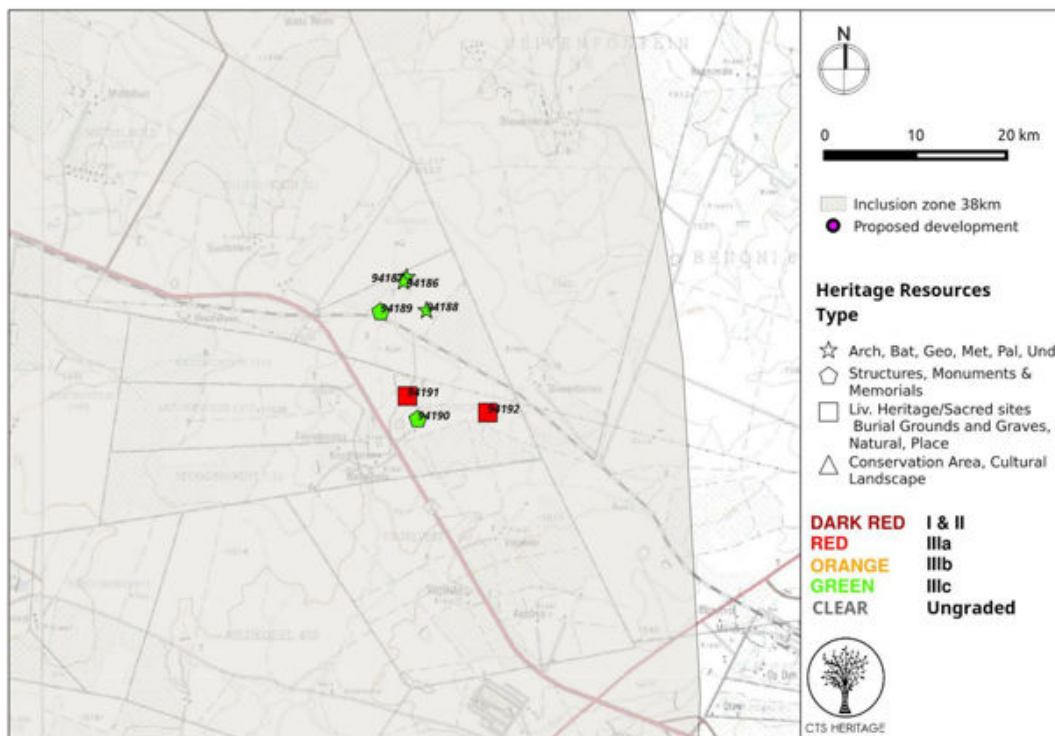


Figure 4 – Map depicting close-up of group B heritage resources near the eastern boundary of the inclusion zone.

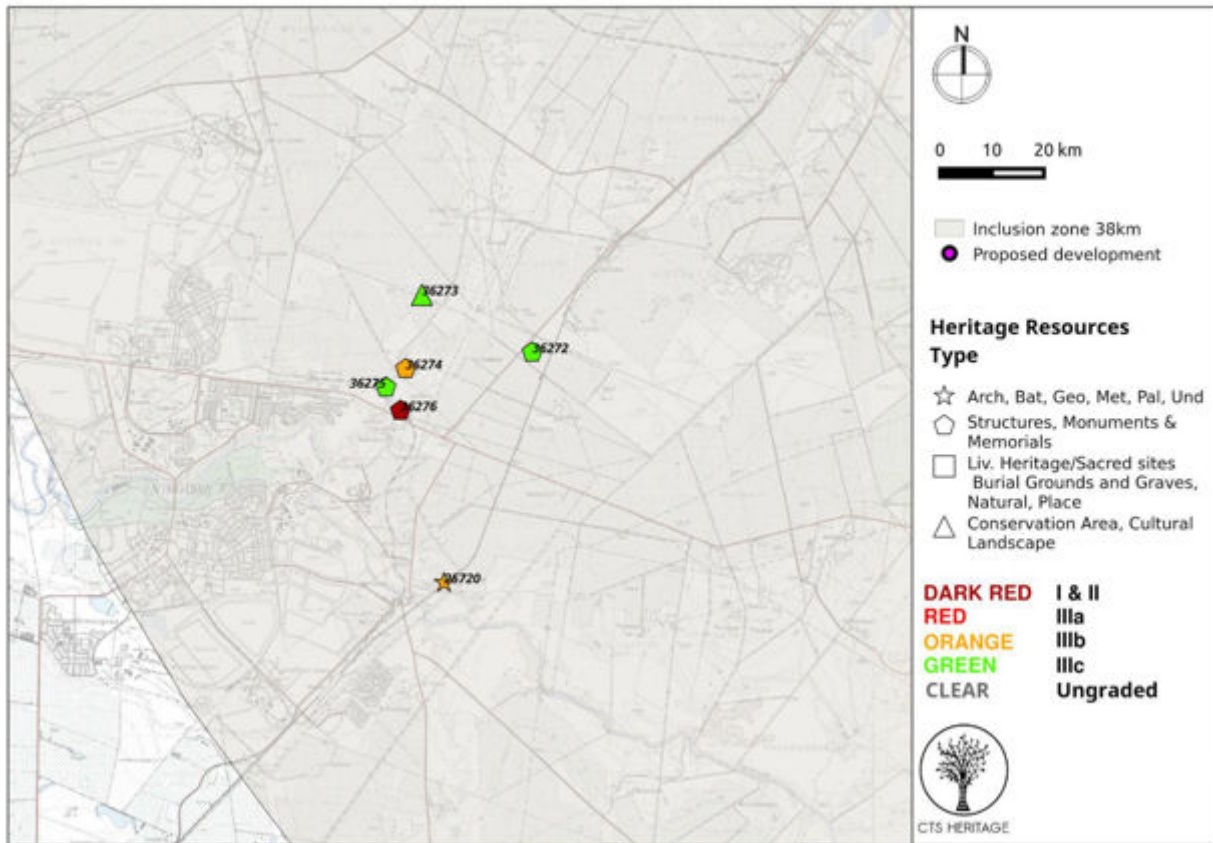


Figure 5 – Map depicting close-up of group C heritage resources near the south-western boundary of the inclusion zone.

