

**PROPOSED CONSTRUCTION OF THE
EERSTEGELUK
TELECOMMUNICATIONS MAST ON THE
FARM EERSTEGELUK 515-
VREDEFORT ROAD, MOQHAKA LOCAL
MUNICIPALITY, FEZILE DABI DISTRICT,
FREE STATE PROVINCE.**

Heritage Impact Assessment (HIA) Report

March 2022

CREDIT SHEET

Stephan Gaigher (BA Hons, Archaeology, UP)

Principle Investigator for G&A Heritage Properties (Pty) Ltd.



Member of ASAPA (Site Director Status)

Cell: +27 73 752 6583

Email: stephan@gaheritage.co.za

Website: www.gaheritage.co.za

REPORT AUTHOR

Stephan Gaigher

***Disclaimer;** Although all possible care is taken to identify all sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the study. G&A Heritage and its personnel will not be held liable for such oversights or for costs incurred as a result of such oversights.*

Statement of Independence

As the duly appointed representative of G&A Heritage, I Stephan Gaigher, hereby confirm my independence as a specialist and declare that neither I nor G&A Heritage have any interests, be it business or otherwise, in any proposed activity, application or appeal in respect of which the Environmental Consultant was appointed as Environmental Assessment Practitioner, other than fair remuneration for work performed on this project.

SIGNED BY: STEPHAN GAIGHER



MANAGEMENT SUMMARY

Project Name and Location

Proposed construction of the Eerstegeluk Telecommunications Mast on the Farm Eerstegeluk 515-Vredefort Road, Moqhaka Local Municipality, Fezile Dabi District, Free State Province.

Consultant

G&A Heritage Management Properties (Pty) Ltd.

P.O. Box 522, Louis Trichardt, 0920

38 A Vorster Street, Louis Trichardt

Stephan Gaigher

+27 73 752 6583

stephan@gaheritage.co.za

Appointed By

Tekplan for Vodacom



Date of Report

31 March 2022

MANAGEMENT SUMMARY

The purpose of the management summary is to distil the information contained in the report into a format that can be used to give specific results quickly and facilitate management decisions. It is not the purpose of the management summary to repeat in shortened format all the information contained in the report, but rather to give a statement of results for decision making purposes.

This study focuses on the proposed construction of the Eerstegeluk Vodacom Telecommunications Mast on the Farm Eerstegeluk 515-Vredefort Road, Moqhaka Local Municipality, Fezile Dabi District, Free State Province.

This study encompasses the heritage impact investigation. A preliminary layout has been supplied to lead this phase of this study.

Scope of Work

A Heritage Impact Assessment (including Archaeological, Cultural heritage, Built Heritage, and Basic Palaeontological Assessment) to determine the impacts on heritage resources within the study area.

The following is required to perform this assessment:

- A desk-top investigation of the area;
- A site visit to the proposed development site;
- Identify possible archaeological, cultural, historic, built and palaeontological sites within the proposed development area;
- Evaluate the potential impacts of construction and operation of the proposed development on archaeological, cultural, historical resources; built and palaeontological resources; and
- Recommend mitigation measures to ameliorate any negative impacts on areas of archaeological, cultural, historical, built and palaeontological importance.

The purpose of this study is to determine the possible occurrence of sites with cultural heritage significance within the study area. The study is based on archival and document combined with fieldwork investigations.

Findings and Recommendations

The Eerstegeluk Vodacom Telecommunications Mast on the Farm Eerstegeluk 515-Vredefort Road, Moqhaka Local Municipality, Fezile Dabi District, Free State Province was investigated during a field visit and through archival studies.

The study area was found to be devoid of any heritage sites with significance and severely altered from the natural landscape. It is recommended that obscured, subterranean sites be managed, if they are encountered.

The historic topographical maps shows both graves and historic structures on some of the older maps, however this could not be verified on the ground. It is therefore expected that they have been destroyed sometime in the past.

The SAHRIS PalaeoSensitivity Map places the site within the "Blue" designation (Low Significance). No Palaeontological Studies are required, however a protocol for finds must be included in the unlikely event that any paleontological resources are uncovered. This is included at the end of this report.

Fatal Flaws

No fatal flaws were identified.

CONTENTS

Scope of Work	4
Findings and Recommendations	4
Fatal Flaws	4
1. General	10
1.1 Project Description and Location	10
1.2 Technical Scope of HIA	11
1.3 Geographical / Spatial Scope of HIA	13
1.4 Temporal Scope	13
2. Legislative Context	14
2.1 National Legislation	14
3. Methodology	17
3.1 Heritage Management	17
3.2 Inventory	17
3.3 Evaluating Heritage Impacts	17
3.4 Site Visit / Fieldwork Details	18
3.5 Assumptions	18
3.6 Gaps / Limitations / Uncertainty	18
3.7 Specialist Specific Methodology	18
3.8 Visual Impact Assessment Methodology	19
4. Findings	20
4.1 Built Environment	20
4.2 Cultural Landscape	21
4.3 Natural Landscape	21
4.4 Battlefields and Concentration Camps	23
5. Measuring Impacts	24
5.1 Magnitude	27
5.2 Duration	28
5.3 Extent ²⁸	
5.4 Probability	29
5.5 Significance	29
5. Description of Affected Environment	31
5.1 Map of Key Features	31
5.2 Results of Fieldwork	31
6. Baseline	34
6.1 Palaeontology	34
6.2 Stone Age	35
6.3 Iron Age	35

6.4	Historic Era	37
6.5	Archival Research	40
6.6	SAHRIS Database Studies	41
6.7	Historical Typographical Maps	43
7.	Potential Heritage Impacts and Proposed Mitigation	47
7.1	Introduction and scope	47
8.	Public Participation	48
9.	Conclusions and Recommendations	49
10.	Chance Finds Protocol	50
11.	References	53

List of Figures

Figure 1. Eerstegeluk Vodacom Telecommunications Mast Location Map (Google Earth)	10
Figure 2. Site Sketch	11
Figure 3. Built Environment – Farmhouse, Kraal and Powerlines	20
Figure 4. Access Road	20
Figure 5. Proposed Site (East facing).....	31
Figure 6. Proposed Site (West facing).....	31
Figure 7. Site Photos – North Facing	32
Figure 8. Site Photos – East Facing	32
Figure 9. Site Photos – South Facing	33
Figure 10. Site Photos – West Facing	33
Figure 11. Paleo Sensitivity Map	34
Figure 12. Distribution of Iron Age sites as documented by T Maggs	36
Figure 13. Dry Stone Walling at Ashkoppies	37
Figure 14. Schoemansdrift Bridge Historical Aerial Photograph (Source: ruralexploration.co.za)	38
Figure 15. Schoemansdrift Bridge (Source: ruralexploration.co.za).....	39
Figure 16. Sites identified in the surrounding area	43
Figure 17. 2627CC_1945 Topographic Map	44
Figure 18. 2627CC_1967 Topographic Map	44
Figure 19. 2627CC_1981 Topographic Map	45
Figure 20. 2627CC_1995 Topographic Map	45
Figure 21. 2627CC_2006 Topographic Map	46

List of Tables

Table 1. Impacts on the NHRA Sections	16
Table 2. NHRA Triggers	16
Table 3. Description of magnitude and assigned numerical values	27
Table 4. Description of duration and assigned numerical values	28
Table 5. Description of extent and assigned numerical values	28
Table 6. Definition of probability ratings	29
Table 7. Application of significance ratings	29
Table 8. Definition of confidence ratings	30
Table 9. Definition of reversibility ratings	30
Table 10. Definition of irreplaceability ratings	30
Table 11. Palaeontological Sensitivity	34

ABBREVIATIONS

Abbreviation	Meaning
BP	Before Present
c.	circa
BCE	Before the Common Era
Bp	Before Present
CE	Common Era
ECO	Environmental Control Officer
EIA	Early Iron Age
ELO	Environmental Liaison Officer
ESA	Early Stone Age
ESMS	Environmental and Social Management System
ESSS	Environmental and Social Safeguard Standards
Fm	Femtometre (10^{-15} m)
GPS	Geographic Positioning System
HIA	Heritage Impact Assessment
ICP	Informed Consultation and Participation
LIA	Late Iron Age
LSA	Late Stone Age
KZN	KwaZulu-Natal
MSA	Middle Stone Age
MYA	Million Years Ago
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Agency
PIA	Palaeontological Impact Assessment
PS	Performance Standard
SAHRA	South African Heritage Resource Agency
SAHRIS	South African Heritage Information System
SAPS	South African Police Service
SHE	Safety, Health and Environment
SHEQ	Safety, Health, Environment and Quality
S&EIR	Scoping and Environmental Impact Reporting
Um	Micrometre (10^{-6} m)
WGS 84	World Geodetic System for 1984

GLOSSARY OF TERMS

'Archaeological' means:

- a) Material remains resulting from human activity which are in a state of disuse and are in or on land and are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
- b) Rock art, being a 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 is older than 100 years including any area within 10 m of such representation; and
- c) Wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land or in the maritime cultural zone referred to in section 5 of the Maritime Zones Act 1994 (Act 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which are older than 60 years or which in terms of national legislation are considered to be worthy of conservation;
- d) Features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found.

'Circa' is used in front of a particular year to indicate an approximate date.

'Grave' means a place of interment and includes the contents, headstone or other marker of and any other structures on or associated with such place. The South African Heritage Resources Agency (SAHRA) will only issue a permit for the alteration of a grave if it is satisfied that every reasonable effort has been made to contact and obtain permission from the families concerned.

'Paleontological' 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 use, and any site which contains such fossilised remains or trace.

A **'place'** is defined as:

- a) A site, area or region;
- b) A building or other structure (which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure);
- c) A group of buildings or other structures (which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures); and (d) an open space, including a public square, street or park; and in relation to the management of a place, includes the immediate surroundings of a place.

'Structures' means any building, works, device, or other facility made by people and which is fixed to land and any fixtures, fittings and equipment associated therewith older than 60 years.

1. General

1.1 Project Description and Location

G&A Heritage was appointed by *Tekplan* to undertake a Heritage Impact Assessment (HIA) for the proposed construction of the Eerstegeluk Vodacom Telecommunication Mast.

The investigation focused on the surveying of the area demarcated for the construction the proposed lattice type telecommunications mast and base station located on the Farm Eerstegeluk 515-Vredefort Road, Mophaka Local Municipality, Fezile Dabi District, Free State Province. The site (vacant land adjacent to a kraal) is located approximately 1.2km east of the banks of the Vaal River, 15km West-northwest (290°) from the intersection of the R59 and R721 outside of Vredefort.

The exact location of the proposed site for the construction of the mast is at the coordinates S26° 57' 45.39" E27° 13' 28.42" as indicated on the accompanying location map.

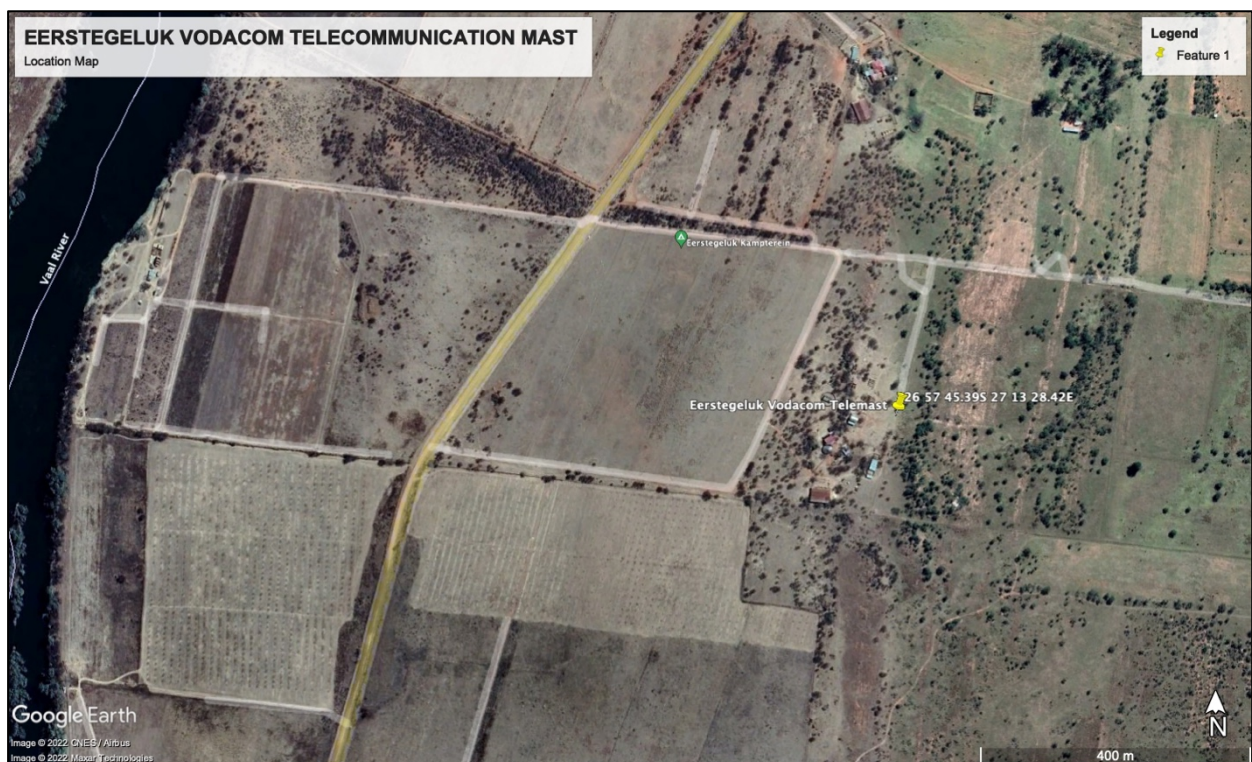


Figure 1. Eerstegeluk Vodacom Telecommunications Mast Location Map (Google Earth)

Vodacom intends to construct a 55m lattice type mast with antennae mounted onto the mast and a container housing the associated equipment. The size of the base station (fenced area) in which the mast and associated equipment will be placed will measure 12m x 12m (144m²).

