

**ARCHAEOLOGICAL IMPACT ASSESSMENT**

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**FOR A PROPOSED ADDITIONAL 132 KV POWER LINE FOR  
THE AUTHORISED SPRINGFONTEIN WIND ENERGY  
FACILITY, FREE -STATE PROVINCE**

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PREPARED FOR

**SAVANNAH ENVIRONMENTAL (PTY) LTD**

BY



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**VERSION 1.1**

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I, Jaco van der Walt as duly authorised representative of Heritage Contracts and Archaeological Consulting CC, hereby confirm my independence as a specialist and declare that neither I nor the Heritage Contracts and Archaeological Consulting CC have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which the client was appointed as Environmental Assessment practitioner, other than fair remuneration for work performed on this project.



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**SIGNATURE:** \_\_\_\_\_

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## EXECUTIVE SUMMARY

**Site name and location:** 132 kV power line alternatives for the authorised Springfontein Wind Energy Facility, located approximately 12 km south-west of Springfontein within Kopanong Local Municipality in the Free State.

**Purpose of the study:** Phase 1 Archaeological Impact Assessment to determine the presence of cultural heritage sites and the impact of the proposed alternative power lines on these resources within the areas demarcated for Springfontein wind energy facility's development.

**1:50 000 Topographic Map:** 3025 BC

**EIA Consultant:** Savannah Environmental (Pty) Ltd

**Developer:** South Africa Mainstream Renewable Power Springfontein (Pty) Ltd

**Heritage Consultant:** Heritage Contracts and Archaeological Consulting CC (HCAC).

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**Date of Report:** 25 February 2014

### Findings of the Assessment:

The potential impacts to heritage resources by the proposed power line development for the Springfontein Wind Energy facility are considered to be low. There is a marked paucity of archaeological sites in the area where Gaigher (2013) investigated an area of approximately 85km<sup>2</sup> for the HIA study as part of the EIA for the Springfontein wind energy facility, whereas studies conducted further west recorded a high frequency of Stone Age material (e.g. Van Ryneveld 2013). The only archaeological remains recorded in the study area consist of highly weathered isolated MSA artefacts scattered (MSA scatter a-b) over large areas close to ridges in the southern and western portion of the study area. These low frequency isolated artefacts are recorded as occurrences and does not constitute a "heritage site". These weathered occurrences are of low significance as they consist of ex situ surface material with no stratigraphy. The limited impact a small power line footprint will have on such a widely dispersed occurrence is extremely low and if alternative 1 or 3 are preferred no further mitigation is needed for this aspect. Apart from the Stone Age occurrences the demolished foundations of a rectangular stone structure was recorded located between alternative 1 and 2. No direct heritage impact is foreseen on the site and if any of these two alternatives are preferred the site must be demarcated with danger tape during the construction phase. Two other sites are on record for the broader study area, the first is a Khoe Khoe engraving site next to a spring (Ouzman 2002). This site is located 2.7 km north of alternative 3 and no impact is foreseen on the site. The second site consist of a reconstructed Rice blockhouse located on a neighbouring farm 500 meters south of alternative 1 and again no

impact is foreseen on the site. From a heritage point of view the impact of the additional power line on heritage resources will be extremely low and all 4 power line alternatives are acceptable.

An independent Palaeontological desktop study (Dr Millstead 2014) was conducted for the project area who recommended mitigation measures to ensure that the project will not have a negative impact on the paleontological resources.

## **General**

Due to extensive sand cover, ground visibility was low on portions of the site during survey. The possible occurrence of unmarked or informal graves and subsurface finds can thus not be excluded. If during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find.

**Disclaimer:** *Although all possible care is taken to identify 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. Heritage Contracts and Archaeological Consulting CC and its personnel will not be held liable for such oversights or for costs incurred as a result of such oversights.*

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- The results of the project;
- The technology described in any report;
- Recommendations delivered to the Client.