4.3 Palaeosensitivity

The initial proposed development area covered a land that falls within a medium to high fossil sensitivity area; for example, the south west section of the proposed development area contains a small area which falls within the red bad graded as very high in term of Palaeosensitivity (Figure 6 -7). Following the assessment of potential impacts of mining activities on the red bad graded as very high in term of Palaeosensitivity; the project proponent revised the development area to only cover land that has medium fossil sensitivity (Figure 8). However, the SAHRIS Fossil Sensitivity Map incorrectly depicts a moderate fossil sensitivity (green colour) when the area is covered by Aeolian sands of the Quaternary age which has been extensively farmed and ploughed over the period of 150-200 years (Wiltshire, 2018). This is due to the occurrence of green-grey and red mudstone, siltstone, grey shale, rhythmite and sandstone which relates to the Normandien Formation. According to Wiltshire (2018), the Normandien Formation is associated with fossils relating to fish, amphibians, reptiles, therapsids and vertebrate burrows that fall within the Geological stratum known as the Lystrosaurus Assemblage Zone. Other fossils associated with the Normandien Formation include the Glossopteris tree fossils and insect wings which are associated with the Rooinek Member (Wiltshire, 2018).

A Palaeontological study was conducted by Dr DJ de Ruiter in 2006 on a site situated just 27 km southwest of the study area boundary in close proximity to the town of Virginia. The study aimed at drawing comparisons between the fossils retrieved from the Pliocene locality belonging to the site near Virginia with the hominid fossils from World Heritage Area sites for the study of paleoecology and paleoclimatology. The Kroonstad quarry which is located 20 km towards the northern boundary of the proposed project footprint contains material of the middle Permian fossil bivalves as well as trace fossils which have been preserved in sandstone of the lower Beaufort or Ecca Group (Wiltshire, 2018).

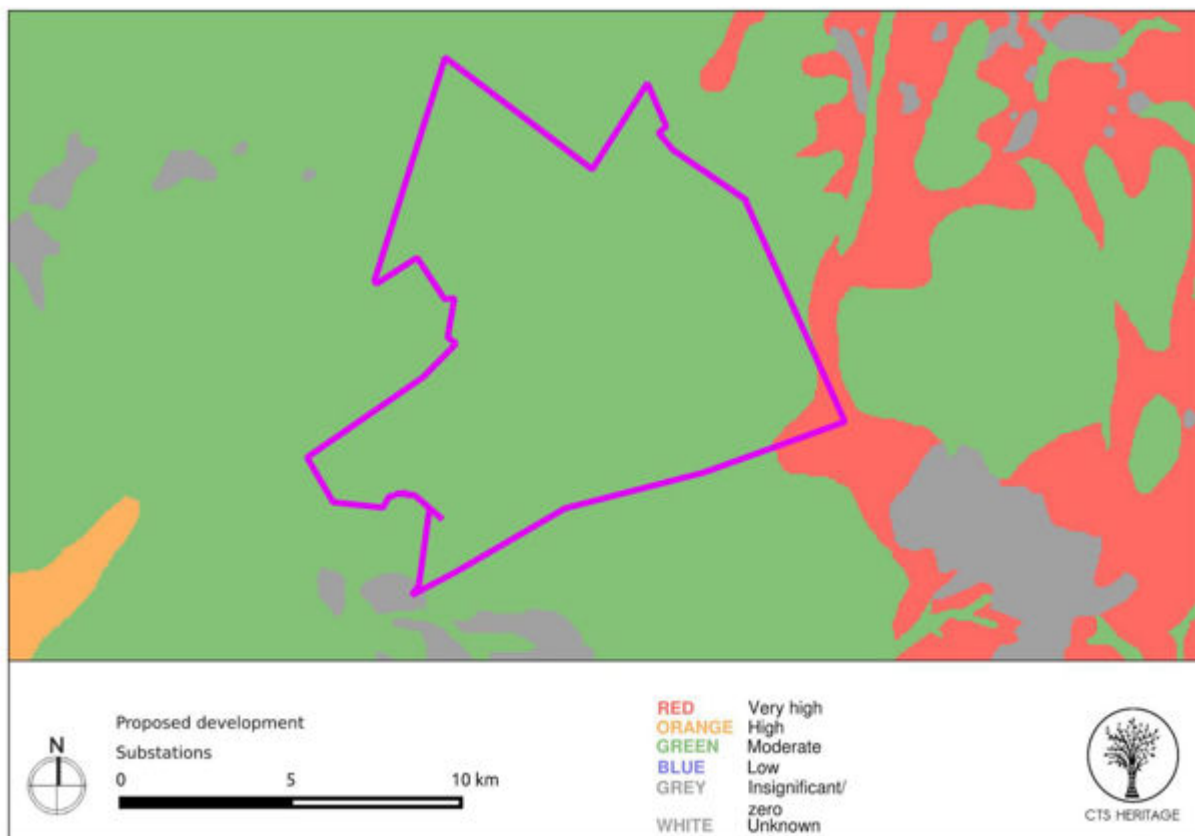


Figure 6 – Initial proposed development area which depicts the sensitivity of the underlying geology in relation to the occurrence of fossils