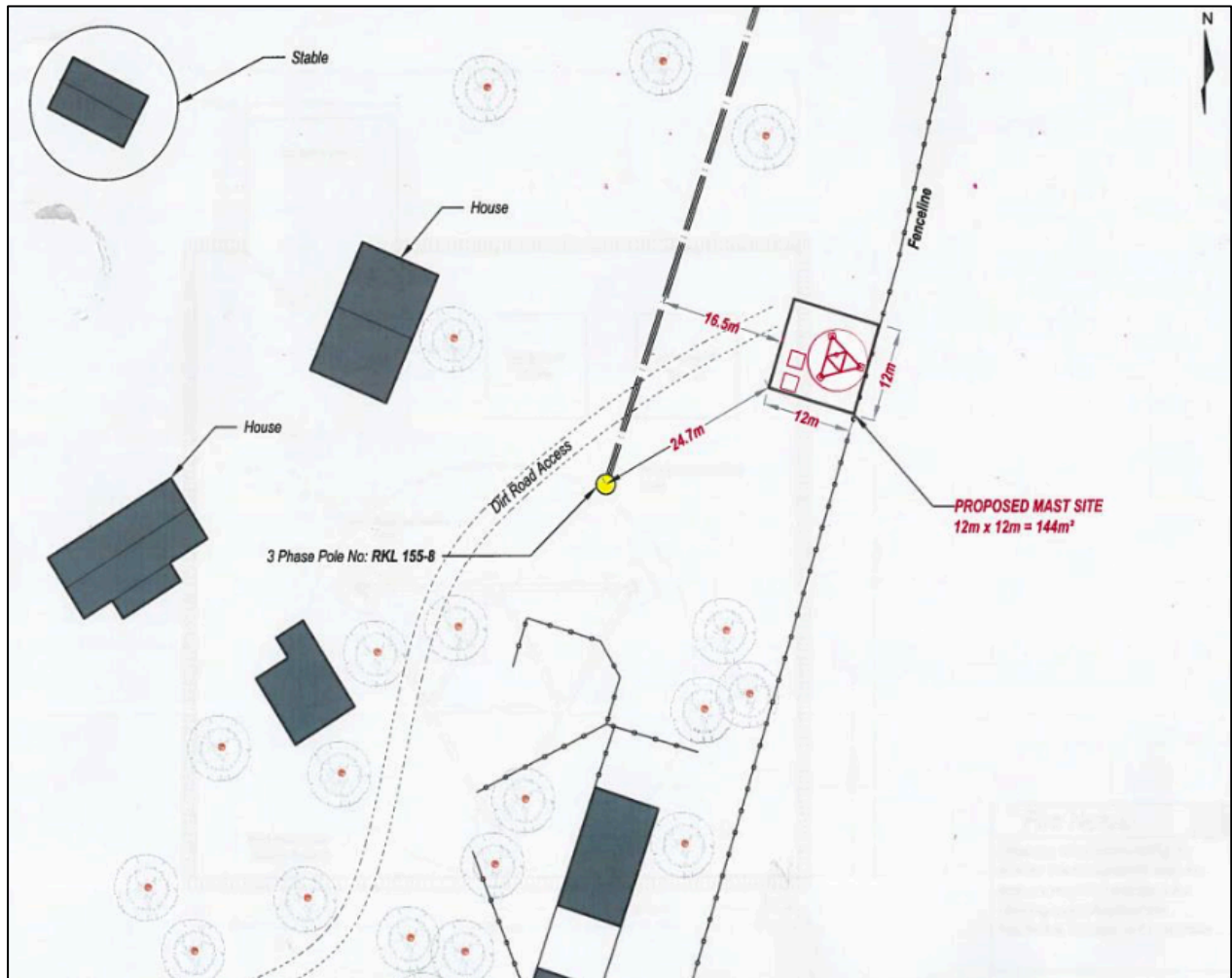


Figure 2. Site Sketch

1.2 Technical Scope of HIA

This HIA focused only on the areas to be directly affected by the proposed development and is meant to deliver, evaluate and inform on the following aspects:

- (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 the relevant legal descriptions, development proponent requirements and as per international best practise approaches and charters;
- (c) An assessment of the impact of the development on such heritage resources;
- (d) An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
- (e) The results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
- (f) If heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- (g) Plans for mitigation of any adverse effects during and after the completion of the proposed development.

The following categories of heritage objects are considered.

Graves: Places of interment including the contents, headstone or other marker of and any other structures on or associated with such place. This may include any of the following:

- 1) Ancestral graves,
- 2) Royal graves and graves of traditional leaders
- 3) Graves of victims of conflict i.e. graves of important individuals

- 4) Historical graves and cemeteries older than 60 years
- 5) Other human remains, buried or otherwise.

The removal of graves is subject to the following procedures:

- Notification of the impending removals (using local language media and notices at the grave site);
- Consultation with individuals or communities related or known to the deceased;
- Satisfactory arrangements for the curation of human remains and / or headstones in a museum, where applicable;
- Procurement of a permit from the relevant controlling body;
- Appropriate arrangements for the exhumation (preferably by a suitably trained archaeologist) and re-interment (sometimes by a registered undertaker, in a formally proclaimed cemetery);
- Observation of rituals or ceremonies required by the families.

Movable objects: This includes objects such as historic or rare books and manuscripts, paintings, drawings, sculptures, statuettes and carvings; modern or historic religious items; historic costumes, jewellery and textiles; fragments of monuments or historic buildings; archaeological material; and natural history collections such as shells, flora, or minerals. Discoveries and access resulting from a project may increase the vulnerability of cultural objects to theft, trafficking or abuse. This may include any of the following:

- 1) Objects recovered from the soil or water including archaeological and paleontological objects and material, meteorites and rare geological specimens;
- 2) Ethnographic art and objects
- 3) Military objects
- 4) Objects of decorative art
- 5) Objects of fine art
- 6) Objects of scientific or technological interest
- 7) Books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings
- 8) Any other prescribed categories, but excluding any object made by a living person.

Protection of Historic Battlefields

Heritage “Places”: A ‘place’ is defined as:

- a) A site, area or region;
- b) A building or other structure (which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure);
- c) A group of buildings or other structures (which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures); and
- d) An open space, including a public square, street or park; and in relation to the management of a place, includes the immediate surroundings of a place.
- e) Traditional Buildings used in cultural ceremonies.

Heritage Structures: Refers to single or groups of architectural works found in urban or rural settings providing evidence of a particular civilisation, a significant development or a historic event. It includes groups of buildings, structures and open spaces constituting past or contemporary human settlements that are recognised as cohesive and valuable from an architectural, aesthetic, spiritual or socio-cultural perspective. This may also include any building, works, device, or other facility made by people and which is fixed to land and any fixtures, fittings and equipment associated therewith older than 60 years.

Archaeological Sites

Archaeological sites comprise any combination of structural remains, artefacts, human or ecological elements and may be located entirely beneath, partially above, or entirely above the land or water surface. Archaeological material may be found anywhere on the earth’s surface, singly or scattered over large areas. Such material includes burial areas, human remains, artefacts and fossils. Archaeological sites may include:

- a) Material remains resulting from human activity which are in a state of disuse and are in or on land and are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;

- b) Rock art, being a 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 is older than 100 years including any area within 10 m of such representation; and
- c) Wrecks, being any vessel or aircraft, or any part thereof, which was wrecked, whether on land or in the maritime cultural zone, and any cargo, debris or artefacts found or associated therewith, which are older than 60 years or which in terms of national legislation are considered to be worthy of conservation;
- d) Features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found.

Paleontological resources: Refers to 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 use, and any site which contains such fossilised remains or trace.

Sacred or Spiritual Sites: Refers to natural features with cultural significance, which may include sacred hills, mountains, landscapes, streams, rivers, waterfalls, caves and rocks; sacred trees or plants, groves and forests; carvings or paintings on exposed rock faces or in caves; and paleontological deposits of early human, animal or fossilised remains. This heritage may have significance to local community groups or minority populations.

1.3 Geographical / Spatial Scope of HIA

The geographic and spatial scope of the HIA centres on the proposed construction of the Eerstegeluk Vodacom Telecommunications Mast on the Farm Eerstegeluk 515-Vredefort Road, Moqhaka Local Municipality, Fezile Dabi District, Free State Province.

Any sites within the directly impacted study area that can be affected by the proposed development and, where known, are included in this report. Mitigation or secondary investigations take this footprint as the spatial parameters of the study area.

1.4 Temporal Scope

The proposed project will consist of three phases;

- 1) Planning
- 2) Development / Construction
- 3) Operational

Due to the nature of the proposed development, impacts on heritage sites are only anticipated during the development / construction phase of the proposed project. The operational phase will not result in any further alterations to heritage on any significant scale.

2. Legislative Context

2.1 National Legislation

Section 38(1) of the South African Heritage Resources Act (25 of 1999) requires that a heritage study is undertaken for:

- (a) *Construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;*
- (b) *Construction of a bridge or similar structure exceeding 50 m in length; and*
- (c) *Any development, or other activity which will change the character of an area of land, or water –*
 - (1) *Exceeding 10 000 m² in extent;*
 - (2) *Involving three or more existing erven or subdivisions thereof; or*
 - (3) *Involving three or more erven, or subdivisions thereof, which have been consolidated within the past five years; or*
- (d) *The costs of which will exceed a sum set in terms of regulations; or*
- (e) *Any other category of development provided for in regulations.*

While the above describes the parameters of developments that fall under this Act., Section 38 (8) of the NHRA is applicable to this development. This section states that;

- (8) *The provisions of this section do not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act, 1989 (Act 73 of 1989), or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act 50 of 1991), or any other legislation: Provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent.*

In regard to a development such as this that falls under Section 38 (8) of the NHRA, the requirements of Section 38 (3) applies to the subsequent reporting, stating that;

- (3) *The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2) (a): Provided that the following must be included:*
 - a) *The identification and mapping of all heritage resources in the area affected;*
 - b) *An assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6 (2) or prescribed under section 7;*
 - c) *An assessment of the impact of the development on such heritage resources;*
 - d) *An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;*
 - e) *The results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;*
 - f) *If heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and*
 - g) *Plans for mitigation of any adverse effects during and after the completion of the proposed development.*
 - 1) *Ancestral graves,*
 - 2) *Royal graves and graves of traditional leaders,*
 - 3) *Graves of victims of conflict (iv) graves of important individuals,*
 - 4) *Historical graves and cemeteries older than 60 years, and*
 - 5) *Other human remains which are not covered under the Human Tissues Act, 1983 (Act No.65 of 1983 as amended);*
 - h) *Movable objects, including:*
 - 1) *Objects recovered from the soil or waters of South Africa including archaeological and paleontological objects and material, meteorites and rare geological specimens;*

- 2) Ethnographic art and objects;
 - 3) Military objects;
 - 4) Objects of decorative art;
 - 5) Objects of fine art;
 - 6) Objects of scientific or technological interest;
 - 7) Books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings; and
 - 8) Any other prescribed categories, but excluding any object made by a living person;
- i) Battlefields;
 - j) Traditional building techniques.

A **'place'** is defined as:

- a) A site, area or region;
- b) A building or other structure (which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure);
- c) A group of buildings or other structures (which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures); and (d) an open space, including a public square, street or park; and in relation to the management of a place, includes the immediate surroundings of a place.

'Structures' means any building, works, device, or other facility made by people and which is fixed to land and any fixtures, fittings and equipment associated therewith older than 60 years.

'Archaeological' means:

- a) Material remains resulting from human activity which are in a state of disuse and are in or on land and are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
- b) Rock art, being a 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 is older than 100 years including any area within 10 m of such representation; and
- c) Wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land or in the maritime cultural zone referred to in section 5 of the Maritime Zones Act 1994 (Act 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which are older than 60 years or which in terms of national legislation are considered to be worthy of conservation;
- d) Features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found.

'Paleontological' 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 use, and any site which contains such fossilised remains or trace.

'Grave' means a place of interment and includes the contents, headstone or other marker of and any other structures on or associated with such place. The South African Heritage Resources Agency (SAHRA) will only issue a permit for the alteration of a grave if it is satisfied that every reasonable effort has been made to contact and obtain permission from the families concerned.

The removal of graves is subject to the following procedures as outlined by the SAHRA:

- Notification of the impending removals (using English, Afrikaans and local language media and notices at the grave site);
- Consultation with individuals or communities related or known to the deceased;
- Satisfactory arrangements for the curation of human remains and / or headstones in a museum, where applicable;
- Procurement of a permit from the SAHRA;
- Appropriate arrangements for the exhumation (preferably by a suitably trained archaeologist) and re-interment (sometimes by a registered undertaker, in a formally proclaimed cemetery);
- Observation of rituals or ceremonies required by the families.

The limitations and assumptions associated with this heritage impact assessment are as follows;

- Field investigations were performed on foot and by vehicle where access was readily available.
- Sites were evaluated by means of description of the cultural landscape, direct observations and analysis of written sources and available databases.
- It was assumed that the site layout as provided by Tekplan is accurate.
- We assumed that the public participation process performed as part of the Basic Assessment process was sufficiently encompassing not to be repeated in the Heritage Assessment Phase.

Table 1. Impacts on the NHRA Sections

Act	Section	Description	Possible Impact	Action
National Heritage Resources Act (NHRA)	34	Preservation of buildings older than 60 years	No impact	None
	35	Archaeological, paleontological and meteor sites	No impact	None
	36	Graves and burial sites	No impact	None
	37	Protection of public monuments	No impact	None
	38	Does activity trigger a HIA?	Yes	HIA

Table 2. NHRA Triggers

Action Trigger	Yes/No	Description
Construction of a road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length.	No	N/A
Construction of a bridge or similar structure exceeding 50m in length.	No	N/A
Development exceeding 5000 m ²	No	N/A
Development involving more than 3 erven or sub divisions	No	N/A
Development involving more than 3 erven or sub divisions that have been consolidated in the past 5 years	No	N/A
Re-zoning of site exceeding 10 000 m ²	No	N/A
Any other development category, public open space, squares, parks or recreational grounds	Yes	High Biodiversity Area

3. Methodology

3.1 Heritage Management

This study defines the heritage component of the EIA process being undertaken for the proposed Eerstegeluk Vodacom Telecommunications Mast on the Farm Eerstegeluk 515-Vredefort Road, Moqhaka Local Municipality, Fezile Dabi District, Free State Province.