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**Annexure A:** Desktop Palaeontological Impact Assessment Report On The Site Of A 132 Kv Power Line For The Springfontein Wind Energy Power Facility, Near Springfontein, Free State Province

## ABBREVIATIONS

AIA: Archaeological Impact Assessment
ASAPA: Association of South African Professional Archaeologists
BIA: Basic Impact Assessment
CRM: Cultural Resource Management
ECO: Environmental Control Officer
EIA: Environmental Impact Assessment*
EIA: Early Iron Age*
EIA Practitioner: Environmental Impact Assessment Practitioner
EMP: Environmental Management Plan
ESA: Early Stone Age
GPS: Global Positioning System
HIA: Heritage Impact Assessment
LIA: Late Iron Age
LSA: Late Stone Age
MEC: Member of the Executive Council
MIA: Middle Iron Age
MPRDA: Mineral and Petroleum Resources Development Act
MSA: Middle Stone Age
NEMA: National Environmental Management Act
PRHA: Provincial Heritage Resource Agency
SADC: Southern African Development Community
SAHRA: South African Heritage Resources Agency

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

## GLOSSARY

Archaeological site (remains of human activity over 100 years old)

Early Stone Age (~ 2.6 million to 250 000 years ago)

Middle Stone Age (~ 250 000 to 40-25 000 years ago)

Later Stone Age (~ 40-25 000, to recently, 100 years ago)

The Iron Age (~ AD 400 to 1840)

Historic (~ AD 1840 to 1950)

Historic building (over 60 years old)

## 1 BACKGROUND INFORMATION

<b>Kind of study</b>	Archaeological Impact Assessment
<b>Type of development</b>	Power Line
<b>Rezoning/subdivision of land</b>	N/A
<b>Developer:</b>	South Africa Mainstream Renewable Power Springfontein (Pty) Ltd
<b>Consultant:</b>	Savannah Environmental

Heritage Contracts and Archaeological Consulting CC has been contracted by Savannah Environmental (Pty) Ltd to conduct an Archaeological Impact Assessment for the Springfontein Wind energy facility's additional power line alternatives for connection into the grid, located approximately 12 km south-west of Springfontein within Kopanong Local Municipality in the Free State. The Archaeological Impact Assessment report forms part of the Basic Assessment (BA) for the proposed additional power line.

South Africa Mainstream Renewable Power Springfontein (Pty) Ltd has received environmental authorisation for the Springfontein Wind Energy Facility located south-west of Springfontein in the Free State. The current authorisation approves a loop in and loop out 132kV power line up to 500m in length to tie into the existing Besembos-Signal 132kV power line which traverses the wind energy facility site (on the remaining extent of Farm Stock Port 283). This grid connection is still an option. However, due to capacity constraints on the Eskom transmission infrastructure which traverses the site, Mainstream would like to add an additional grid connection alternative to be authorised to the development. As such Mainstream have proposed a number of alternatives to connect to the Eskom Oranjekrag/Springfontein 66kV line which runs 5-7km east of the on-site substation of the windfarm.

The aim of the study is to identify cultural heritage sites, document, and assess their importance within local, provincial and national context. It serves to assess the impact of the proposed project on non-renewable heritage resources, and to submit appropriate recommendations with regard to the responsible cultural resources management measures that might be required to assist the developer in managing the discovered heritage resources in a responsible manner. It is also conducted to protect, preserve, and develop such resources within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999).

The report outlines the approach and methodology utilized before and during the survey, which includes: Phase 1, a background study that includes collection from various sources and consultations; Phase 2, the physical surveying of the area on foot and by vehicle; Phase 3, reporting the outcome of the study.



During the survey a historical ruin were identified close to the proposed alternative1 & 2 although several Stone Age occurrences were documented in the general area. General site conditions and features on sites were recorded by means of photographs, GPS locations, and site descriptions. Possible impacts were identified and mitigation measures are proposed in the following report. This report will be submitted to SAHRA for review.

## **1.1 Terms of Reference**

### **Field study**

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

### **Reporting**

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

To assist the developer in managing the discovered heritage resources in a responsible manner, and to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999).

## **1.2. Archaeological Legislation and Best Practice**

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

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

The AIA or HIA, as a specialist sub-section of the EIA, is required under the National Heritage Resources Act NHRA of 1999 (Act 25 of 1999), Section 38(1), Section 38(8) of the NEMA and the MPRDA.

The AIA should be submitted, as part of the EIA, BIA or EMP, to the PHRA if established in the province or to SAHRA. SAHRA will be ultimately responsible for the professional evaluation of Phase 1 AIA reports upon which review comments will be issued. 'Best practice' requires Phase 1 AIA reports and additional development information, as per the EIA, BIA/EMP, to be submitted in duplicate to SAHRA after completion of the study. SAHRA accepts Phase 1 AIA reports authored by professional archaeologists, accredited with ASAPA.