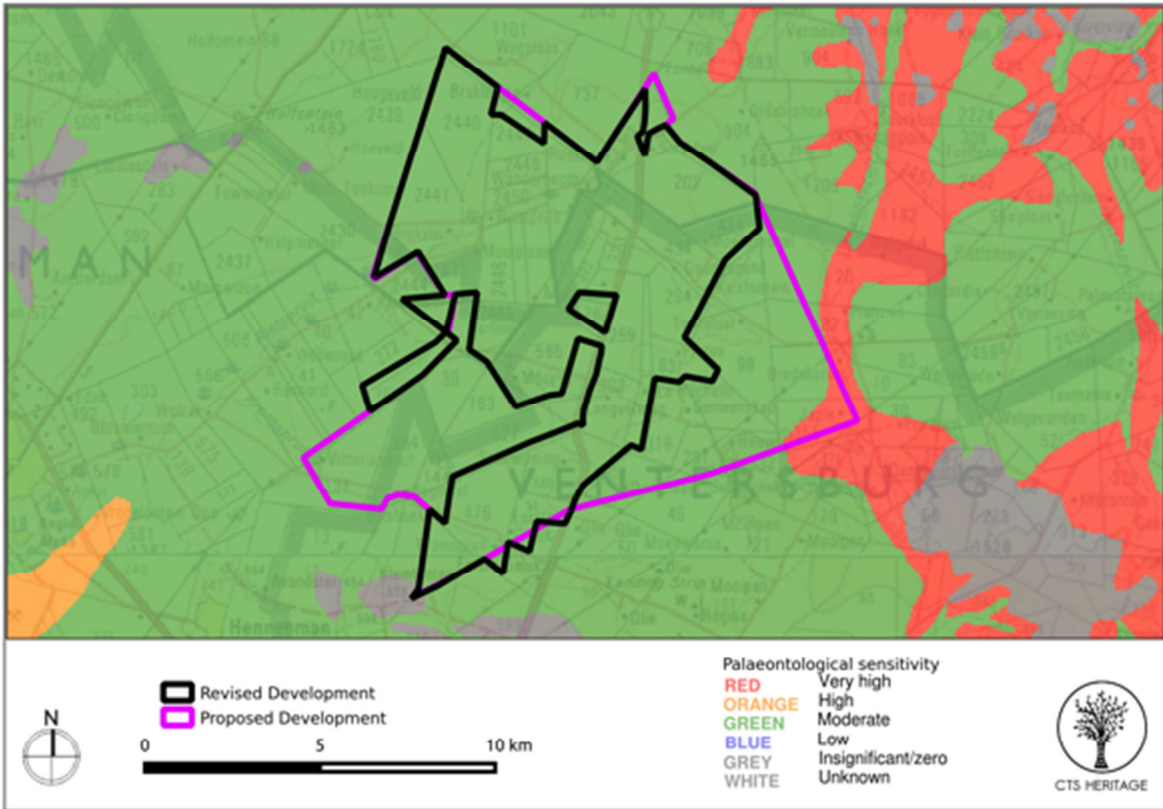


Figure 7- Map showing the revised development area (black) and the old development area (purple)

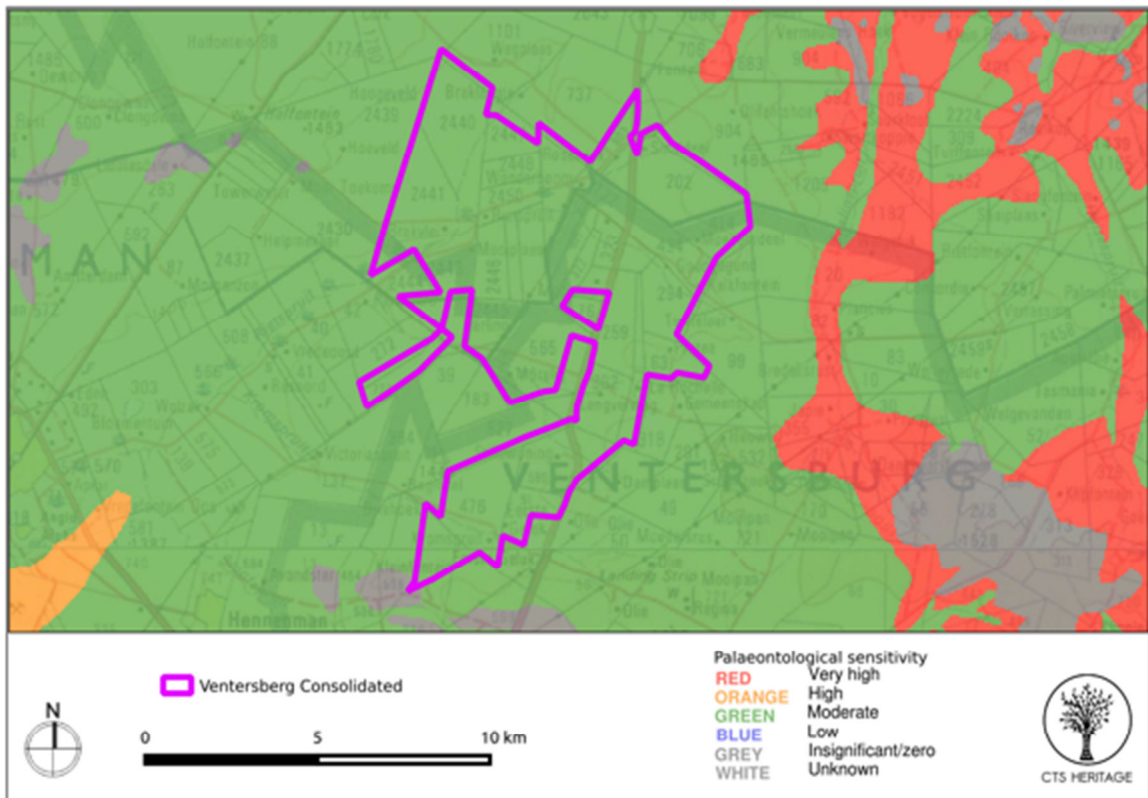


Figure 8- Revised development area

5. STATEMENT OF HERITAGE SIGNIFICANCE OF THE AFFECTED ENVIRONMENT

Importance of General Notes

A large portion of this report has been compiled based on previous HIA studies conducted for the study area, none of which bear any data specifically related to archaeological and heritage resources. As a result, a ground survey of the area was deemed necessary in order to overcome limitations encountered as a result of the lack of data.

5.1. Context

This document is fundamentally informed by the NHRA, No. 25 of 1999 and is consistent with the various United Nations Educational, Scientific and Cultural Organization (UNESCO), International Council on Monuments and Sites (ICOMOS) characters for places of cultural significance.

5.2. Extent of Application

This Statement of Heritage Significance does not imply exemption from any national, provincial or local authority legal or other regulatory requirements, including any protection or management or general provisions in terms of the NHRA, No. 25 of 1999.

5.3. Assumptions

Due to input constraints, certain assumptions are contained in this document, which are qualified as such in the text to convey confidence levels. One of the assumptions is that the information provided by the client regarding the proposed development is correct and will remain consistent throughout the project. Furthermore, it is the understanding that the BAR Public Participation process will address issues of heritage consent and Interested and Affected Parties (I&APs) will be allowed space to provide inputs towards the strengthening of this HIA document should there be such requirements from the I&APs. It is also assumed that the identified heritage resources represent the total number of heritage resources within the development footprint with exception to those resources that are subterranean in nature. If any such resources, not visible to the earth surface are discovered during construction activities they will be treated as chance finds.

5.4. Limitation of Liability

NGT assumes no responsibility whatsoever for any loss or damages that may be suffered as a direct or indirect result of information contained in this report. Any claim that however arises is limited to the amount paid to NGT for services rendered to compile this report

6. SURVEY RESULTS AND IMPACT ASSESSMENT TO THE IDENTIFIED CULTURAL HERITAGE RESOURCES

The results of the survey of the proposed six drill point sites (*Figure 7*) and the broader study area yielded a total of two heritage sites, in form of a grave site and a historical Barn, which all fall outside the areas for the proposed drill sites for prospecting. The first site is a family grave site which belonged to the De Beer family who were once the owners of the land. They no longer occupy the farm land. The grave site is fenced off with an access gate. However, sections of the fence have fallen down. The second site is a provincial heritage site; a built environment feature in the form of a farm Barn. The Barn was built using sandstone and is currently adaptively reused as a guest house.

These two sites, fall outside the areas where the drilling activities will take place and will not be directly or indirectly affected by the proposed prospecting activities. The areas for the proposed drilling activities associated with the prospecting right application are predominantly agricultural plough fields and two drill points are located in areas that used to be plough fields (*Figure 8*). Therefore, the six drill point sites are located on transformed land with no archaeological or heritage resources.