It is described as a first phase (HIA). This report attempts to evaluate both the accumulated heritage knowledge of the area and information derived from direct physical observations.

3.2 Inventory

Inventory studies involve the in-field survey and recording of archaeological resources within a proposed development area. The nature and scope of this type of study is defined primarily by the results of the overview study. In the case of site-specific developments, direct implementation of an inventory study may preclude the need for an overview.

There are several different methodological approaches to conducting inventory studies. Therefore, the proponent, in collaboration with the archaeological consultant, must develop an inventory plan for review and approval by the SAHRA prior to implementation (*Dincause, Dena F., H. Martin Wobst, Robert J. Hasenstab and David M. Lacy 1984*).

3.3 Evaluating Heritage Impacts

A combination of document research as well as the determination of the geographic suitability of areas and the evaluation of aerial photographs determined which areas could and should be accessed.

After plotting of the site on a GPS the areas were accessed using suitable combinations of vehicle access and access by foot.

Sites were documented by digital photography and geo-located with GPS readings using the WGS 84 datum. An aerial drone was used to evaluate the site from different heights and to improve coverage of the area.

Further techniques (where possible) included interviews with local inhabitants, visiting local museums and information centers and discussions with local experts. All this information was combined with information from an extensive literature study as well as the result of archival studies based on the SAHRA (South African Heritage Resource Agency) provincial databases.

This Heritage Impact Assessment relies on the analysis of written documents, maps, aerial photographs and other archival sources combined with the results of site investigations and interviews with effected people. Site investigations are not exhaustive and often focus on areas such as river confluence areas, elevated sites, or occupational ruins.

The following documents were consulted in this study;

- South African National Archive Documents
- SAHRIS (South African Heritage Resources Information System) Database of Heritage Studies
- Historic Maps
- 1945, 1967, 1981, 1995 and 2006 Surveyor General Topographic Map series
- Google Earth 2021 imagery
- Published articles and books
- JSTOR Article Archive

3.4 Site Visit / Fieldwork Details

Fieldwork for the HIA was done on the 16th of March 2022. The area was found to be accessible by vehicle and areas of possible significance were investigated on foot. The survey was tracked using GPS and a track file in GPX format is available on request.

The study area was surveyed using standard archaeological surveying methods. The area was surveyed using directional parameters supplied by the GPS and surveyed by vehicle and on foot. This technique has proven to result in the maximum coverage of an area.

Standard archaeological documentation formats were employed in the description of sites. Using standard site documentation forms as comparable medium, it enabled the surveyors to evaluate the relative importance of sites found. Furthermore, GPS (Global Positioning System) readings of all finds and sites were taken. This information was then plotted using a **Garmin Colorado** GPS (WGS 84- datum).

Indicators such as surface finds, plant growth anomalies, local information and topography were used in identifying sites of possible archaeological importance. Test probes were done at intervals to determine sub-surface occurrence of archaeological material. The importance of sites was assessed by comparisons with published information as well as comparative collections.

Test excavation is that form of archaeological excavation where the purpose is to establish the nature and extent of archaeological deposits and features present in a location, which it is proposed to develop (though not normally to fully investigate those deposits or features) and allow an assessment to be made of the archaeological impact of the proposed development. It may also be referred to as archaeological testing' (DAHGI 1999a, 27).

'Test excavation should not be confused with, or referred to as, archaeological assessment which is the overall process of assessing the archaeological impact of development. Test excavation is one of the techniques in carrying out archaeological assessment which may also include, as appropriate, documentary research, field walking, examination of upstanding or visible features or structures, examination of aerial photographs, satellite or other remote sensing imagery, geophysical survey, and topographical assessment' (DAHGI 1999b, 18).

3.5 Assumptions

It was assumed that the impacted areas will be limited to the proposed development. It is furthermore assumed that the *PalaeoSensitivity* Map provided on the SAHRIS platform is comprehensive enough to inform on actions in this regard and the intrusive effects of the development would be sufficiently limited not to impact on any palaeontological resources.

3.6 Gaps / Limitations / Uncertainty

None.

3.7 Specialist Specific Methodology

The scope of work includes:

- the identification and assessment of archaeological, cultural, historic, and built sites within the study area.
- Archival study of existing data and information for the study area.
- Site inspection and fieldwork.
- This site work includes communicating with local inhabitants to confirm possible locations of heritage and cultural sites.
- Impact assessment has been performed according to the methodology as described in the relevant Impact Evaluation.

This HIA Methodology assists in evaluating the overall effect of a proposed activity on the heritage environment. The determination of the effect of a heritage impact on a heritage parameter is determined

through a systematic analysis of the various components of the impact. This is undertaken using information that is available to the heritage practitioner through the process of heritage impact assessment. The impact evaluation of predicted impacts was undertaken through an assessment of the significance of the impacts.

3.8 Visual Impact Assessment Methodology

Visual impacts of developments result when sites that are culturally celebrated are visually affected by a development. The exact parameters for the determination of visual impacts have not yet been rigidly defined and are still mostly open to interpretation. CNdV Architects and The Department of Environmental Affairs and Development Planning (2006) have developed some guidelines for the management of the visual impacts of wind turbines in the Western Cape, although these have not yet been formalised. In these guidelines they recommend a buffer zone of 1km around significant heritage sites to minimise the visual impact.

Visual impacts to scenic routes and sense of place are considered to be low as the proposed telecommunications mast will have a very small footprint and its height will be mitigated by the surrounding mountain sides.

4. Findings

4.1 Built Environment

Some structures associated with farming and rural living were identified in the area surrounding the study area and across the road from the study area.

- Dirt roads
- Fences
- Power lines
- Farmstead and associated outbuildings
- Footpaths



Figure 3. Built Environment – Farmhouse, Kraal and Powerlines

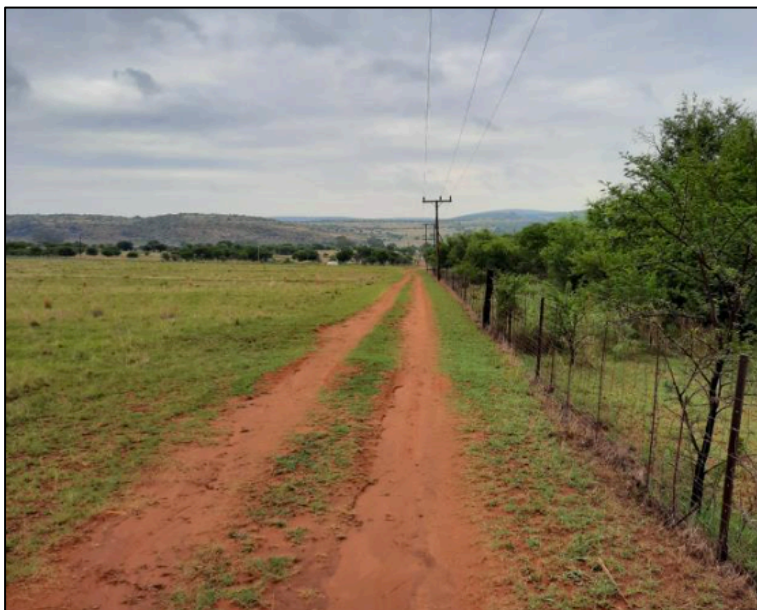


Figure 4. Access Road

Mitigation

These structures are not historically significant.

4.2 Cultural Landscape

The cultural landscape is strongly associated with farming and rural living.

4.3 Natural Landscape

The natural landscape the study area can be described as altered bushveld but has been severely altered by human activities. The Vredefort Dome is located approximately 28km east (100°) from the study area.

The Vredefort Dome

The Vredefort Dome is a representative part of a larger meteorite impact structure, or astrobleme. Dating back over 2 million years, it is the oldest astrobleme found on earth. With a radius of 190km, it is also the largest and the most deeply eroded.

Within the area, geological strata comprising the middle to upper zones of the earth’s crust, developed over a period of more than 32 000 million years are exposed. All the classic related characteristics of a large astrobleme are found at the property. This multi-ring structure formed by the impact scar illustrated the effect of rock metamorphism of rocks, transformation of crystal structures and shatter cones of the immense force created by the impact.

The Vredefort Dome bears witness to the world’s greatest known single energy release event, which had devastating global effects, according to some scientists, major evolutionary changes. It provides critical evidence of the earth’s geological history and is crucial to understanding of the evolution of the planet.

The national World Heritage Convention Act of 1999 is to be applied to this World Heritage Site. Various legal instruments are also applicable to ensure the protection of the property. These include the Environmental Conservation Act (Act no. 73 of 1989), the National Environmental Management Act (Act no. 107 of 1998), the Physical Planning Act (Act no. 88 of 1967), the Subdivision of Agricultural Land Act (Act no. 70 of 1970), the Free State Township Ordinance (Ord. no. 9 of 1969), the National Environmental Management Biodiversity Act (Act no. 10 of 2004), and the Free State Nature Conservation Ordinance (Ord. no. 8 of 1969). In terms of these laws, all development within or outside the property is subjected to an environmental impact assessment. Once the World Heritage Conservation Act also applies to the property, it will automatically be recognized as a protected area in terms of the National Environmental Management: Protected Areas (Act 57 of 2003). Protection in terms of the latter legislation also implies that mining or prospecting will be completed prohibited within the property and buffer zone.

Source: whc.unesco.org

Landscape Type	Description	Occurrence still possible?	Likely occurrence?
1 Paleontological	Mostly fossil remains. Remains include microbial fossils such as found in Baberton Greenstones	No	No
2 Archaeological	Evidence of human occupation associated with the following phases – Early-, Middle-, Late Stone Age, Early-, Late Iron Age, Pre-Contact Sites, Post-Contact Sites	No	No
3 Historic Built Environment	<ul style="list-style-type: none"> - Historical townscapes/streetscapes - Historical structures; i.e. older than 60 years - Formal public spaces - Formally declared urban conservation areas - Places associated with social identity/displacement 	No	No

4 Historic Farmland	<p>These possess distinctive patterns of settlement and historical features such as:</p> <ul style="list-style-type: none"> - Historical farm yards - Historical farm workers villages/settlements - Irrigation furrows - Tree alignments and groupings - Historical routes and pathways - Distinctive types of planting - Distinctive architecture of cultivation e.g. planting blocks, trellising, terracing, ornamental planting. 	No	No
5 Historic rural town	<ul style="list-style-type: none"> - Historic mission settlements - Historic townscapes 	No	No
6 Pristine natural landscape	<ul style="list-style-type: none"> - Historical patterns of access to a natural amenity - Formally proclaimed nature reserves - Evidence of pre-colonial occupation - Scenic resources, e.g. view corridors, viewing sites, visual edges, visual linkages - Historical structures/settlements older than 60 years - Pre-colonial or historical burial sites - Geological sites of cultural significance. 	No	No
7 Relic Landscape	<ul style="list-style-type: none"> - Past farming settlements - Past industrial sites - Places of isolation related to attitudes to medical treatment - Battle sites - Sites of displacement, 	No	No
8 Burial grounds and grave sites	<ul style="list-style-type: none"> - Pre-colonial burials (marked or unmarked, known or unknown) - Historical graves (marked or unmarked, known or unknown) - Graves of victims of conflict - Human remains (older than 100 years) - Associated burial goods (older than 100 years) - Burial architecture (older than 60 years) 	No	No
9 Associated Landscapes	<ul style="list-style-type: none"> - Sites associated with living heritage e.g. initiation sites, harvesting of natural resources for traditional medicinal purposes - Sites associated with displacement & contestation - Sites of political conflict/struggle - Sites associated with an historic event/person - Sites associated with public memory 	No	No
10 Historical Farmyard	<ul style="list-style-type: none"> - Setting of the yard and its context - Composition of structures - Historical/architectural value of individual structures - Tree alignments - Views to and from - Axial relationships - System of enclosure, e.g. defining walls - Systems of water reticulation and irrigation, e.g. furrows 	No	No

	<ul style="list-style-type: none"> - Sites associated with slavery and farm labour - Colonial period archaeology 		
11 Historic institutions	<ul style="list-style-type: none"> - Historical prisons - Hospital sites - Historical school/reformatory sites - Military bases 	No	No
12 Scenic visual	<ul style="list-style-type: none"> - Scenic routes 	No	No
13 Amenity landscape	<ul style="list-style-type: none"> - View sheds - View points - Views to and from - Gateway conditions - Distinctive representative landscape conditions - Scenic corridors 	No	No

4.4 Battlefields and Concentration Camps

At the end of 1900, the British built a Concentration Camp at the station known as Greenlands, on the railway line south of the town Vredefort. The camp (named Vredefort Road) was managed by Lieutenant R. Splaine of the 3rd Durham Light Infantry. This camp was the first to close after the war (on the 15th of September 1902) and many inmates had been moved to Kroonstad and Heilbron even before then.

An encounter between the Boers and British occurred outside Vredefort on the 24th of July 1900. The dispute was over five wagon-loads of flour that Gen. De Wet had sent to be milled at Vredefort. During the wagon's return journey, Broadwood's men pursued and captured them. The lead to a counter-pursuit by the Boers, developing into a fierce fire-fight. The confrontation ended in stalemate, when reinforcements for both sides arrived. Total casualties were 9 killed, several wounded and 18 Boers taken prisoners of War.

5. Measuring Impacts

In 2003 the SAHRA (South African Heritage Resources Agency) compiled the following guidelines to evaluate the cultural significance of individual heritage resources:

- **Type of Resource**
 - Place
 - Archaeological Site
 - Structure
 - Grave
 - Palaeontological Feature
 - Geological Feature

- **Type of Significance**
 - Historic Value
 - Important in the community, or pattern of history
 - Important in the evolution of cultural landscapes and settlement patterns
 - Important in exhibiting density, richness or diversity of cultural features illustrating the human occupation and evolution of the nation, province, region or locality.
 - Important for association with events, developments or cultural phases that have had a significant role in the human occupation and evolution of the nation, province, region or community.
 - Important as an example for technical, creative, design or artistic excellence, innovation or achievement in a particular period.
 - It has strong or special association with the life or work of a person, group or organisation of importance in history
 - Importance for close associations with individuals, groups or organisations whose life, works or activities have been significant within the history of the nation, province, region or community.
 - It has significance relating to the history of slavery
 - Importance for a direct link to the history of slavery in South Africa.