Minimum accreditation requirements include an Honours degree in archaeology or related discipline and 3 years post-university CRM experience (field supervisor level).

Minimum standards for reports, site documentation and descriptions are set by ASAPA in collaboration with SAHRA. ASAPA is based in South Africa, representing professional archaeology in the SADC region. ASAPA is primarily involved in the overseeing of ethical practice and standards regarding the archaeological profession. Membership is based on proposal and secondment by other professional members.

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

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

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

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

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

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

Human remains that are less than 60 years old are protected under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925), as well as the Human Tissues Act (Act 65 of 1983), and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the office of

the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning; or in some cases, the MEC for Housing and Welfare.

Authorisation for exhumation and reinterment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. To handle and transport human remains, the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

### **1.3 Description of Study Area**

#### **1.3.1 Location Data**

The proposed power line is located approximately 12 km south-west of Springfontein within Kopanong Local Municipality in the Free State. The following farms are being investigated for the siting of the proposed power line:

- » Remainder of the farm Stock Port 283;
- » Remainder of the farm Prior Grange 282;
- » Remainder of the farm Kiel 37& Remainder of farm Mount Brand 278.

The study area falls within the Dry Highveld Grassland Bioregion as described by Mucina *et al* (2006) with the vegetation described as Xhariep Karroid Grassland. Land use in the general area is characterized by agriculture, dominated by sheep farming. The study area is relatively flat characterised by sandy top soil overlaying clay. Low running Silicilastic rock ridges protrude through the sand cover. A Single non perennial river drains the area in west to easterly direction.