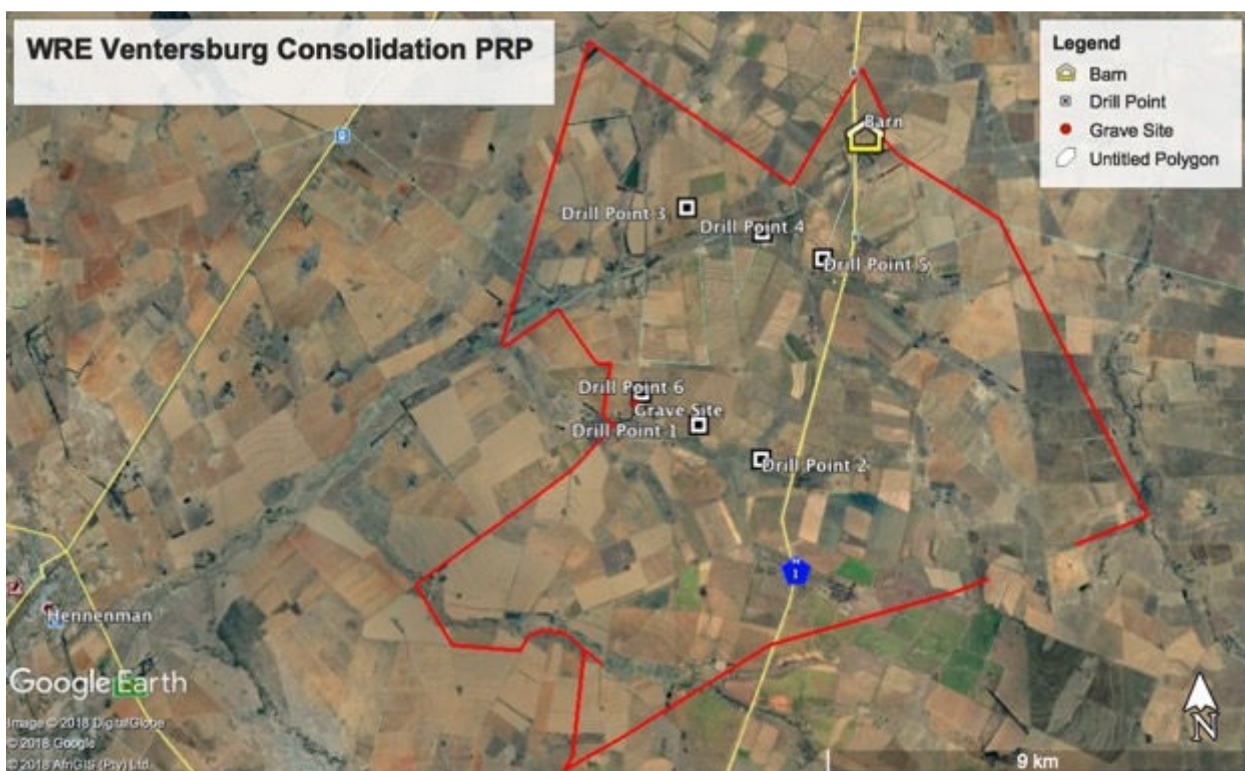


Figure 9 – Map depicting six proposed drill points in relation to the grave site and historical barn within the project footprint.

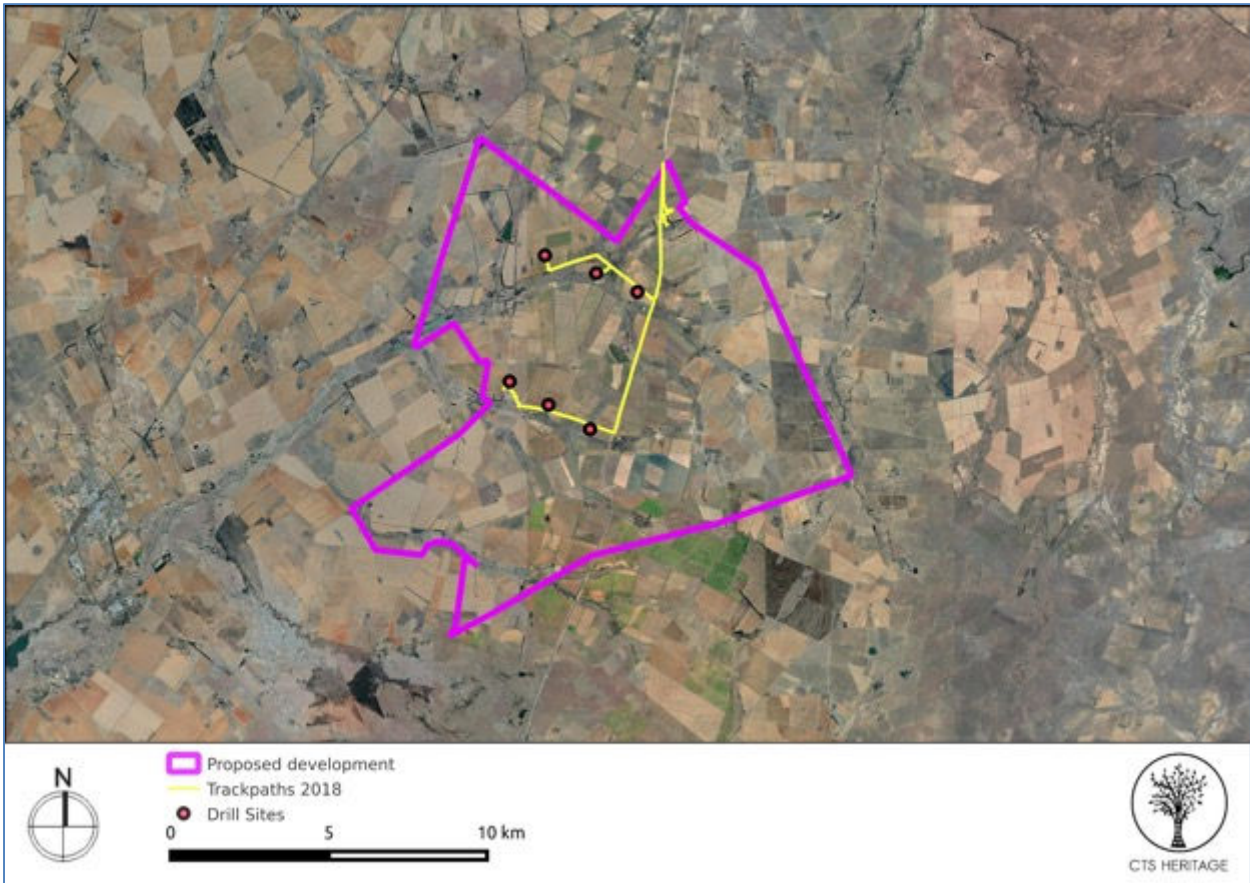


Figure 10 – Map depicting GPS tracking during physical survey of the six drill points and potential heritage sites.