 - Aesthetic Value
 - It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group.
 - Important to a community for aesthetic characteristics held in high esteem or otherwise valued by the community.
 - Importance for its creative, design or artistic excellence, innovation or achievement.
 - Importance for its contribution to the aesthetic values of the setting demonstrated by a landmark quality or having impact on important vistas or otherwise contributing to the identified aesthetic qualities of the cultural environs or the natural landscape within which it is located.
 - In the case of an historic precinct, importance for the aesthetic character created by the individual components which collectively form a significant streetscape, townscape or cultural environment.

 - Scientific Value
 - It has potential to yield information that will contribute to an understanding of natural or cultural heritage
 - Importance for information contributing to a wider understanding of natural or cultural history by virtue of its use as a research site, teaching site, type locality, reference or benchmark site.
 - Importance for information contributing to a wider understanding of the origin of the universe or of the development of the earth.

- Importance for information contributing to a wider understanding of the origin of life; the development of plant or animal species, or the biological or cultural development of hominid or human species.
 - Importance for its potential to yield information contributing to a wider understanding of the history of human occupation of the nation, Province, region or locality.
 - It is important in demonstrating a high degree of creative or technical achievement at a particular period
 - Importance for its technical innovation or achievement.
- a) Does the site contain evidence, which may substantively enhance understanding of culture history, culture process, and other aspects of local and regional prehistory?
- internal stratification and depth
 - chronologically sensitive cultural items
 - materials for absolute dating
 - association with ancient landforms
 - quantity and variety of tool type
 - distinct intra-site activity areas
 - tool types indicative of specific socio-economic or religious activity
 - cultural features such as burials, dwellings, hearths, etc.
 - diagnostic faunal and floral remains
 - exotic cultural items and materials
 - uniqueness or representativeness of the site
 - integrity of the site
- b) Does the site contain evidence which may be used for experimentation aimed at improving archaeological methods and techniques?
- monitoring impacts from artificial or natural agents
 - site preservation or conservation experiments
 - data recovery experiments
 - sampling experiments
 - intra-site spatial analysis
- c) Does the site contain evidence which can make important contributions to paleo environmental studies?
- topographical, geomorphological context
 - depositional character
 - diagnostic faunal, floral data
- d) Does the site contain evidence which can contribute to other scientific disciplines such as hydrology, geomorphology, pedology, meteorology, zoology, botany, forensic medicine, and environmental hazards research, or to industry including forestry and commercial fisheries?
- o Social Value / Public Significance
- It has strong or special association with a particular community or cultural group for social, cultural or spiritual reasons
 - Importance as a place highly valued by a community or cultural group for reasons of social, cultural, religious, spiritual, symbolic, aesthetic or educational associations.
 - Importance in contributing to a community's sense of place.
- a) Does the site have potential for public use in an interpretive, educational or recreational capacity?
- integrity of the site
 - technical and economic feasibility of restoration and development for public use

- visibility of cultural features and their ability to be easily interpreted
 - accessibility to the public
 - opportunities for protection against vandalism
 - representativeness and uniqueness of the site
 - aesthetics of the local setting
 - proximity to established recreation areas
 - present and potential land use
 - land ownership and administration
 - legal and jurisdictional status
 - local community attitude toward development
- b) Does the site receive visitation or use by tourists, local residents or school groups?
- Ethnic Significance
Does the site presently have traditional, social or religious importance to a particular group or community?
 - ethnographic or ethno-historic reference
 - documented local community recognition or, and concern for, the site
 - Economic Significance
What value of user-benefits may be placed on the site?
 - visitors' willingness-to-pay
 - visitors' travel costs
 - Scientific Significance
 - a) Does the site contain evidence, which may substantively enhance understanding of historic patterns of settlement and land use in a particular locality, regional or larger area?
 - b) Does the site contain evidence, which can make important contributions to other scientific disciplines or industry?
 - Historic Significance
 - a) Is the site associated with the early exploration, settlement, land use, or other aspect of southern Africa's cultural development?
 - b) Is the site associated with the life or activities of a particular historic figure, group, organization, or institution that has made a significant contribution to, or impact on, the community, province or nation?
 - c) Is the site associated with a particular historic event whether cultural, economic, military, religious, social or political that has made a significant contribution to, or impact on, the community, province or nation?
 - d) Is the site associated with a traditional recurring event in the history of the community, province, or nation, such as an annual celebration?
 - Public Significance
 - a) Does the site have potential for public use in an interpretive, educational or recreational capacity?
 - visibility and accessibility to the public
 - ability of the site to be easily interpreted
 - opportunities for protection against vandalism
 - economic and engineering feasibility of reconstruction, restoration and maintenance
 - representativeness and uniqueness of the site
 - proximity to established recreation areas
 - compatibility with surrounding zoning regulations or land use
 - land ownership and administration
 - local community attitude toward site preservation, development or destruction
 - present use of site

- b) Does the site receive visitation or use by tourists, local residents or school groups?
- o Other
 - Is the site a commonly acknowledged landmark?
 - Does, or could, the site contribute to a sense of continuity or identity either alone or in conjunction with similar sites in the vicinity?
 - Is the site a good typical example of an early structure or device commonly used for a specific purpose throughout an area or period of time?
 - Is the site representative of a particular architectural style or pattern?

For each predicted impact, criteria are described. These criteria include the **magnitude** (size or degree scale), which also includes the **type** of impact, being either a positive or negative impact; the **duration** (temporal scale); and the **extent** (spatial scale), as well as the **probability** (likelihood). The methodology is quantitative and generated through a spreadsheet but requires professional judgement in the application of the criteria.

When assessing impacts, broader considerations are also considered, these include the **confidence** with which the assessment was undertaken, the **reversibility** of the impact and the resource **irreplaceability**.

Calculations

(as applied in the excel spreadsheet 'Eerstegeluk Telemast.xls') – Available on request.

For each predicted impact, certain criteria are applied to establish the likely **significance** of the impact, firstly in the case of no mitigation being applied and then with the most effective mitigation measure(s) in place.

These criteria include the **magnitude** (size or degree scale), which also includes the **type** of impact, being either a positive or negative impact; the **duration** (temporal scale); and the **extent** (spatial scale). These numerical ratings are used in an equation whereby the **consequence** of the impact can be calculated. Consequence is calculated as follows:

Consequence = type x (magnitude + duration + extent).

To calculate the significance of an impact, the **probability** (or likelihood) of that impact occurring is applied to the consequence.

Significance = consequence x probability

Depending on the numerical result, the impact would fall into a significance category as negligible, minor, moderate or major, and the type would be either positive or negative.

The following tables show the scales used to classify the above variables and define each of the rating categories.

5.1 Magnitude

The magnitude refers to the degree of alteration of the affected environmental receptor. The relevant descriptor for magnitude is selected by the user (refer to Table).

Table 3. Description of magnitude and assigned numerical values

Numerical Rating	Magnitude	
	Category	Descriptors
1	Negligible	Natural and/ or social functions and/ or processes are negligibly altered

2	Very low	Natural and/ or social functions and/ or processes are slightly altered
3	Low	Natural and/ or social functions and/ or processes are somewhat altered
4	Moderate	Natural and/ or social functions and/ or processes are moderately altered
5	High	Natural and/ or social functions and/ or processes are notably altered
6	Very high	Natural and/ or social functions and/ or processes are majorly altered
7	Extremely high	Natural and/ or social functions and/ or processes are severely altered

*NOTE: Where applicable, the magnitude of the impact is related to a relevant standard or threshold or is based on specialist knowledge and understanding of that particular field.

5.2 Duration

The duration refers to the length of permanence of the impact on the environmental receptor. The relevant descriptor for duration is selected by the user (refer to Table).

Table 4. Description of duration and assigned numerical values

Numerical Rating	Duration	
	Category	Descriptors
1	Immediate	Impact will self-remedy immediately
2	Brief	Impact will not last longer than 1 year
3	Short term	Impact will last between 1 and 5 years
4	Medium term	Impact will last between 5 and 10 years
5	Long term	Impact will last between 10 and 15 years
6	On-going	Impact will last between 15 and 20 years
7	Permanent	Impact may be permanent, or in excess of 20 years

5.3 Extent

The extent refers to the geographical scale of impact on the environmental receptor. The relevant descriptor for extent is selected by the user (refer to Table).

Table 5. Description of extent and assigned numerical values

Numerical Rating	Extent	
	Category	Descriptors
1	Very limited	Impacts very limited / felt in isolated areas of the study area
2	Limited	Impacts limited to specific parts of the study area
3	Local	Impacts felt mostly throughout the study area

4	Municipal area	Impacts felt outside the study area, at a municipal level
5	Regional	Impacts felt outside the study area, at a regional / provincial level
6	National	Impacts felt outside the study area, at a national level
7	International	Impacts felt outside the study area, at an international level

5.4 Probability

To calculate the significance of an impact, the probability (or likelihood) of that impact occurring is also taken into account. (Refer to Table).

Table 6. Definition of probability ratings

Numerical Rating	Probability	
	Category	Descriptors
1	Highly unlikely / None	Expected never to happen
2	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
3	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
4	Probable	Has occurred here or elsewhere and could therefore occur
5	Likely	The impact may occur
6	Almost certain / Highly probable	It is most likely that the impact will occur
7	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur

5.5 Significance

These are auto-calculated in the spreadsheet as described above and includes the following categories in Table 11. This table is for illustration only.

Table 7. Application of significance ratings

Range		Significance rating
-147	-109	Major (-)
-108	-73	Moderate (-)
-72	-36	Minor (-)
-35	-1	Negligible (-)
0	0	Neutral
1	35	Negligible (+)
36	72	Minor (+)

73	108	Moderate (+)
109	147	Major (+)

The following, broader considerations will also be considered. These include the level of confidence in the assessment rating; the reversibility of the impact; and the irreplaceability of the resource as set out in Tables 12, 13 and 14 respectively.

Table 8. Definition of confidence ratings

Rating	Descriptor
Low	Judgement is based on intuition
Medium	Determination is based on common sense and general knowledge
High	Substantive supportive data exists to verify the assessment

Table 9. Definition of reversibility ratings

Rating	Descriptor
Low	The affected environment will not be able to recover from the impact - permanently modified
Medium	The affected environment will only recover from the impact with significant intervention
High	The affected environmental will be able to recover from the impact

Table 10. Definition of irreplaceability ratings

Rating	Descriptor
Low	The resource is not damaged irreparably or is not scarce
Medium	The resource is damaged irreparably but is represented elsewhere
High	The resource is irreparably damaged and is not represented elsewhere

5. Description of Affected Environment

5.1 Map of Key Features

No key features were identified within the study area.

5.2 Results of Fieldwork

The area was accessed by vehicle and investigated on foot. The area has been mostly disturbed from green field condition and is strongly associated with agriculture, and rural living. The study area was found to be devoid of any heritage sites of significance and severely altered from the natural landscape.



Figure 5. Proposed Site (East facing)

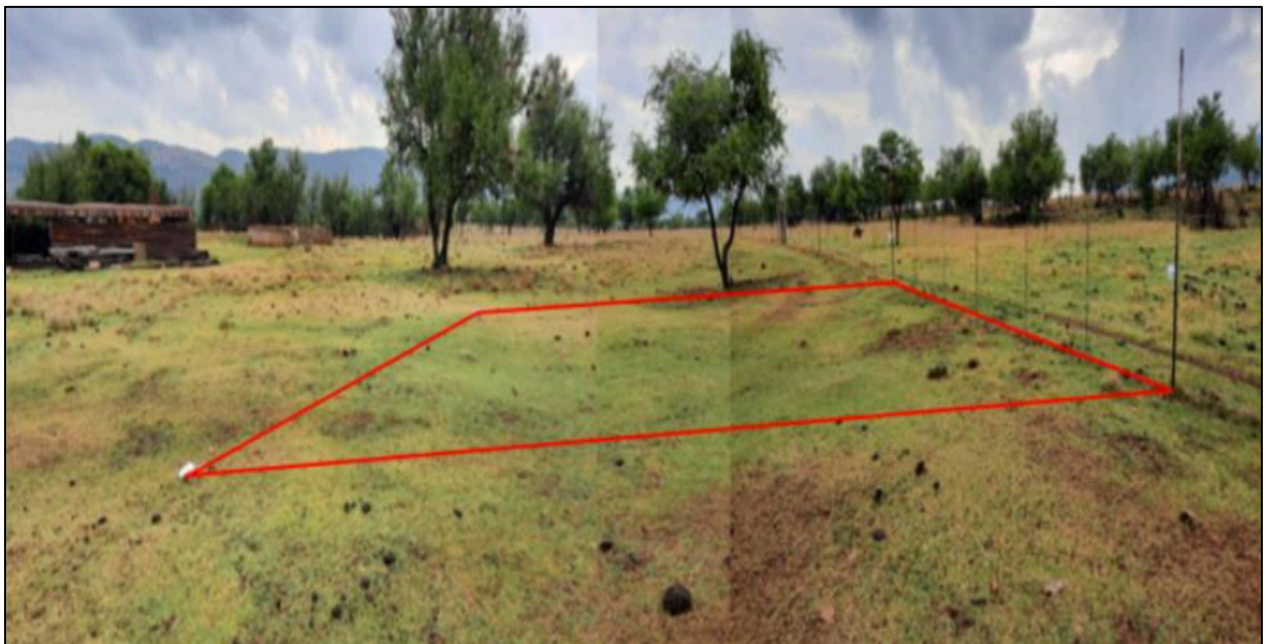


Figure 6. Proposed Site (West facing)



Figure 7. Site Photos – North Facing



Figure 8. Site Photos – East Facing



Figure 9. Site Photos – South Facing



Figure 10. Site Photos – West Facing

6. Baseline

Context Relevant to Project Location, Design, Operation, or Mitigation Decisions

Besides having importance as an area of geological and natural significance, the Vredefort Dome has also been a home to humankind for many thousands of years. The same reasons that attracted people to the Dome in the recent past, probably lured prehistoric hominids, Stone Age hunter-gatherers and groups of Iron Age agro-pastoralists here. These attractions included ample water sources, vegetation and fauna, a favourable climate and abundance of rock shelters for habitation (Pelser, 2006:5).