### 1.3.2. Location Map

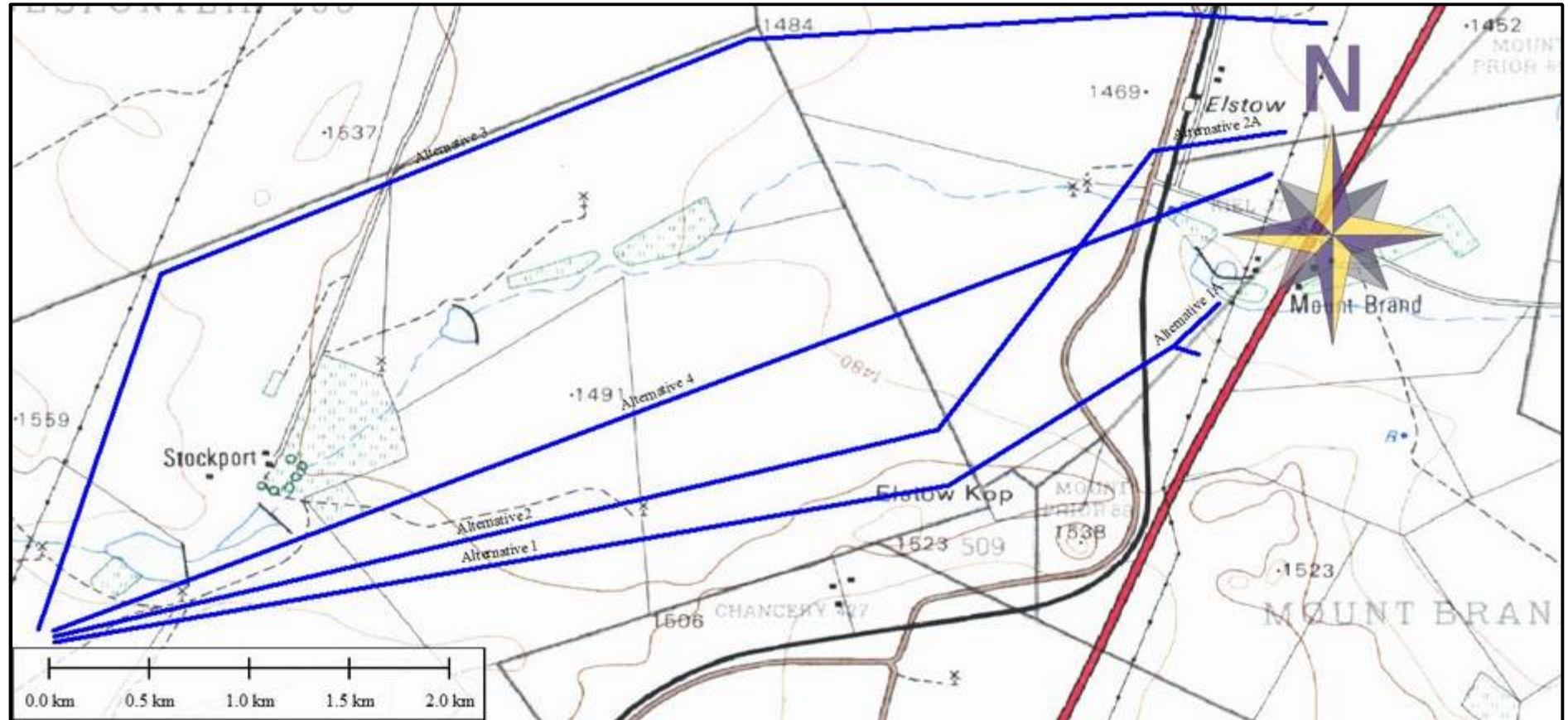


Figure 1: Location map showing the four alternatives in blue.

## **2. APPROACH AND METHODOLOGY**

The aim of the study is to cover archaeological databases and historical sources to compile a background history of the study area followed by field verification; this was accomplished by means of the following phases (the results are represented in section 4 of this report).

### **2.1 Phase 1 - Desktop Study**

The first phase comprised a desktop study, gathering data to compile a background history of the area in question. It included scanning existing records for archaeological and historical sites in the area.

#### **2.1.1 Literature Search**

Utilising data from previous CRM reports done in the area as well as a search in the National archives. The aim of this is to extract data and information on the area in question, looking at archaeological sites, historical sites and graves of the area.

#### **2.1.2 Information Collection**

The SAHRA report mapping project (Version 1.0) and SAHRIS was consulted to collect data from previously conducted CRM projects in the region to provide a comprehensive account of the history of the study area.

#### **2.1.3 Consultation**

A public participation process is facilitated by the Environmental Consultant for the project, in addition to this the author also interviewed Farm Owners on the farm Prior Grange ,Mr Blackie de Swardt and Danie van der Wath, owner of the farm Stock Port 283.

#### **2.1.4 Google Earth and Mapping Survey**

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where sites of heritage significance might be located.

#### **2.1.5 Genealogical Society of South Africa**

The database of the Genealogical Society was consulted to collect data on any known graves in the area.

### **2.2 Phase 2 - Physical Surveying**

A field survey of the four alternatives was conducted over a period of two days, focusing on drainage lines, hills and outcrops, high lying areas and disturbances in the topography. The study area was surveyed by means of vehicle and extensive surveys on foot by a professional archaeologist on the 20 -21 February 2014

All sites discovered inside the proposed development area was plotted on 1:50 000 maps and their GPS co-ordinates noted. Digital photographs were taken at all the sites.

### **2.3. Restrictions**

Due to the fact that most cultural remains may occur below surface, the possibility exists that some features or artefacts may not have been discovered/ recorded during the survey. Only the proposed alignments were surveyed as indicated in the location map, and not the entire farm. Although Heritage Contracts and Archaeological Consulting CC surveyed the area as thoroughly as possible, it is incumbent upon the developer to stop operations and inform the relevant heritage agency should further cultural remains, such as stone tool scatters, artefacts, bones or fossils, be exposed during the process of development.

## **3 NATURE OF THE DEVELOPMENT**

South Africa Mainstream Renewable Power Springfontein (Pty) Ltd is proposing the construction of a 132 kV power line for the authorised Springfontein Wind Energy Facility. The power line will have servitude of up to 36m.

## **4. REGIONAL OVERVIEW**

### **4.1 General Information**

Through CRM reports on the area together with secondary source material, primary sources, maps and online sources the study is contextualised. Numerous CRM projects were conducted within the greater study area. Studies by Gaigher (2013), Van Ryneveld (2013) and Dreyer (2006) were consulted for this report. Dreyer did not record any sites as part of the N1 and borrow pit project. Gaigher who assessed the Springfontein Wind energy project that covered an area of approximately 85 km<sup>2</sup> did not record any heritage sites. Van Rhyneveld worked west of the study area close to the van der Kloof dam, where she recorded Iron Age homesteads, graves and MSA sites.