Site Name:	Drill Point 001
Associated Farm Name:	Delport and Mojolefa / Twistniet 565 (Farm Portion 3)
Location/GPS Coordinates:	S27° 56.779' E27° 10.239'
Description of Site and Surrounding Area:	
<p>This drill point site is covered in grass and weeds (<i>Figure 9</i>). This land is indicative of former agricultural activities; it has previously been ploughed (and is fenced off). Opposite (north) of the drill point site is maize plough field. The location of the proposed drilling extends over both properties i.e. the active and the inactive plough fields. No archaeological or heritage related resources were identified.</p>	



Figure 11 – Images depicting the general landscape setting of site 001.

Site Name:	Drill Point 002
Associated Farm Name:	Twistniet 565 (Farm Portion 2)
Location/GPS Coordinates:	S27° 57.195' E27° 11.041'
Description of Site and Surrounding Area:	
The drill point site falls within the typical grassland biome setting. A cluster of acacia trees have been identified to the north of the site (<i>Figure 10</i>). A number of termite mounds were noted as well as a random scatter of cattle excrements. No archaeological or heritage related resources were identified.	



Figure 12 – Images depicting the general landscape setting for site 002.

Site Name:	Drill Point 003
Associated Farm Name:	Groenkol and Rietspruit (Farm Portion RE)
Location/GPS Coordinates:	S27° 54.229' E27° 10.169'
Description of Site and Surrounding Area:	
<p>This site is located within an active maize plough field (<i>Figure 11</i>). Some challenges were experienced with regards to gaining access to the exact GPS coordinates point for the propose drill point. No archaeological or heritage related resource have been identified due to the fact that the land is transformed through active and ongoing agricultural activities.</p>	



Figure 13 – Images depicting the general landscape setting of site 003.

Site Name:	Drill Point 004
Associated Farm Name:	Armoedspruit 415 (Farm Portion RE)
Location/GPS Coordinates:	S27° 54.535' E27° 11.159'
Description of Site and Surrounding Area:	
<p>This site has an extensive vegetation cover of thatch grass and sweet grass which are generally water loving species. A dam has been identified east of the site (<i>Figure 12</i>). Thatch grass often grows in areas that have moist soils and also where the land has been previously disturbed which suggests the absence of heritage resources. No archaeological or heritage related resources were identified.</p>	



Figure 14 – Images depicting general landscape setting for site 004.

Site Name:	Drill Point 005
Associated Farm Name:	Damleegte 323 (Farm Portion RE)
Location/GPS Coordinates:	S27° 54.854' E27° 11.953'
Description of Site and Surrounding Area:	
This site falls within an old plough field (<i>Figure 13</i>). Evidence points to use of the land to grow maize and sunflowers and that the land might have been ploughed a year or two ago. Cattle tracks were also observed. No archaeological resources were identified.	



Figure 15 – Images ordered from left to right depicting the general landscape setting of 005 and cattle tracks identified on site.

Site Name:	Drill Point 006
Associated Farm Name:	Lekkerleven 2445 (Farm Portion 0)
Location/GPS Coordinates:	S27° 56.382' E27° 09.488'

Description of Site and Surrounding Area:

This site falls within in active plough filed. However, the field was not ploughed this year which suggests the practice of rotational cropping. Due to the land being previously disturbed by the practice of agriculture, archaeological and heritage related resources occur at the proposed drill point 006.

Site Name:	GY1 (Family Burial Ground)
Associated Farm Name:	Lekkerleven 2445 (Farm Portion 0)
Location/GPS Coordinates:	S27° 56.513' E27° 09.381'

Description of Site and Surrounding Area:

This is a family burial site with one marked grave (Figure 14). It is located approximately 350m south-west of the proposed drill point site 006 (Figure 7). The grave site belonged to the De Beer family who were the previous owners of that land. A typical grave orientation is observed i.e. east-west orientation (with the head pointing west and facing east). The burial ground is sectioned off with a fence. The size of the area fenced off suggests the possibility of more graves which may not have been marked. The grave has a granite headstone and a cement dressing with white pebbles covering the top of the cement dressing. Each corner of the grave contains a plinth.



Figure 14 – Images depicting family burial site.

Table 6- Impact and risk assessment rating for project planning phase in relation to the identified grave site.

		Disturbance/damage/destruction of heritage resources				
Impact Assessment	Impact Name	Destruction of heritage resources				
	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	1
	Extent of Impact	2	2	Reversibility of Impact	1	1
	Duration of Impact	2	1	Probability	1	1
	Environmental Risk (Pre-mitigation)					-2,00
	Mitigation Measures					
	<i>All heritage structures must be suitably identified prior to invasive prospecting works proceeding and suitably demarcated and avoided.</i>					
	<i>No prospecting must be undertaken within 100 metres from heritage features and archaeological sites.</i>					
	<i>Should heritage sites be identified on-site during invasive prospecting activities, all prospecting activities must stop and a Heritage specialist should be notified.</i>					
	Heritage Risk (Post-mitigation)					-1,25
	Degree of confidence in impact prediction:					High
	Impact Prioritisation					
	Public Response					2
	<i>Issue has received a meaningful and justifiable public response</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					1,33	
Final Significance					-1,67	

Table 7- Impact and risk assessment rating for project construction phase in relation to the identified grave site

		Disturbance/damage/destruction of heritage resources				
Impact Assessment	Impact Name	Destruction of heritage resources				
	Alternative	Proposal				
	Phase	Construction				
	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	3
	Duration of Impact	5	2	Probability	2	2
	Environmental Risk (Pre-mitigation)					-7,00
	Mitigation Measures					
	<i>All heritage structures must be suitably identified prior to invasive prospecting works proceeding and suitably demarcated and avoided.</i>					
	<i>No prospecting must be undertaken within 100 metres from heritage features and archaeological sites.</i>					
	<i>Should heritage sites be identified on-site during invasive prospecting activities, all prospecting activities must stop and a Heritage specialist should be notified.</i>					
	Heritage Risk (Post-mitigation)					-4,50
	Degree of confidence in impact prediction:					High
	Impact Prioritisation					
	Public Response					2
	<i>Issue has received a meaningful and justifiable public response</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					1,33	
Final Significance					-6,00	

Table 8-Impact and risk assessment rating for project operational phase in relation to the identified grave site