6.1 Palaeontology

Paleontological remains occur in the Cretaceous layer underlying the study area. These are of high significance but should not be impacted on as the ground intrusion is very limited and bedrock is not expected to be disturbed. This is only a basic analysis of the palaeontology, and it is not a specialist analysis.

The SAHRIS PalaeoSensitivity Map places the site within the “Blue” designation (Low Significance). No Palaeontological Studies are required, however a protocol for finds must be included in the unlikely event that any paleontological resources are uncovered.

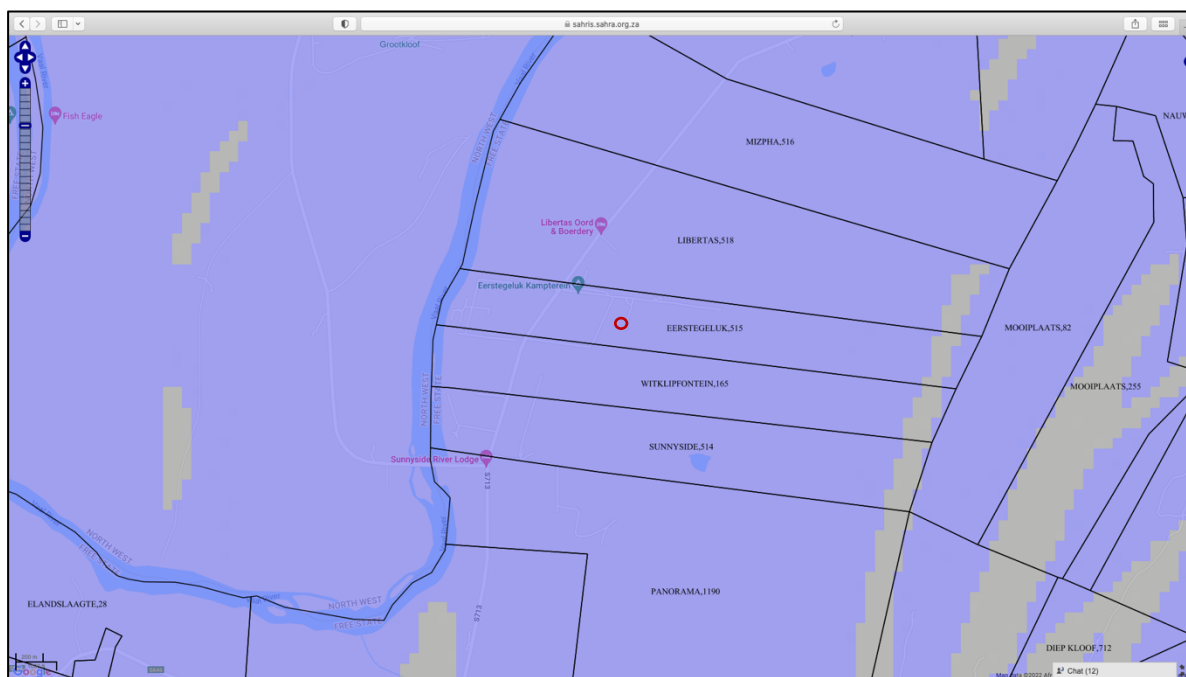


Figure 11. Paleo Sensitivity Map

Table 11. Palaeontological Sensitivity

Colour	Sensitivity	Action Required
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 area will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.
---------------	---------	--

6.2 Stone Age

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, Middle Stone Age and Earlier Stone Age. Each of these phases contain sub-phases or industrial complexes, and within these we can expect regional variation regarding the characteristics and time ranges. The three main phases can be divided as follows;

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

With the famous Cradle of Humankind World Heritage site located only a 100 km away in the north of Vredefort, it can be safely assumed that humans have been present in the Dome area for a long time, perhaps even millions of years. Thus far, however, no early hominid fossils have been found in the Vredefort region.

Our species' direct involvement with the Dome can only be traced back to the Later Stone Age (between 25 000 and 20 000 years ago). The evidence for this habitation is quite sparse, since the area has not enjoyed a significant number of archaeological excavations.

Nevertheless, assemblies of stone tools have been found on the banks of the Vaal, near the Schoemansdrift bridge, and on the farm Parson's Rus. The tools include blades, hand axes, scrapers and flake tools. A cave on the farm Buffelskloof also contains evidence of periodic human habitation and may have been used well into the iron-age. Several Bushman rock art sites have also been identified.
(Fleminger, D. 2009)

6.3 Iron Age

The Iron Age as a whole represents the spread of Bantu speaking people and includes both pre-historic and historic periods. It can be divided into three distinct periods:

- Early Iron Age: most of the first millennium AD.
- Middle Iron Age: 10th to 13th centuries AD.
- Late Iron Age: 14th century to colonial periods.

The Iron Age prehistory of southern Africa has traditionally been divided into two periods, the Early Iron Age, and the Later Iron Age. Chronologically, the division was put at the year 1000. Culturally, it was based on several changes' observable in the archaeological record, including economic, social, and political organization. Because of this, the two periods were seen as bracketing separate cultural phenomenon and interpreted as reflecting new population movements into southern Africa from the north. In fact, no new population movements into the region took place. The cultural changes that took place around the turn of the millennium and the origins of the Later Iron Age in southern Africa are seen mainly because of local developments, although scholars offer different explanations.

The Iron Age is characterized by the ability of these early people to manipulate and work iron ore.

The Late Iron Age stone-walled settlements built by Sotho/Tswana speakers form part of this rich cultural heritage. Previous archaeological surveys and research has shown that Sotho/Tswana speaking peoples occupied the Vredefort Dome area during Late Iron Age (from 1400 - 1800 AD), as well as most areas in the southern African region. Evidence of these occupations is the stone wall settlements we see on the landscape today.

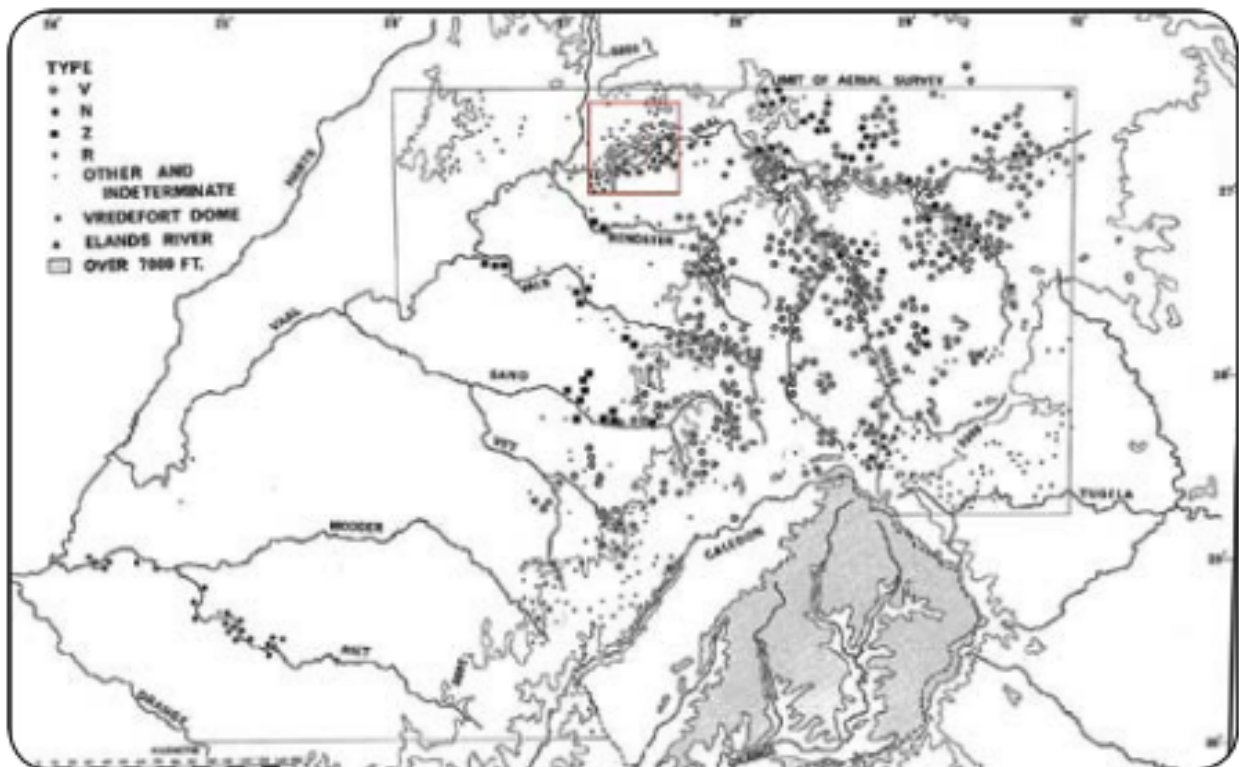


Figure 12. Distribution of Iron Age sites as documented by T Maggs

Other common structural features of the Vredefort Iron Age settlements include grain pits, middens (rubbish and ash tips) and raised granaries. Fragments of broken pottery, storage vessels and grind stones are found at most sites.

One of the most extensive recent excavations in the Vredefort area took place at a site called Askoppies (Ash Hill), so named because of the hundreds of ash heaps (middens) found around the settlement. The Askoppies complex stretches over an area of several square kilometres, containing between 8 and 15 distinct settlement units.

Each of these free-standing 'suburbs' was neatly demarcated by a series of interlocking scallop-shaped stone walls, which defined the outer boundary of the settlement and divided the individual living units within. The 'dry' walls were created by carefully stacking up rocks and boulders found in the surrounding area, and mortar or mud was not generally used. Bear in mind that these walls are not part of the hut, which was made of clay or mud, but rather like a garden fence that ran between the houses.



Figure 13. Dry Stone Walling at Ashkoppies

6.4 Historic Era

During the first half of the 19th century, at a time when white hunting parties, missionaries and “Trek Boere” started migrating through the *Transvaal*, events related to the *Difaqane* and Great Trek occurred in the area. One of the main bodies of white immigrants, the group led by Andries Hendrik Potgieter, established themselves in Potchefstroom in 1838. From there farms would be given to Voortrekker men in a vast district covering traditional Tswana land, including the Vredefort Dome area. Dr. Andrew Smith, an explorer who travelled through the Sotho-Tswana lands in 1834-1835 described:

“The slopes of the hills and knolls were densely covered with the ruins of large stone kraals which at the time they were occupied must have contained a great number of inhabitants, though at the time we passed among them, not a human being was to be seen.” (Smith, 1975: 245).

Bakwena and other communities had resided in the area until only a few years earlier, but these settlements were abandoned, mainly as a result of the violence in the pre-Difaqane and Difaqane periods. The white immigrants found only ruins and bones and the area was thought to be vacant.

Mzilikazi received reports about the arrival of the Boers and made military preparations to counter the invasion. The first interactions occurred when the first Voortrekkers crossed the Vaal River. The

Liebenbergs were killed on the 21st of August 1836 at the area which currently falls within the Vredefort Dome buffer zone.

The first successful laager against a Ndebele attack (22 August 1836) was formed by a Voortrekker group on the banks of the Vaal River at a location which later formed part of the farm Kopjeskraal inside the current Vredefort Dome core area. (Meintjies, 1973: 51-53). In mid-October Mzilikazi send a force of a few thousand warriors under the command of Kaliphi. A major battle, the first between an African army and a Voortrekker encampment in defensive formation, took place at Vegkop, near present day Heilbron. More than 400 Ndebele were killed, while 2 Voortrekkers succumbed and 14 were wounded. After the battle, Potgieter's army retreated to Thaba Nchu.

The Voortrekkers formed alliances with Batlhaping, Barolong, Bataung and Bahurutshe chiefs and in January 1837, under the joined forces of Potgieter and Maritz, the allied forces launched an attack on Mosega. Further attacks against Mzilikazi by the Griqua, Kora, Zulu and Boers forced him to move north of the Limpopo. The defeat of Mzilikazi meant that his domination of the western highveld was ended and the balance of military power changed in favour of the Boer immigrants (Etherington, 2001: 252-256).

The town of Vredefort was founded on 21 May 1881 by the House of Representatives of the Republic of the Orange Free State. By 1899, it served a thriving community with a church (1882), a school (1883), various residences, as well as general dealers and a bakery. A mill operating since 1884 supplied flour for the residents.

In the 1880's, gold was discovered in the area outside Venterskoon, but yielded poor results and mining ceased in 1911. The Great Western Mining Company later resumed mining at both sides of the Vaal River, but with only about 130kg of gold extracted, also ceased production in 1937. (De Jager, 2005: 8-9, 11, 15-32; Reimold and Gibson, 2005: 242-243).

The study area is situated approximately 1,5km from the Schoemansdrift crossing over the Vaal River, which marks the border between the Free State and the North West Provinces. Aerial photographs dating at around 1935 shows the bridge and drift, but no year mark could be found on the bridge.



Figure 14. Schoemansdrift Bridge Historical Aerial Photograph (Source: ruralexploration.co.za)



Figure 15. Schoemansdrift Bridge (Source: ruralexploration.co.za)

Battle of Tygerpoort

The drift was the crossing point when traveling between Kroonstad and Potchefstroom. Lord Kitchener ordered Gen. Methuen to move from Potchefstroom to Skandinaviersdrift, to cross the drift and move east along the river to get to Gen. Christiaan De Wet's position on the south side of Schoemansdrift.

The drift was used by Gen. de Wet for his first crossing into the Transvaal on the 6th of August 1900 to escape the British encirclement. From the drift he turned right to be between the river and the mountain to get to Venterskroon and beyond towards Vuurenskloof, where he planned to set up camp. His scouts informed him that the British had arrived in Tygersfontein and could thus threaten their movements. Gen. de Wet sent out a force to hold off the British which resulted in a lively exchange of fire, including cannons from both sides. The Boers succeeded in holding off the British for the night, but the next morning De Wet's camp at Vuurenskloof was attacked resulting in a hasty retreat by De Wet towards the Gatsrand mountains to the north.