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where archaeological and historical sites might be located. No buildings or structures are located within the proposed study area alternatives. The database of the Genealogical Society of South Africa indicated no known grave sites within the study area.

### **4.2 Archaeological Background**

The archaeological background and timeframe of the study area can be divided into the Stone Age and Iron Age.

#### **4.2.1. Stone Age**

The Stone Age is divided in Early; Middle and Late Stone Age and refers to the earliest people of South Africa who mainly relied on stone for their tools.

**Early Stone Age:** The period from  $\pm$  2.5 million yrs. -  $\pm$  250 000 yrs. ago. Acheulean stone tools are dominant. No Acheulean sites are on record near the project area, but isolated finds may be possible. However, isolated finds have little value. Therefore, the project is unlikely to disturb a significant site. The lack of any ESA sites was confirmed during the field investigation.

**Middle Stone Age:** The Middle Stone Age includes various lithic industries in SA dating from  $\pm$  250 000 yrs. - 25 000 yrs. before present. This period is first associated with archaic Homo sapiens and later Homo sapiens sapiens. Material culture includes stone tools with prepared platforms and stone tools attached to handles. Several MSA occurrences were documented during the survey but does not have conservation value and is discussed further in Section 7 of this report.

**Late Stone Age:** The period from  $\pm$  25 000- yrs before present to the period of contact with either Iron Age farmers or European colonists. This period is associated with Homo sapiens sapiens. Material culture from this period includes: microlithic stone tools; ostrich eggshell beads and rock art. Sites in the open are usually poorly preserved and therefore have less value than sites in caves or rock shelters. Since there are no caves in the study area no LSA sites of significance were recorded. Some petroglyphs are on record on the farm Prior Grange and is discussed further in Section 7 of this report.

#### **4.2.2. Iron Age (general)**

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

The Early Iron Age: Most of the first millennium AD.

The Middle Iron Age: 10th to 13th centuries AD

The Late Iron Age: 14th century to colonial period.

The Iron Age is characterised by the ability of these early people to manipulate and work Iron ore into implements that assisted them in creating a favourable environment to make a better living.



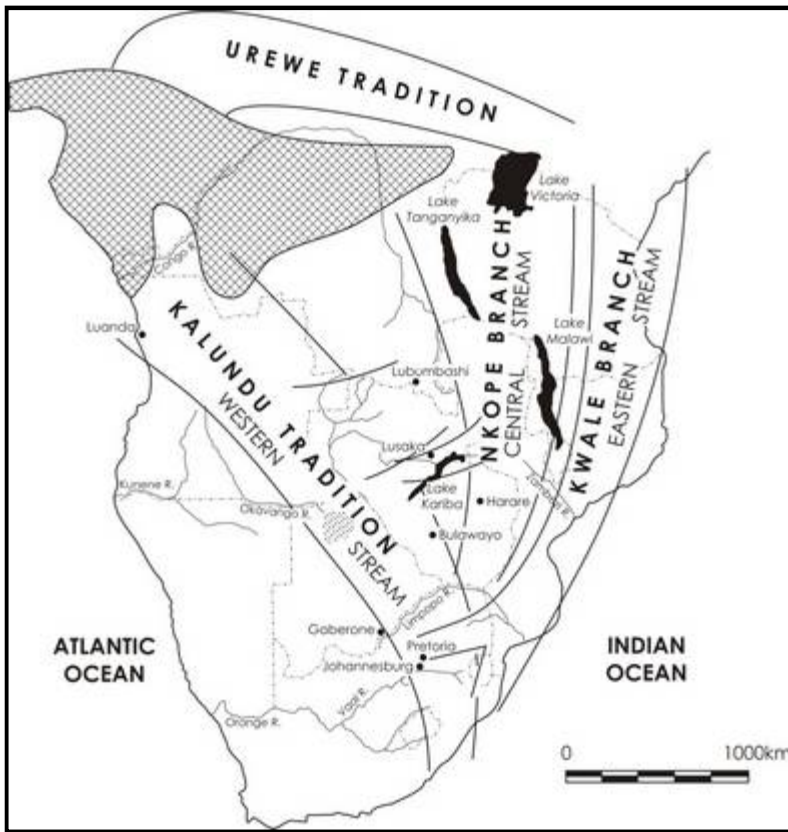


Figure 2: Movement of Bantu speaking farmers (Huffman 2007)

No Sites dating to the Iron Age have been recorded or is expected for the study area (Maggs 1976, Dreyer 2012).