Disturbance/damage/destruction of heritage resources					
Impact Name	Destruction of heritage resources				
Alternative	Proposal				
Phase	Operations				
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	2	2	Reversibility of Impact	3	2
Duration of Impact	2	2	Probability	2	1
Environmental Risk (Pre-mitigation)					-5,00
Mitigation Measures					
<p><i>All heritage structures must be suitably identified prior to invasive prospecting works proceeding and suitably demarcated and avoided.</i></p> <p><i>No prospecting must be undertaken within 100 metres from heritage features and archaeological sites.</i></p> <p><i>Should heritage sites be identified on-site during invasive prospecting activities, all prospecting activities must stop and a Heritage specialist should be notified.</i></p>					
Heritage Risk (Post-mitigation)					-1,75
Degree of confidence in impact prediction:					High
Impact Prioritisation					
Public Response					2
<i>Issue has received a meaningful and justifiable public response</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					1,50
Final Significance					-2,63

Table 9- Impact and risk assessment rating for project decommissioning phase in relation to the identified grave site

Impact Assessment	Disturbance/damage/destruction of heritage resources					
	Impact Name	Destruction of heritage resources				
	Alternative	Proposal				
	Phase	Decommissioning				
	Environmental Risk					
	Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
	Nature of Impact	-1	-1	Magnitude of Impact	1	1
	Extent of Impact	2	2	Reversibility of Impact	2	2
	Duration of Impact	2	2	Probability	2	1
	Environmental Risk (Pre-mitigation)					-3,50
	Mitigation Measures					
	<p><i>All heritage structures must be suitably identified prior to invasive prospecting works proceeding and suitably demarcated and avoided.</i></p> <p><i>No prospecting must be undertaken within 100 metres from heritage features and archaeological sites.</i></p> <p><i>Should heritage sites be identified on-site during invasive prospecting activities, all prospecting activities must stop and a Heritage specialist should be notified.</i></p>					
	Heritage Risk (Post-mitigation)					-1,75
	Degree of confidence in impact prediction:					High
	Impact Prioritisation					
	Public Response					1
	<i>Low: Issue not raised in public responses</i>					
	Cumulative Impacts					1
	<i>Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.</i>					
	Degree of potential irreplaceable loss of resources					2
<i>The impact is unlikely to result in irreplaceable loss of resources.</i>						
Prioritisation Factor					1,00	
Final Significance					-1,75	

Table 10-Impact and risk assessment rating for project planning phase in relation to the identified grave site

Disturbance/damage/destruction of heritage resources					
Impact Name	Destruction of heritage resources				
Alternative	Proposal				
Phase	Rehabilitation and Closure				
Environmental Risk					
Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
Nature of Impact	-1	-1	Magnitude of Impact	1	1
Extent of Impact	2	2	Reversibility of Impact	1	2
Duration of Impact	2	2	Probability	2	1
Environmental Risk (Pre-mitigation)					-3,00
Mitigation Measures					
<p><i>All heritage structures must be suitably identified prior to invasive prospecting works proceeding and suitably demarcated and avoided.</i></p> <p><i>No prospecting must be undertaken within 100 metres from heritage features and archaeological sites.</i></p> <p><i>Should heritage sites be identified on-site during invasive prospecting activities, all prospecting activities must stop and a Heritage specialist should be notified.</i></p>					
Heritage Risk (Post-mitigation)					-1,50
Degree of confidence in impact prediction:					High
Impact Prioritisation					
Public Response					1
<i>Low: Issue not raised in public responses</i>					
Cumulative Impacts					1
<i>Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.</i>					
Degree of potential irreplaceable loss of resources					2
<i>The impact is unlikely to result in irreplaceable loss of resources.</i>					
Prioritisation Factor					1,00
Final Significance					-1,50

Site Name:	Smaaldeel 01 (SMA001 – Site Id 34894)
Associated Farm Name:	Smaldeel 202 (Farm Portion RE)
Location/GPS Coordinates:	S27° 53.717' E27° 12.510'
Description of Site and Surrounding Area:	
This site is a provincial graded historical site. A typical mansard roofed barn built using sandstone. The site is actively adaptively reused as a guesthouse and also currently houses site offices for road construction activities (<i>Figure 15</i>). The site falls outside the area of the proposed drill point sites associated with the prospecting right application.	



Figure 15 – Images depicting Historical Barn from different viewpoints.

Table 11-Impact and risk assessment rating for project planning phase in relation to the identified the historic barn

Impact Assessment	Disturbance/damage/destruction of cultural resources					
	Impact Name	Disturbance/damage/destruction of cultural resources				
	Alternative	Proposal				
	Phase	Planning				
	Environmental Risk					
	Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
	Nature of Impact	-1	-1	Magnitude of Impact	1	1
	Extent of Impact	3	2	Reversibility of Impact	1	2
	Duration of Impact	2	2	Probability	2	1
	Environmental Risk (Pre-mitigation)					-2,50
	Mitigation Measures					
	<p><i>All heritage structures must be suitably identified prior to invasive prospecting works proceeding and suitably demarcated and avoided.</i></p> <p><i>No prospecting must be undertaken within 100 metres from cultural resources.</i></p> <p><i>Should cultural resources be identified on-site during invasive prospecting activities, all prospecting activities must stop and a Heritage specialist should be notified.</i></p>					
	Heritage Risk (Post-mitigation)					-1,25
	Degree of confidence in impact prediction:					High
	Impact Prioritisation					
	Public Response					1
	<i>Low: Issue not raised in public responses</i>					
	Cumulative Impacts					1
	<i>Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely 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					1,00	
Final Significance					-1,25	

Table 12- Impact and risk assessment rating for project construction phase in relation to the identified the historic barn

Impact Assessment	Disturbance/damage/destruction of cultural resources					
	Impact Name	Disturbance/damage/destruction of cultural resources				
	Alternative	Proposal				
	Phase	Construction				
	Environmental Risk					
	Attribute	Pre-mitigation	Post-mitigation	Attribute	Pre-mitigation	Post-mitigation
	Nature of Impact	-1	-1	Magnitude of Impact	4	1
	Extent of Impact	4	2	Reversibility of Impact	1	1
	Duration of Impact	4	2	Probability	2	1
	Environmental Risk (Pre-mitigation)					-6,50
	Mitigation Measures					
	<p><i>All heritage structures must be suitably identified prior to invasive prospecting works proceeding and suitably demarcated and avoided.</i></p> <p><i>No prospecting must be undertaken within 100 metres from cultural resources.</i></p> <p><i>Should cultural resources be identified on-site during invasive prospecting activities, all prospecting activities must stop and a Heritage specialist should be notified.</i></p>					
	Heritage Risk (Post-mitigation)					-1,75
	Degree of confidence in impact prediction:					Medium
	Impact Prioritisation					
	Public Response					2
	<i>Issue has received a meaningful and justifiable public response</i>					
	Cumulative Impacts					1
	<i>Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely 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					117	
Final Significance					-2,04	