Elwick Battery

On the farm Tygersfontein (>10km from the study area) are the remains of some fortifications dating to the Boer War.

In January 1900, Sir W. G. Armstrong Whitworth Ltd. received an order from Lady Meux for six 12 pounder, 3 inch Q.F. naval guns to be mounted on field carriages. The guns had a range of 100 yards which was double that of the 15 pounder, then the standard armament of the British Field Artillery and nearly three times that of the R.H.A. 12 pounder. Lady Meux presented the guns to Lord Roberts, Commander in Chief of the British Forces in South Africa in February 1900.

The War Office had declared a policy of only accepting infantry and yeomanry volunteers for service in South Africa, artillery was specifically excluded. However, one unit, the 1st Northumberland Royal Garrison Artillery (Volunteers) succeeded in persuading the officialdom to make an exception and in January 1900 authority was given for it to raise a battery for the war. This unit had a Drill Hall near the Elswick Works and

the battery based there was comprised entirely of men from the factory. The battery, which was raised for active service, came almost entirely from this drill hall and was given the name of the Elswick Battery.

Sources:

www.ruralexploration.co.za

Military History Journal Vol. 1 No. 4 – June 1969. Elwick Guns by Major L.A. Crook.

<http://samilitaryhistory.org/vol153jr.html>

du Pisani, J. 2008. Vredefort Dome World Heritage Site (VDWHS) Integrated Management Plan (IMP) Cultural Heritage Plan (CHP).

6.5 Archival Research

Three main sources of information regarding the heritage sensitivity of this area could be identified. These were;

- Scientific publications on heritage related research in the area
- Previous heritage studies in the area as per the SAHRIS database
- Historic maps and figures as available in the National Archive

Scientific publications

Several publications on heritage related work in this area could be sourced. These include, but are not limited to;

- Banhegyi, S. 2011. Frequency distributions of stone artefacts from Holkrans, North West Province, South Africa. Unpublished Honours thesis. Johannesburg: University of the Witwatersrand. Online at: <http://wiredspace.wits.ac.za/handle/10539/12670>
- Bon, F., Bruxelles, L., Fauvelle-Aymar, F-X. & Sadr, K. 2012. Khoekhoe pastoralists at the junction of historical and archaeological sources. Proposed models for settlement pattern and technological signature of a Neolithic population in southern Africa. In: Fauvelle-Aymar, F-X. (ed.) *Palethnology of Africa*, *Palethnology* 4:141-166.
- Bradfield, J. & Sadr, K. 2011. Stone arrowheads from Holkrans, North West Province, South Africa. *South African Archaeological Bulletin* 66(193): 77-88.
- Byrne, E.J. 2012. A landscape approach to the archaeology of the Vredefort Dome. Unpublished MSc thesis. Johannesburg: University of the Witwatersrand.
- Deacon, J. 1984. *The Later Stone Age of Southernmost Africa*. Oxford: British Archaeological Reports International Series 213. de la Pena, R & Vega Toscano, G. 2013. Bipolar knapping in Gravettian occupations at El Palomar rockshelter (Yeste, southeastern Spain). *Journal of Anthropological Research* 69: 33-64.
- Eriksson, P.G., Altermann, W. & Hartzler, F.J. 2009. The Transvaal Supergroup and its precursors. In: Johnson, M.R., Anhaeusser, C.R. & Thomas, R.J. (eds) *The Geology of South Africa* (2nd edition): 237-260. South Africa: Geological Society of South Africa/Council for Geoscience.
- Humphreys, A.J.B. & Thackeray, A.I. 1983. *Ghaap and Gariap: Later Stone Age Studies in the Northern Cape*. South African Archaeological Society Monograph Series 2.
- Inizan, M.L., Reduron-Ballinger, M., Roche, H. & Tixier, J. 1999. *Technology and Terminology of Knapped Stone*. Nanterre: CREP
- Klatzow, S. 2000. Interaction between hunter-gatherers and agriculturalists in the eastern Free State. Unpublished MA thesis. Johannesburg: University of the Witwatersrand.
- Law de Lauriston, P.B.M. 2014. The effects of contact with farmers on hunter-gatherers' lithic assemblages: use-wear analysis of stone tools from Holkrans, North-West Province, South Africa. Unpublished PhD thesis. Johannesburg: University of the Witwatersrand.
- Lombard, M., Wadley, L., Deacon, J., Würz, S., Parsons, I., Mohapi, M., Swart, J. & Mitchell, P. 2012. South African and Lesotho Stone Age sequence updated. *South African Archaeological Bulletin* 67(195): 123-144.
- Maggs, T. 1976. *Iron Age Communities of the Southern Highveld*. Pietermaritzburg: Council of the Natal Museum. McGraw-Hill Dictionary of Geology and Mineralogy (2nd edition). 2003. Iowa: The Lake Side Press.
- Mitchell, P.J. 2002. *The Archaeology of Southern Africa*. Cambridge: Cambridge University Press

6.6 SAHRIS Database Studies

An extensive search into the SAHRIS database resulted in the identification of the following heritage related studies that have been performed over the last two decades in the study area. Only studies within a radius of 50km from the study area were considered.

- Du Pisani, J. 2008. Vredefort Dome World Heritage Site (VDWHS) Integrated Management (IMP) Cultural Heritage Plan (CHP).
- Dreyer, C. 2006. First Phase Archaeological and Cultural Heritage Assessment of the Proposed Animal Breeding Station at the Farms Rietkuil 110, Dampoort 327, Winkelhaakdam 455, Mt. Sinai 292, Gibson 294 and van Vuurenskop 457, Vredefort, Free State.
- Dreyer, C. 2006. First Phase Archaeological and Cultural Heritage Investigation of the Proposed Residential Developments on the Farms Denoon 808, Maara 618, Aasvogelrand 249, Bergplaats 240 and Union 440, Vredefort, Free State.
- Dreyer, C. 2005. First Phase Archaeological and Cultural Heritage Investigation of the Proposed Residential Developments on the Farm Vaalkop 1024, Vredefort, Free State.
- Dreyer, C. 2010. First Phase Archaeological and Heritage Assessment of the site proposed for the Vodacom mast at the farm Buffelskloof 511 IQ, Vredefort Dome, North West Province.
- Dreyer, C. 2008. First Phase Archaeological and Cultural Heritage Assessment of the proposed residential developments at the farm Buffelskloof 511 IQ, Vredefort Dome, Potchefstroom, North West Province.
- Dreyer, C. 2004. Archaeological and Historical Assessment of the Proposed Tourist Accommodation Facilities on the Farm Buffelskloof 511 IQ in the Vredefort Dome Conservancy.
- Roodt, F. 2006. Heritage Resources Scoping Report. Residential Development on the Farm Grootedrift 499 IQ North West Province.
- Dreyer, C. 2005. First Phase Archaeological and Cultural Heritage Investigation of the Proposed Residential Developments on the Farm Sligo 214, Vredefort, Free State.
- Henderson, Z. Koortzen, C. 2007. Assessment of the Proposed Eskom Line Alternatives within the Zeus-Mercury-Vredefort Dome Extended Study Area, in terms of Archaeological and other Heritage Sites.
- Pelser, A. 2003. Askoppies: Late Iron Age Sotho-Tswana Settlement on the Vredefort Dome.
- Pelser, A. 2004. Human Skeletal Remains from Askoppies, a Late Iron Age Tswana Settlement on the Vredefort Dome.
- Pelser, A. 2005. The Archaeological Investigation of a Possible Copper Smythly on Askoppies, a Late Iron Age Tswana Site on the Vredefort Dome, North West Province.
- Kusel, U. 2008. Cultural Heritage Resources Impact Assessment of Portion 67 (a Portion of Portion 3) of the Farm Tygerfontein 488, Tlokwe Local Municipality, North West Province.
- Kusel, U. 2008. Cultural Heritage Resources Impact Assessment of the Farm Joedoekop 664 IQ, North West Province.
- Huffman, T. 2005. Archaeological Assessment of the Parys Golf Island and Feesgronde, FS Province.
- Dreyer, C. 2005. Archaeological and Cultural Historical Assessment of the Proposed Upgrading of the Road (R59) between Parys and N1, Free State.
- Van Ryneveld, K. 2007. Phase 1 Archaeological Impact Assessment: Tumahole Ext. 7 Residential Development, Parys, Free State, South Africa.
- Kusel, U. 2007. Cultural Heritage Resources Impact Assessment of Portion 2 of the Farm Elandsheuvel 436 IQ Tlokwe Local Municipality, North West Province.
- Kusel, U. Cultural Heritage Resources Impact Assessment of Portion 46 of the Farm Elandsheuvel 436 IQ (Portions adjacent and to the West of Loopspruit), Tlokwe Local Municipality, North West Province.
- Dreyer, C. 2006. Archaeological and Cultural Heritage Investigation of the Proposed Poultry Farm at Weltevreden Noord 17, Viljoenskroon, Free State.
- Dreyer, C. 2005. Archaeological and Cultural Heritage Investigation of the Proposed Water Supply Pipeline at Viljoenskroon, Free State.
- Dreyer, C. 2006. First Phase Archaeological and Cultural Heritage Investigation of the Proposed Residential Development on the Farm Northleigh 422, Viljoenskroon, Free State.
- Dreyer, C. 2005. Archaeological and Cultural Heritage Investigation of the Proposed Landfill Sites at Viljoenskroon, Free State.
- Huffman, T. 2005. Archaeological Assessment of the Mispah Tailings Dam Extension.

- Henderson, Z., Koortzen, C. 2007. Heritage Assessment Report Mercury Substation Expansion, Zaaiplaats 190/3, Fezile Dabi (DC20) District, Free State.
- Van der Walt, J. 2007. Archaeological Impact Assessment. Township Development on Sub Division of AH19, Pretoriuskraal, Orkney, North West Province.
- Dreyer, C. 2005. Archaeological and Historical Investigation of the Proposed Residential Developments on Subdivision 13 of the Farm Pretoriuskraal 53, Viljoenskroon, Free State.
- Van Schalkwyk, J. 2003. Mercury – Perseus 400 kV Transmission Line Cultural Heritage Resources.

Relevance of Listed Heritage Studies for the Study Area

Of specific value for this project are the following reports as these are geographically the closest to the current study area:

- Dreyer, C. 2006. First Phase Archaeological and Cultural Heritage Assessment of the Proposed Animal Breeding Station at the Farms Rietkuil 110, Dampoort 327, Winkelhaakdam 455, Mt. Sinai 292, Gibson 294 and van Vuurenskop 457, Vredefort, Free State.
 - Stone walls identified on site at the coordinates 26° 54' 09"S 027° 18' 59"E and 26° 54' 10"S 027° 19' 00"E (approximately 10km from the current study area).
 - Results of the study: "The remains of stone-walled structures occur higher up in the hills. No other indication of any archaeological or historical material was found at the difference sites proposed for the development."
- Dreyer, C. 2005. First Phase Archaeological and Cultural Heritage Investigation of the Proposed Residential Developments on the Farm Vaalkop 1024, Vredefort, Free State.

The study area is located on the western banks of the Vaal River, directly parallel to the under investigation in this HIA.

- A graveyard which contains about 10 graves, lies along the S646 road between Skandinawia Drift and Schoemans Drift (26°56'41"S 27°08'40"E).
- Stone walls which clearly date from a Late Iron Age occupation (1650-1810) were found in several places. A cluster lies at the foot of the slope to the west of Vaalkop, while another group is found on a higher level to the east of Vaalkop.
- During the investigation, no remains of archaeological and other material of cultural historical importance could be found on the lower part of the farm near the river.

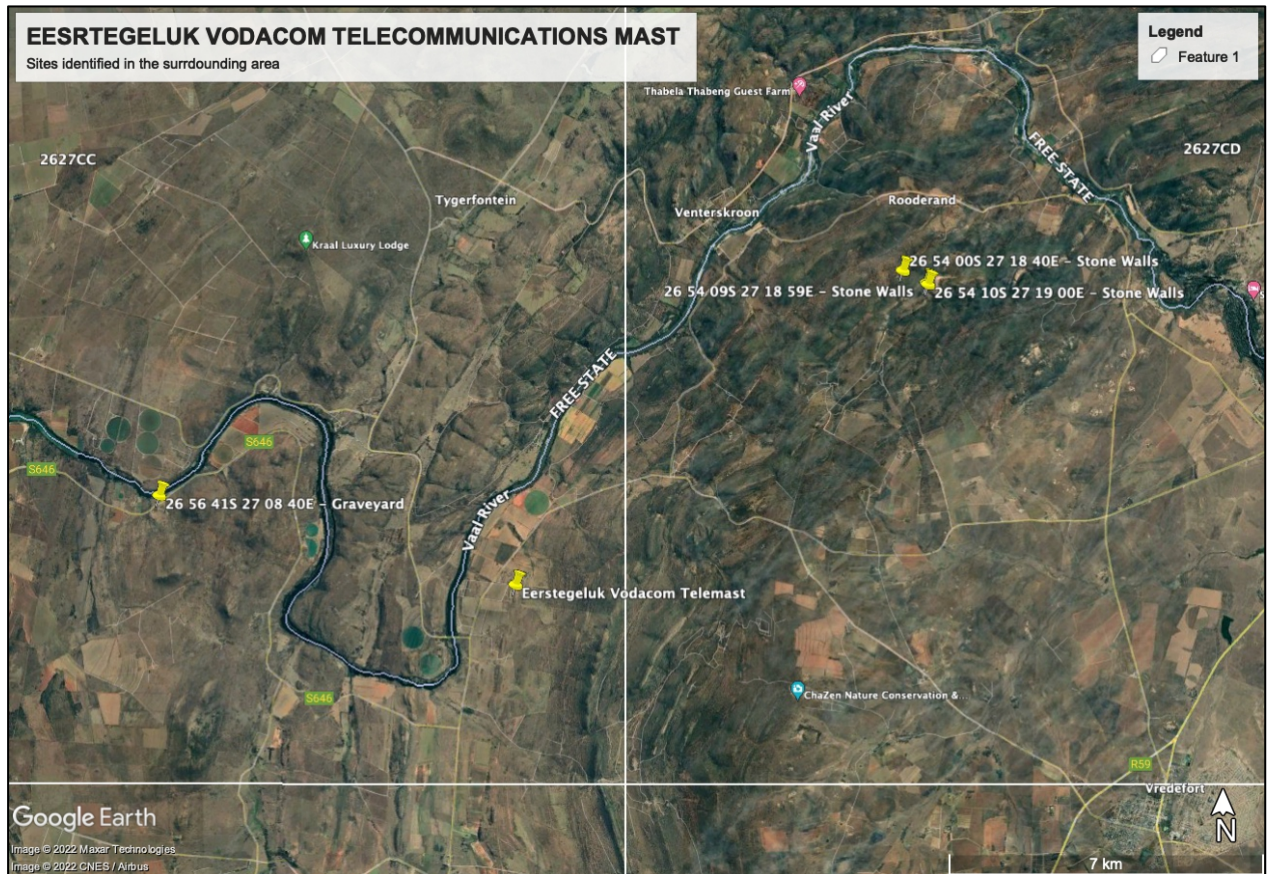


Figure 16. Sites identified in the surrounding area

6.7 Historical Typographical Maps

Especially during the evaluation of historic structures, the availability of archived historic maps is useful. These give a direct chronological reference for such sites and lead the investigation on the ground.