### 4.3 Palaeontology

A paleontological study was commissioned by Heritage Contracts and Archaeological Consulting CC by Dr Barry Millsted. He reported the following:

*"The probability of the project negatively impacting on the palaeontological heritage of South Africa is assessed as improbable. However, given the scientific importance of the fossils forming the Cistecephalus Assemblage Zone the significance of any negative impact would potentially be very high. Any damage to the fossil materials present within the project area will be irreversible, and permanent to long term. A number of mitigation procedures are outlined, that if enacted will minimise the potential for any negative impact to the areas palaeontological heritage. It is also possible that the application of these mitigation procedures may result in the finding of new fossil materials. Indeed, should such previously new fossil material be found it may prove to result in a positive impact on the palaeontological heritage of South Africa.*

*Should the outlined damage mitigation procedures be implemented no palaeontological reason was identified that should negatively impact on the proposed project and the project status is assessed as being beneficial" (Millsted 2014).*

## 5. HISTORICAL BACKGROUND

The following section will endeavour to give a brief overview of the history of the area and district in which it is located. The report has been divided into several sections that will focus on the following aspects:

- General history of human settlement in the area
- The history of the greater study area
- The history of Springfontein

### Consultation

The owner of the farm Prior Grange has taken a keen interest in the history of the area and published a book on the history of the farm and Springfontein (De Swardt 2010). He was also responsible for the reconstruction of the Rice Blockhouse on the farm Mount Prior adjacent to the current study area. Mr de Swardt is not aware of any sites that will be impacted on by any of the proposed power line alterantives. Owner of the farm Stock Port 283, Danie van der Wath accompanied the author on the field survey of his farm and is also not aware of any sites that will be impacted on.

## 5.1. Historiography and Methodology

It was necessary to use a range of sources in order to give an accurate account of the history of the area in which the study area is located. Sources include secondary source material, maps, electronic sources and archival documents. This study is by no means all-inclusive, and there are doubtlessly still sources to be found on the history of the property and area researched in this study.

## 5.2. Maps of the Area under Investigation



Figure 3: Google Earth image showing the project area in relation to Kimberley and Bloemfontein.



Figure 4: 1885 Map showing the area of Griqualand West, which was in British possession at the time. Bloemfontein and the farm area were located outside of the area in British possession; however the British forces occupied the area during the war in 1900. (The British Empire 2011)

### 5.3. A Brief History of Human Settlement and Black And White Interaction In The greater study Area

A farm does not exist in isolation, and it is important to understand the social history of the surrounding area. It is essential to consider the history of towns in the vicinity of the property under investigation, since these social centres would have affected those individuals living in the rural areas. The city of Kimberley is of obvious significance, but some smaller towns such as Bloemfontein and Kimberley and also Springfontein are also of importance. The history of these towns will be discussed briefly.

Roberts' book provides a lovely description of the Kimberley area: "The earth was grey, stony, cindery, carpeted in long silvery grass and dotted with thousands upon thousands of umbrella-shaped thorn trees...When it rained, the normally dry watercourses became raging torrents; when it blew, the dust was choking; when, as happened for most days of the year, the sun shone, it was like an oven. In more ways than one could it be described as a no-man's-land; lying between the Great Karoo to the south, the undulating grasslands to the north-east and the Kalahari desert to the north-west." (Roberts 1985: 3) The land was however all but uninhabited.