Table 13- Impact and risk assessment rating for project operational phase in relation to the identified the historic barn

Impact Assessment	Disturbance/damage/destruction of cultural resources					
	Impact Name	Disturbance/damage/destruction of cultural resources				
	Alternative	Proposal				
	Phase	Operation				
	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	5	2	Reversibility of Impact	2	1
	Duration of Impact	4	2	Probability	2	1
	Environmental Risk (Pre-mitigation)					-7,50
	Mitigation Measures					
	<p><i>All heritage structures must be suitably identified prior to invasive prospecting works proceeding and suitably demarcated and avoided.</i></p> <p><i>No prospecting must be undertaken within 100 metres from cultural resources.</i></p> <p><i>Should cultural resources be identified on-site during invasive prospecting activities, all prospecting activities must stop and a Heritage specialist should be notified.</i></p>					
	Heritage Risk (Post-mitigation)					-1,75
	Degree of confidence in impact prediction:					Medium
	Impact Prioritisation					
	Public Response					1
	<i>Low: Issue not raised in public responses</i>					
	Cumulative Impacts					3
	<i>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.</i>					
	Degree of potential irreplaceable loss of resources					1
<i>The impact is unlikely to result in irreplaceable loss of resources.</i>						
Prioritisation Factor					1,33	
Final Significance					-2,33	

Table 14- Impact and risk assessment rating for project decommissioning phase in relation to the identified the historic barn

Disturbance/damage/destruction of cultural resources					
Impact Name	Disturbance/damage/destruction of cultural resources				
Alternative	Proposal				
Phase	Decommissioning				
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	2	2	Reversibility of Impact	1	1
Duration of Impact	2	2	Probability	1	1
Environmental Risk (Pre-mitigation)					-1,50
Mitigation Measures					
<i>All heritage structures must be suitably identified prior to invasive prospecting works proceeding and suitably demarcated and avoided.</i>					
<i>No prospecting must be undertaken within 100 metres from cultural resources.</i>					
<i>Should cultural resources be identified on-site during invasive prospecting activities, all prospecting activities must stop and a Heritage specialist should be notified.</i>					
Heritage Risk (Post-mitigation)					-1,75
Degree of confidence in impact prediction:					Low
Impact Prioritisation					
Public Response					1
<i>Low: Issue not raised in public responses</i>					
Cumulative Impacts					3
<i>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.</i>					
Degree of potential irreplaceable loss of resources					1
<i>The impact is unlikely to result in irreplaceable loss of resources.</i>					
Prioritisation Factor					1,33
Final Significance					-2,33

Table 15- Impact and risk assessment rating for project closure and rehabilitation phase in relation to the identified the historic barn

Impact Assessment	Disturbance/damage/destruction of cultural resources					
	Impact Name	Disturbance/damage/destruction of cultural resources				
	Alternative	Proposal				
	Phase	Rehabilitation and Closure				
	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	2	2	Reversibility of Impact	1	1
	Duration of Impact	2	2	Probability	1	1
	Environmental Risk (Pre-mitigation)					-1,75
	Mitigation Measures					
	<p><i>All heritage structures must be suitably identified prior to invasive prospecting works proceeding and suitably demarcated and avoided.</i></p> <p><i>No prospecting must be undertaken within 100 metres from cultural resources.</i></p> <p><i>Should cultural resources be identified on-site during invasive prospecting activities, all prospecting activities must stop and a Heritage specialist should be notified.</i></p>					
	Heritage Risk (Post-mitigation)					-1,75
	Degree of confidence in impact prediction:					Low
	Impact Prioritisation					
	Public Response					1
	<i>Low: Issue not raised in public responses</i>					
	Cumulative Impacts					3
	<i>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.</i>					
	Degree of potential irreplaceable loss of resources					1
<i>The impact is unlikely to result in irreplaceable loss of resources.</i>						
Prioritisation Factor					1,33	
Final Significance					-2,33	

7. DISCUSSION

The literature review undertaken as part of this report yielded important information about the archaeology and heritage of the broader study area and the region in which it is located. We know that the study area contains no scientific and systematic research that is specifically related to archaeology and heritage. Therefore, previous archaeological and heritage reports played a crucial and significant role in gathering background information about the project area. This was important because, in order to better understand and plan around any developmental project, one needs to have a better context of the receiving environment related to both tangible and intangible issues. In the case of the current study, the inclusion, documentation and discussion of a site (SMAALDEEL 01 – SMA001, Site Id 34894) that falls within the broader project area was deemed important even though it falls very far from the proposed six drill points sites. The aim is to guide the project planning team and the environmental assessment practitioner to plan around the resources without infringing on its fabric or risking it during a possible mining right application and the mining activities thereafter. It will also assist in terms of mitigating any potential risks to it, which may also translate to risks to the entire project. According to the data presented in Dreyer (2005), the site Smaaldeel 01 (SMA001) falls squarely within the proposed project area and has been rated as a site of great significance regarding built environment heritage of the region. The site is of provincial heritage significance. The initial stages of prospecting are largely a non-invasive and localised and thus will not impact negatively on the site Smaaldeel 01 (SMA001) which is located a good distance away.

A grave site was also found during the survey phase of the project. All graves in South Africa are deemed to be of high heritage significance. The identified grave site is situated in close proximity of the proposed drill point 006 located on the property Lekkerleven 244 (Farm portion 0). This grave site is associated with the De Beer family who were the previous owners of the farm. The burial ground is located approximately 350 m south-west of the drill point 006. The grave is marked with a granite headstone, cement dressing and a plinth at each corner of the grave. White pebbles are placed on top of the cementitious dressing. The burial ground/ grave yard is sectioned off with a fence. The size of the fence in relation to the single marked grave suggests that there is a possibility of more unmarked graves. Due to nature of the proposed prospecting activities which are localised and largely non-invasive, the grave site will not be impacted. In the future, an impact assessment of this grave site will need to take place as part of the mining right application and the establishment of the associated mine infrastructure.

8. CONCLUSIONS:

- It is concluded that the grave site is located outside of the proposed six prospecting drill sites.
 - Activities related to the drilling will not negatively impact the grave site.
 - Prospecting is considered to be largely non-invasive and localised, in which case, no mitigation measures are required to safeguard the grave site at this stage of the project. If any mitigations are required, it will be during the mining right application and the establishment of mine infrastructure on site.
- The historical building (Barn house) is situated away from the six drill points associated with prospecting. Therefore, activities related to the prospecting drilling will not have any impacts on this site.
- All six drill points fall within an already transformed land - within active or seasonally active agriculture fields, on which no archaeological or heritage resources or sites have been identified.
- In terms of paleaontological sensitivity, the amended prospecting rights footprint falls outside the palaeontological sensitive area. There will therefore be no impacts of palaeontological resources.