The following historic map sets are relevant for this study (in chronological order).

- 2627CC_1945
- 2627CC_1967
- 2627CC_1981
- 2627CC_1995
- 2627CC_2006

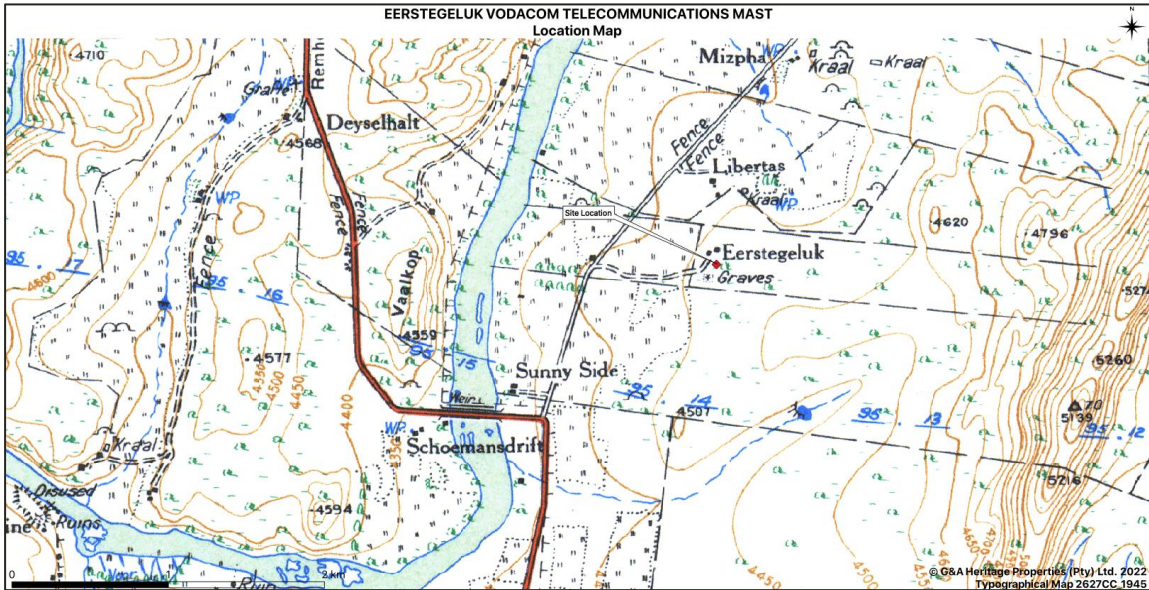


Figure 17. 2627CC_1945 Topographic Map

The 1945 topographical map indicates graves adjacent to the proposed construction site. No traces of these graves could be identified on site. The map also indicates the presence of structures near the site which would thus be older than 60 years and thus protected under the NHRA. These could also not be verified.

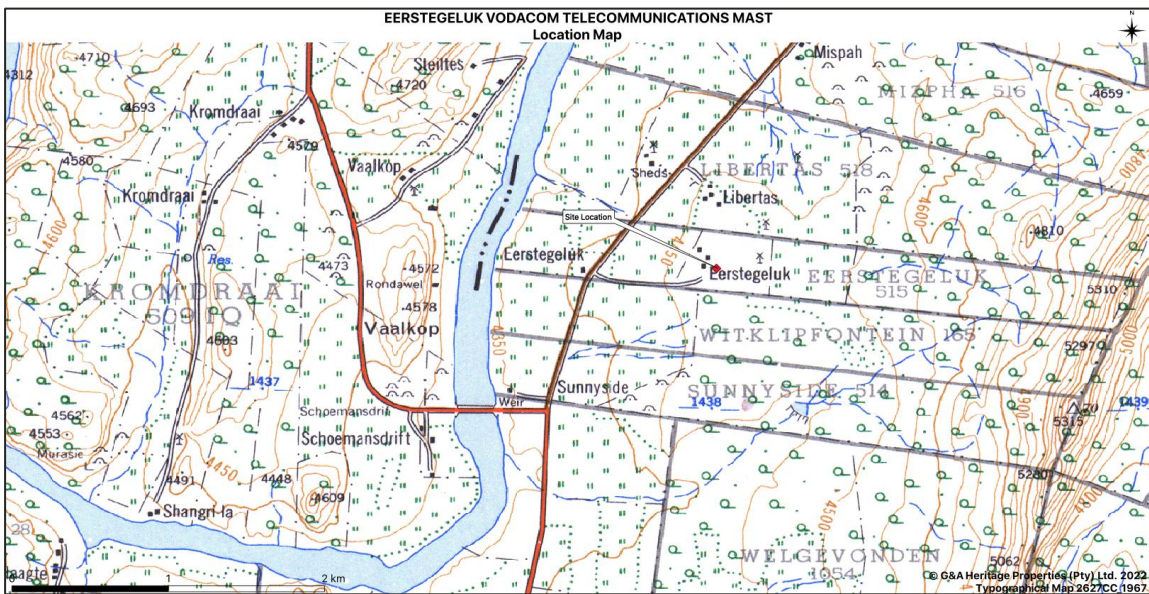


Figure 18. 2627CC_1967 Topographic Map

Structures identified near the site on the 1945 map are indicated on the consecutive maps (1967, 1981, 1995 and 2006).

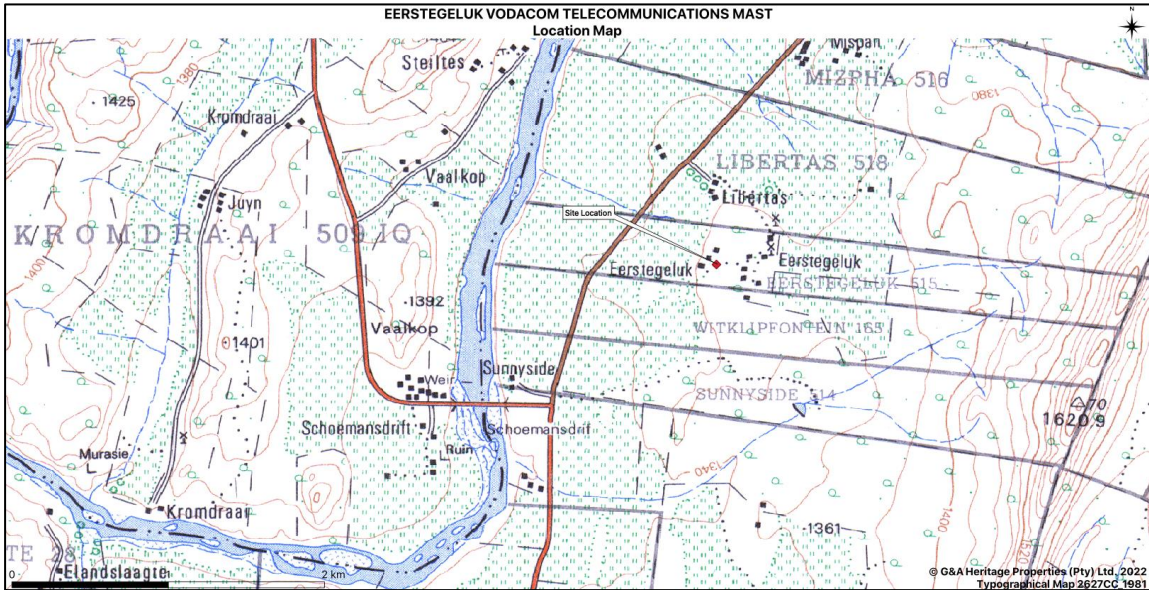


Figure 19. 2627CC_1981 Topographic Map

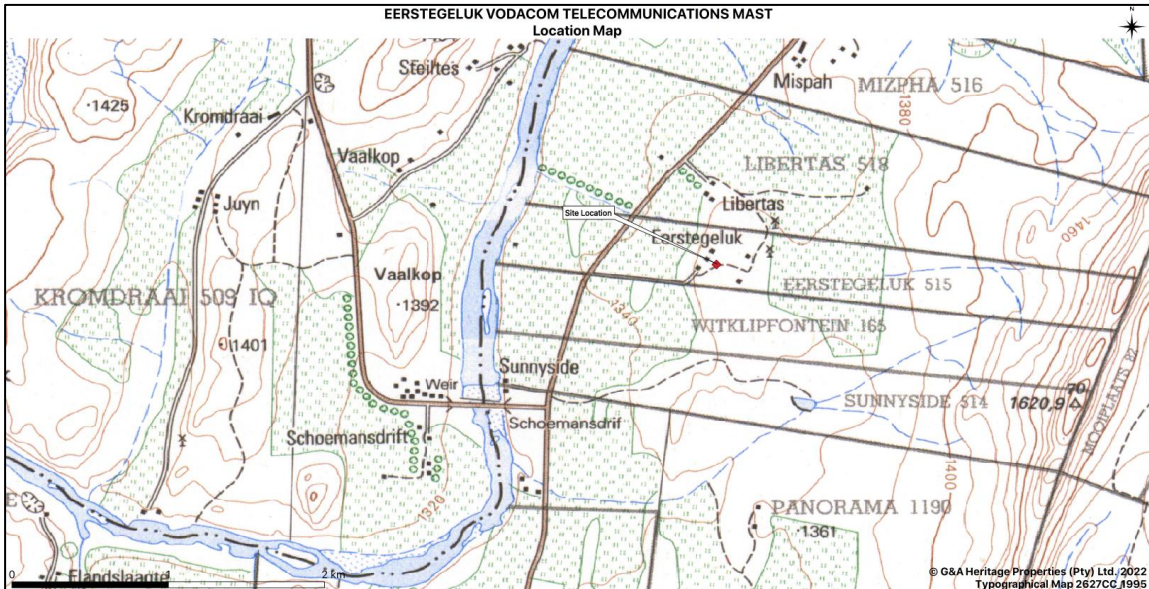


Figure 20. 2627CC_1995 Topographic Map

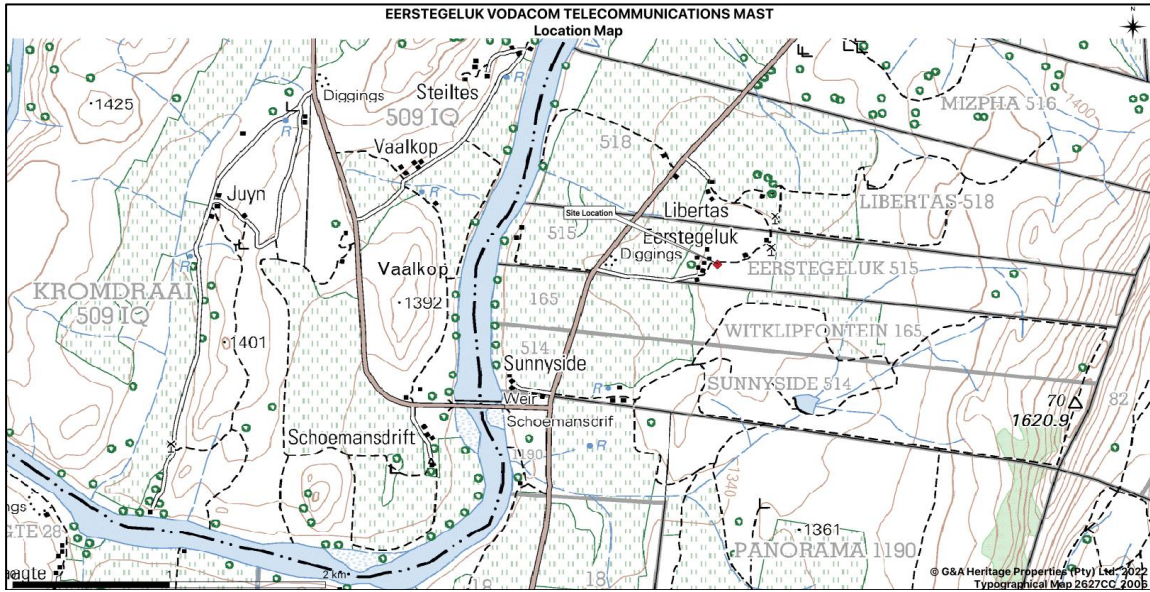


Figure 21. 2627CC_2006 Topographic Map

7. Potential Heritage Impacts and Proposed Mitigation

Heritage Impact Assessment

7.1 Introduction and scope

This component will evaluate the potential impact that the proposed development could have on heritage sites and objects of community, cultural or scientific value. This includes archaeological, cultural heritage, built heritage and basic paleontological assessments to determine the impacts on heritage resources within the study area.

The scope of work includes:

- Identification and assessment of archaeological, cultural, historic, built, and paleontological sites within the study area.
- Archival study of existing data and information for the study area.
- Site inspection and fieldwork: 16 March 2022. This site work includes communicating with local inhabitants to confirm possible locations of heritage and cultural sites.
- Compilation of a Heritage Impact Assessment (HIA) Report.