Among the earliest inhabitants in the area were the Koranas, the Khoikhoi and the Bushmen. The latter existed as hunter-gatherers, whereas the Khoikhoi and Koranas grazed livestock. In other respects, their cultures were much alike. A group of people, who more recently started to inhabit

the Kimberley district, were the "Bastards", in whose veins flowed the blood of white adventurers, the Khoikhoi and Bushmen peoples. These people, who often owned firearms and wagons, formed bands that joined Bushman and Khoikhoi tribes. "Together they made up a nomadic, independent, haphazard society, each group following its own chief." (Roberts 1985: 3)

The London Missionary Society, which arrived on the scene in the early nineteenth century, attempted to bring order to the Kimberley area. The society renamed the "Bastards" as Griquas, and in due time the territory would become known as Griqualand West. The order however did not last long, and the Griqua split into factions and resumed their raiding expeditions. Boer farmers that moved inland from the Cape Colony during the 1830s and 1840s, further added to this arena of conflicting claims. Colesberg, which came into being in the 1830s, was one of the earliest towns to develop in this area. The settlement of Hopetown was established later on, but the area remained inhospitable and desolate. It was however only in 1866 that an occurrence took place that would forever change the social fibre of this area. In December 1866, during a visit to a family on a neighbouring property, the landowner and amateur geologist Schalk van Niekerk picked up an interesting stone. On further inspection, this was found to be the first diamond that was ever discovered in South Africa. (Roberts 1985: 3-7)

As more diamonds were found on the banks of the Vaal River, just above its confluence with the Gariep, mining and the industry associated with it started to become something that would always be at the centre of South Africa's social, economic and political life. Within a few years, in four locations between the Vaal and the Gariep, volcanic pipes were discovered in which diamonds had crystalized in the distant past. These pipes seemed to be of limitless capacity, and Kimberley developed between them in the early 1870s. In a few years, this town would become the second largest settlement in South Africa, producing 80 per cent of the region's exports. The need for a constant stream of labour dramatically changed the social structure of the area. By the mid-1870s, 50 000 black men a year sought work in Kimberley. The majority of these people were Bapedi and other Sotho-Tswana speakers from Transvaal. There were not many black individuals from Natal and the Cape who came to work at Kimberly, and those who did were mainly educated and Christian, and worked as artisans and clerks. In 1889, the company of Cecil John Rhodes, De Beers Consolidated Mines, acquired the monopoly over the diamond pipes at Kimberley. Rhodes had realized that working the mines as single units rather than multiple claims would prove much more profitable. The organization of black labour changed considerably with the consolidation of the mines. Workers henceforth lived in closed barracks, called compounds, which they could only leave to go to work. Since De Beers had the monopoly of the mines, workers' wages were also reduced. In this way the path was set for a new, and ultimately disastrous, organization of labour in South Africa. (Ross 2002: 54-56)

The discovery of diamonds and gold in the Northern provinces also had other consequences. The British, who at the time had colonized the Cape and Natal, had intensions of expanding their territory into the northern Boer republics. This eventually led to the Anglo-Boer War, which took place between 1899 and 1902 in South Africa, and which was one of the most turbulent times in South Africa's history. Even before the outbreak of war in October 1899 British politicians, including Sir Alfred Milner and Mr. Chamberlain, had declared that should Britain's differences with

the Z.A.R. result in violence, it would mean the end of republican independence. This decision was not immediately publicized, and as a consequence republican leaders based their assessment of British intentions on the more moderate public utterances of British leaders. Consequently, in March 1900, they asked Lord Salisbury to agree to peace on the basis of the status quo ante bellum. Salisbury's reply was, however, a clear statement of British war aims. (Du Preez 1977)

The siege of Kimberley took place between 14 October 1899 and 15 February 1900. By this time, the town was the centre of Cecil John Rhodes' De Beers diamond mining enterprise. Before the war, as Rhodes realized that the conflict was eminent, he moved to Kimberley with a large battalion to defend it against the advancing Boers. On 14 October 1899 the Boers invaded the Northern Cape Colony, beginning the siege of Kimberley. The Boers were however unable to lay siege to the town, as the British were relieved by General French's Cavalry Division. (British Battles.com 2011)

Bloemfontein is also close to the study area and has an interesting history. One of the legends about Bloemfontein regards the origins of its name. One speculation is that Bloemfontein was named after an ox called Bloem. This ox was owned by a local farmer from the area and taken by a mysterious lion, never to be seen again.

In another story, the name Bloemfontein came from one of the leaders of the KhoiKhoi tribe, Jan Blom who lived in the area long before it grew into a city.

Bloemfontein was first a small farm owned by Johannes Nicolaas Brits who sold his land to Maj Warden. A small community grew which expanded into a town and then into the capital city of the Orange Free State Republic, which in turn eventually became known as the Free State Province. Many of the buildings in the city are historical landmarks built when the area was still developing.