9. RECOMMENDATIONS:

- It is recommended that SAHRA and FS-PHRA grant the project a Positive Review Comment and allow the proposed prospecting activities to proceed as planned.
- The nature of the current process is prospecting is largely non-invasive. The survey only covered the 6 drill points and it excluded archaeological and heritage potential yield areas such as areas within the broader study areas that show dense concentration of trees and small outcrops.
- If the mining right application is lodged in the future which will include a scoping and EIA processes, all areas that have the potential to yield archaeological and heritage resources will need to be surveyed during the mining right application process.

10. REFERENCES

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12. APPENDIX – LIST AND NAMES OF SITES IDENTIFIED IN AND AROUND THE PROPOSED DEVELOPMENT AREA FOR THE PROPOSED VENTERSBURG PROSPECTING RIGHTS APPLICATION

Site ID	Site no	Full Site Name	Site Type	Grading	Declaration
25720	VRC-01	Virginia Railway Cutting	Palaeontological	NA	NA
26375	9/2/348/0009	Pre-Colonial stone huts, Willem Pretorius Game Reserve, Winburg District	Archaeological	Grade II	Provincial Heritage Site
26391	9/2/340/0005	Old Police station complex, Ventersburg	Building	Grade II	Provincial Heritage Site
26394	9/2/340/0004	Skanskraal and Voortrekker Graves, Kromfontein, Ventersburg District	Burial Grounds & Graves	Grade II	Provincial Heritage Site
26395	9/2/340/0002	Early Sotho settlement, Waterval, Sandrивierhoogte, Ventersburg District	Building	Grade II	Provincial Heritage Site
26396	9/2/340/0003	Town Hall, Voortrekker Street, Ventersburg	Building	NA	Heritage Register
26399	9/2/340/0001	Nederduitse Gereformeerde Church, Steyn Street, Ventersburg	Building	Grade II	Provincial Heritage Site
26408	9/2/335/0002	Farm school, Taaiboschspruit, Sasolburg District	Building	NA	Heritage Register
26438	9/2/326/0013	Town Hall, cnr Steyn and Van Riebeeck Streets, Steynsrus, Lindley District	Building	NA	Heritage Register
26451	9/2/324/0014	Old Magistrate's Office, Murray Street, Kroonstad	Building	Grade II	Provincial Heritage Site
26452	9/2/324/0016	Nederduitse Gereformeerde Mother Church, Church Square, Kroonstad	Building	Grade II	Provincial Heritage Site
26453	9/2/324/0005	Old Market Square Post Office and prison-cells, 66 Murray Street, Kroonstad	Building	Grade II	Provincial Heritage Site
26454	9/2/324/0006	Old market building, Market and Murray Streets, Kroonstad	Building	Grade II	Provincial Heritage Site
26455	9/2/324/0008	Town Hall, Church Street, Kroonstad	Building	Grade II	Provincial Heritage Site
26458	9/2/324/0003	Kroonstad North Nederduitse Gereformeerde Church, Reitz, Symond and Malherbe Streets, Kroonstad	Building	NA	Heritage Register

26467	9/2/318/0001	Farmhouse, Ferreirasrust, Hennenman District	Building	Grade II	Provincial Heritage Site
32460	Kroonstad Quarry	Kroonstad Quarry Q42.5	Palaeontological	NA	NA
34793	UTK001	UITKYK 001	Building	Grade II	NA
34794	UTK002	UITKYK 002	Structures	Grade IIIc	NA
34795	UTK003	UITKYK 003	Building, Artefacts	Grade IIIb	NA
34797	UTK004	UITKYK 004	Burial Grounds & Graves	Grade IIIa	NA
34799	UTK005	UITKYK 005	Burial Grounds & Graves	Grade IIIa	NA
34801	UTK006	UITKYK 006	Burial Grounds & Graves	Grade IIIa	NA
34824	DBM001	Wits Gold DBM 001	Monuments Memorials	Grade IIIa	NA
34826	BEY001	Beyers 001	Artefacts, Ruin, 100 years, Deposit	Grade IIIc	NA
34894	SMA001	Smaaldeel 001	Building	Grade IIIa	NA
34924	ALD-001	Aldam 001	Building	Grade IIIb	NA
36272	LEB01	Lebone 01	Structures	Grade IIIc	NA
36273	LEB02	Lebone 02	Cultural Landscape	Grade IIIc	NA
36274	LEB03	Lebone 03	Building	Grade IIIb	NA
36275	LEB04	Lebone 04	Building	Grade IIIc	NA
36276	LEB05	Lebone 05	Transport infrastructure	Grade II	NA
91014	Kroonstad N1	Kroonstad National Road 1 Widening	Burial Grounds Graves	NA	NA
94186	Arbeid 01	Farm Arbeid 2154 / 01	Stone walling	Grade IIIc	NA
94187	Arbeid 02	Farm Arbeid 2154 / 02	Stone walling	Grade IIIc	NA
94188	Arbeid 03	Farm Arbeid 2154 / 03	Stone walling	Grade IIIc	NA
94189	Arbeid 04	Farm Arbeid 2154 / 04	Transport infrastructure	Grade IIIc	NA
94190	Arbeid 05	Farm Arbeid 2154 / 05	Structures	Grade IIIc	NA

94191	Arbeid 06	Farm Arbeid 2154 / 06	Burial Grounds Graves	Grade IIIa	NA
94192	Arbeid 07	Farm Arbeid 2154 / 07	Burial Grounds Graves	Grade IIIa	NA
105605	Grave of Itumeleng Caswell Mokobo Site	Grave of Itumeleng Caswell Mokobo Site, Welkom	Burial Grounds Graves	NA	Provincial Heritage Site
105608	Grave of Vuyo Edward Charles Site	Grave of Vuyo Edward Charles Site, Welkom	Burial Grounds Graves	NA	Provincial Heritage Site
105609	Grave of Albert Ndooyisile Xhamfu Site	Grave of Albert Ndooyisile Xhamfu Site, Welkom	Burial Grounds Graves	NA	Provincial Heritage Site
105610	Grave of Samuel Zuka Baloi Site	Grave of Samuel Zuka Baloi Site, Welkom	Burial Grounds Graves	NA	NA
105804	Motale Family Graves	Motale Family Graves	Burial Grounds Graves	NA	NA
108132	Kroonstaad Concentration Camp Cemetery	Kroonstaad Concentration Camp Cemetery	Burial Grounds Graves	NA	NA