8. Public Participation

Public participation will be included in the larger environmental study stakeholder engagement process.

9. Conclusions and Recommendations

The site for the proposed construction of the Eerstegeluk Vodacom Telecommunications Mast on the Farm Eerstegeluk 515-Vredefort Road, Moqhaka Local Municipality, Fezile Dabi District, Free State Province, was investigated during a field visit and through archival studies.

The study area was found to be devoid of any heritage sites with significance and severely altered from the natural landscape. It is recommended that obscured, subterranean sites be managed, if they are encountered.

The historic topographic maps indicate graves and structures close to the study area, however these could not be verified on during the field investigation.

The SAHRIS PalaeoSensitivity Map places the site within the “Blue” designation (Low Significance). No Palaeontological Studies are required, however a protocol for finds must be included in the unlikely event that any paleontological resources are uncovered.

Provided the recommendations in this report is followed there is no reason, from a heritage point of view, why this development cannot continue.

10. Chance Finds Protocol

It is important to note that, although unlikely, sub-surface remains of heritage sites could still be encountered during construction of the project. Such sites would offer no surface indication of their presence due to the high state of alterations in some areas as well as heavy vegetation cover in other areas. The following indicators of unmarked sub-surface sites could be encountered:

- Ash deposits (unnaturally grey appearance of soil compared to the surrounding substrate);
- Bone concentrations, either animal or human;
- Ceramic fragments such as pottery shards either historic or pre-contact;
- Stone concentrations of any formal nature.

The following recommendations are given should any sub-surface remains of heritage sites be identified as indicated above:

- All operators of excavation equipment should be made aware of the possibility of the occurrence of sub-surface heritage features and the following procedures should they be encountered.
- All construction in the immediate vicinity (50m radius of the site) should cease.
- The heritage practitioner should be informed as soon as possible.
- Mitigation measures (such as refilling etc.) should not be attempted.
- The area in a 50m radius of the find should be cordoned off with hazard tape.
- Public access should be limited.
- The area should be placed under guard.
- No media statements should be released until such time as the heritage practitioner has had enough time to analyze the finds.

Should any archaeological, palaeontological, or cultural heritage resources, including graves or human remains (as defined and protected by the NRA 1999) be identified during the vegetation cleaning, surface scraping, trenching, excavation or construction phases of the development, it is recommended that the process as described below is followed.

On-site Reporting Process:

- The identifier should immediately notify his / her supervisor of the find(s).
- The identifier's supervisor should report the incident to the on-site SHE / SHEQ officer within 24 hours of the find(s).
- Should the find(s) relate to human remains, the on-site SHE / SHEQ officer should immediately notify the nearest SAPS station of the find(s).
- The on-site SHE / SHEQ officer should report the find(s) to the appointed ECO / ELO officer within 24 hours after the find(s) was / were reported by the relevant supervisor.
- Within 72 hours of the find(s) being reported to the SHE / SHEQ officer, the ECO / ELO officer should ensure that the find(s) is reported on the SAHRIS Database, and the relevant heritage specialist is contacted to make arrangements for a heritage inspection.
- Should the find(s) relate to human remains, the ECO/ ELO officer should ensure that the heritage inspection coincides with the SAPS inspection, to verify if the find(s) is / are of forensic, authentic (informal / older than 60 years) or archaeological (older than 100 years) origin.
- The heritage specialist should compile a heritage site inspection report based on the site-specific findings. The report should make recommendations for the destruction, conservation or mitigation of the find(s) and prescribe a recommended way forward for the development. The report should be submitted to the ECO / ELO officer, who should ensure submission thereof on the SAHRIS database.
- SAHRA / the relevant PHRA will state legal requirements for the development to proceed in the SAHRA / PHRA comments on the heritage inspection report.
- The developer should proceed with implementation of the SAHRA / PHRA comment requirements, which may well stipulate permit specifications to proceed.
 - Should the permit specifications stipulate further Phase 2 archaeological investigations (including grave mitigation), a suitable accredited heritage specialist should be appointed to conduct the work according to the applicable SAHRA / PHRA process.

- The heritage specialist should apply for the permit.
- Upon issue of the SAHRA / PHRA permit, the Phase 2 heritage mitigation program may commence.
- Should the permit specifications stipulate destruction of the find(s) under a SAHRA / PHRA permit, the developer should immediately proceed with the permit application.
- Upon the issue of the SAHRA / PHRA permit, the developer may legally proceed with the destruction of the archaeological, palaeontological or cultural heritage resource(s).
- Upon completion of the Phase 2 heritage mitigation program, the heritage specialist will submit a Phase 2 report to the ECO / ELO officer, who should in turn ensure the submission thereof on the SAHRIS database.
- Report recommendations may include that the remainder of a heritage site be destroyed under a SAHRA / PHRA permit.
- Should the find(s) relate to human remains of forensic origin, the matter will be directly addressed by SAPS. A SAHRA / PHRA permit will not be applicable.

NOTE: the SAHRA / PHRA permit and process requirements relating to the mitigation of human remains requires suitable advertising of the find(s), consultation, mitigation and re-internment / deposition process.

Duties of the Supervisor:

1. The supervisor should ensure that all activities in the vicinity of the find(s) are ceased immediately upon the reporting thereof by the identifier.
2. The supervisor should ensure that the location of the find(s) is secured within 24 hours of the reporting thereof by means of a temporary fence allowing for a 5 – 10m heritage conservation buffer zone around the find(s). The temporary conserved area should be sign-posted as a “No Entry – Heritage Site” zone.
3. Where development was impacted on the resource, no attempt should be made to remove artefacts / objects / remains further from their context and should any artefacts / objects / remains that has / have been removed should be collected and placed within the conservation area or kept for safekeeping with the SHE / SHEQ officer.
4. It is imperative that where development has impacted on any archaeological, palaeontological or cultural heritage resources, the context of the find(s) be preserved as much as possible for interpretive and sample testing purposes.
5. The supervisor should record the name, company and capacity of the identifier and compile a brief report describing the events surrounding the find(s).
6. The report should be submitted to the SHE / SHEQ officer at the time of the incident report.

Duties of the SHE / SHEQ officer:

1. The SHE / SHEQ officer should ensure that the location of the find(s) is recorded with a GPS. A photographic record of the find(s), including implementation of temporary conservation measures, should be compiled. Where relevant a scale bar, or object that can indicate the scale, should be inserted in the photographs for interpretive purposes.
2. The SHE / SHEQ officer should ensure that the supervisor’s report, GPS co-ordinate and photographic record of the find(s) are submitted to the ECO / ELO officer.
3. Should the find(s) relate to human remains, the SHE / SHEQ officer should ensure that the mentioned reporting be made available to the SAPS at the time of the incident report.
4. Any retrieved artefacts / objects / remains should, in consultation with the ECO / ELO officer, be kept in a safe place (preferable on site).

Duties of the ECO / ELO officer:

1. The ECO / ELO officer should ensure that the incident is reported on the SAHRIS Database. (The ECO / ELO officer should ensure that he / she is registered on the relevant SAHRIS case with SAHRIS authorship to the case at the time of appointment to enable heritage reporting.)
2. The ECO / ELO officer should ensure that the incident report is forwarded to the heritage specialist for interpretive purposes at his / her soonest opportunity and prior to the heritage site inspection.
3. The ECO / ELO officer should facilitate appointment of the heritage specialist by the developer / construction consultant for the heritage inspection.
4. The ECO / ELO officer should facilitate access by the heritage specialist to any retrieved artefacts / objects / remains that have been kept in safekeeping.

5. Should the find(s) relate to human remains, the SHE / SHEQ officer should facilitate coordination of the heritage site inspection and the SAPS site inspection.
6. The ECO / ELO officer should facilitate heritage reporting and heritage compliance requirements by SAHRA / the relevant PHRA, between the developer / construction consultant, the heritage specialist, the SHE / SHEQ officer (where relevant) and the SAPS (where relevant).

Duties of the Developer / Construction Consultant:

1. The developer / construction consultant should ensure that an adequate heritage contingency budget is accommodated within the project budget to facilitate and streamline the heritage compliance process in the event of identification of incidental archaeological, palaeontological and / or cultural heritage resources during the course of the vegetation cleaning, surface scraping, trenching, excavation or construction phases of the development, when resources not visible at the time of the surface assessment may be exposed.

11. References

- Ahler, S.A. 1977. Functional analysis of nonobsidian chipped stone artefacts: terms, variables and quantification. In: Hayden, B. (ed.). *Lithic use-wear analysis*: 301-328. New York: Academic Press.
- Aikman, H, Baumann, N, Winter, S and Cliff H. 2005. A state of the cultural historical environment study: Unpublished report compiled by Overstrand Heritage and Landscape Consortium for the Overstrand District Municipality.
- Bonner, P. 2002. *Kings, Commoners and Concessionaires: The Evolution and Dissolution of the Nineteenth-Century Swazi State*. S.L.: Cambridge University Press
- Booth, A. R. ed. 1967. *Journal of the Rev. George Champion*. Cape Town: Struik.
- Brain, C.K. 1981. *The hunters or the hunted? An introduction to African cave taphonomy*. Chicago: Chicago University Press.
- Camp, T.A.S. 2012. *The conservation history of the former Eastern Transvaal region*.
- Cory, Sir G. E. 1926. *The Diary of the Rev. Francis*
- Cronin, M. 1975. *Mgungundlovu*. Unpublished B.A. (Hons.) thesis: University of Cape Town.
- Cruz-Uribe, K. & Klein, R.G. 1994. Chew marks and cut marks on animal bones from the Kasteelberg B and Dune Field Midden Later Stone Age sites, Western Cape Province, South Africa. *Journal of Archaeological Science* 21: 35-49.
- Dennis Moss Partnerships Inc. 2003. *Overberg Spatial Development Framework*. Department of Planning, Local Government and Housing. 2000. *Bio-regional Planning Framework for the Western Cape Province*.
- Gardiner, Allen F. 1966. *Narrative of a Journey to the Zoolu Country in South Africa*. Cape Town: Struik (Reprint).
- Greenfield, H. J., van Schalkwyk, L. O. and Jongsma, T. L. 2000. Surface and subsurface reconnaissance at Ndongondwane: preliminary results of the 1995-97 field seasons. *Southern African Field Archaeology*, 9: 5-16.
- Greenfield, H. J. and van Schalkwyk, L. O. 2003. Intra-settlement social and economic organization of Early Iron Age farming communities in southern Africa: view from Ndongondwane. *Azania*, 38: 121-37.
- Hart, T. & Miller, D. 1994. Phase 1 archaeological and palaeontological survey of the proposed mining area on the farm Velddrif 110, Velddrif, Western Cape Province. Report prepared by the Archaeology Contracts Office, University of Cape Town, for Lime Sales Limited.
- Huffman, T. N. 1993. Broederstroom and the Central Cattle Pattern. *South African Journal of Science*, 89: 220-26.
- Huffman, T. N. 2001. The Central Cattle Pattern and interpreting the past. *Southern African Humanities*, 13: 19-35.
- Huffman, T. 2007. *Handbook to the Iron Age of Pre-Colonial Farming Societies in South Africa*. s.l. University of KwaZulu-Natal.

- Japha, D., Japha, V., Le grange, L & Todeschini, F. Mission Settlements in South Africa: A Report on their historical background and prospects for conservation. University of Cape Town.
- Kent, S. 1998. Invisible gender-invisible foragers: hunter-gatherer spatial patterning and the southern African archaeological record. In: Kent, S. (ed.) *Gender in African prehistory*: 39-67. California: Altamira Press.
- Kirby, P. R. 1955. *Andrew Smith and Natal*. Cape Town: Van Riebeeck Society.
- Knight, I. 1998. *Great Zulu Battles 1838 – 1906. Arms and Armour*.
- Krige, E. J. 1936. *The social system of the Zulus*. Pietermaritzburg: Shuter and Shooter.
- Laband, J. & Thompson, P. 2000. *The Illustrated Guide to the Anglo-Zulu War*.
- Lombard, M., Parsons, I. & Van der Ryst, M.M. 2004. Middle Stone Age lithic point experimentation for macro-fracture and residue analysis: the process and preliminary results with reference to Sibudu Cave points. *South African Journal of Science* 100: 159-166
- Maggs, T. O. 1980. The Iron Age sequence south of the Vaal and Pongola Rivers: some historical implications. *Journal of African History*, 21: 1-15.
- Maggs, T. O. 1984c. The Iron Age south of the Zambezi. In *Southern African Prehistory and Paleoenvironments* (ed. R. Klein). Rotterdam: Balken, pp. 329-60.
- Maggs, T. O. 1995. The Early Iron Age in the extreme south: some patterns and problems. *Azania*, 29/30: 171-8.
- Owen, M.A. Cape Town: Van Riebeeck Society.
- Spenneman, D. 2006. Gauging community values in Historic preservation. *CRM: The Journal of Heritage Stewardship* 3(2):6-20.
- Stuart, J. n.d. Unpublished papers. Killie Campbell African Library, Durban.
- Stuart, J. & McMalcolm, D. eds. 1969. *The diary of Henry Francis Fynn*. Pietermaritzburg: Shuter and Shooter.
- Vinnicombe, P. 1976. *People of the Eland: Rock Paintings of the Drakensberg Bushmen a Reflection of their Life and Thoughts*. S.L.: University of Natal Press.
- Van Vuuren, L. 2009. Pongolapoort Dam – development steeped in controversy. *The Water Wheel*, May/Jun.
- Wadley, L & Jacobs, Z. 2004. Sibudu Cave, KwaZulu-Natal: Background to the excavations of Middle Stone Age and Iron Age occupations. *South African Journal of Science* 100: 145-151.
- Webb, C. de B., & Wright, J. 1977. *The Stuart Archives, Vol. I*. Pietermaritzburg: Natal University Press.
- Whitelaw, G. D. 1994. KwaGandaganda: settlement patters in the Natal Early Iron Age. *Natal Museum Journal of Humanities*, 6: 1-64.
- Wells, H.B.S.C.B.D.M.L.H. 1945. Fossil Man in the Lebombo Mountains, South Africa: The “Border Cave”, Ingwavuma District, Zululand. *Man*, Volume 45, pp. 6-13