The railway built in 1890 connected Bloemfontein to Cape Town and made it more accessible to the rest of South Africa. One of its most famous citizens was JRR Tolkien, the English writer famous for works such as "The Hobbit" and "The Lord of the Rings". He didn't live in this city but moved back to England after his father died in 1895 where he studied and lived out the rest of his life.

Historical highlights of this Bloemfontein include:

- » The place where the Bloemfontein Conference took place that was meant to prevent the outbreak of the Second Boer War;
- » The location of a concentration camp which, after the Battle of Paardeberg, is where Afrikaner women and children were housed. Many died in these camps, and an official figure puts the body count at 26 370 women and children.

#### **5.4 History of Springfontein**

The following information on Springfontein was sourced from De Swardt (2005).

The Anglo Boer War had an impact also on the Springfontein area. Initially a British military intelligence report compiled in 1897 stated that the town was a scatter of around 15 homes, a

hotel or store and a church and of no tactical importance. The report stated that the town did have two water springs and that the west water supply could easily water around 30 trains per day.

Contrary to the British report Springfontein became an important railway junction. The railway line from the Cape to Bloemfontein was completed 7 years before and the one joining the line from East London was completed 3 years before. The Boer Commandos moved towards Springfontein in 1899 splitting there to then move to Norval's Point on the Orange River Bridge or to Bethulie. This would then put them in a strategic position to stop the advance of the British Troops through the railway lines. The Boer Commandos controlled the inland advance of the British until the surrender of 4000 Boers at Paardeberg to Lord Roberts.

After Roberts occupied Bloemfontein, his forces renewed attacks on the Southern Free State. Gen Gatacre moved along the East London Railway and occupied Bethulie on 14 March. Two of his scouts heard that the Springfontein line was intact. They stole a hand trolley and to their surprise found the Boer guards at Springfontein asleep. The scouts, Hennessey and Turnerr took possession of two engines as well as 40 trucks and took them back to Bethulie. The Boers realised that they have been compromised and fled the town. The British occupied the town without a shot being fired on 17 March 1900. After the occupation the town was used as a base from where to drive an attack on Gen De Wet and also on the Southern Free State. A big British camp and also what is said to be the largest concentration camp were established here in 1901. The terrible conditions in the concentration camp and the harsh winter recorded more than 700 deaths. Remains of the camp and Welsh Field hospital include only the waterworks and some of the laundry area. The house at De Bome where Emily Hobhouse stayed during her visits to the Springfontein camp also remained.

The British defence of the town concentrated around "Gibraltar Hill" to the east of the railway line. The hill was enclosed by a system of trenches, stone walls, sangars, sentry posts and gun placements that are still visible today. Between "Gibraltar" and the railway line was 12 General Hospital, a veterinary hospital and the Remount Depot. This hospital was said to be the biggest medical facility in the Southern Hemisphere at the time. The only remains of this is the waste dump containing a large amount of beer bottles.

The area also had some cemeteries one for unbaptised children (the Minister, rev Sanford believed that unbaptised people should not be buried with baptised people) and in the other Boer and British soldiers (or prisoners of war) was buried side by side. Lieutenant Lord O'Hagan died in 1900 and was buried only a few yards from Matheus Hendrik Steyn the brother of President Steyn who died here on route to a POW camp. Also interesting is that 2 of the 200 British soldiers buried here have two graves.

Towards the end of the war around 8000 block houses were built by the Royal Engineers along the railway lines of South Africa. Only about 50 block houses survived the impact of the elements. The block houses in the Springfontein area were mostly the Rice type.



Figure 5: Reconstructed Rice type Blockhouse at Mount Prior.

## 6. HERITAGE SITE SIGNIFICANCE AND MITIGATION MEASURES

The presence and distribution of heritage resources define a 'heritage landscape'. In this landscape, every site is relevant. In addition, because heritage resources are non-renewable, heritage surveys need to investigate an entire project area, or a representative sample, depending on the nature of the project. In the case of the proposed PV Solar Facility the local extent of its impact necessitates a representative sample and only the footprint of the areas demarcated for development were surveyed. In all initial investigations, however, the specialists are responsible only for the identification of resources visible on the surface.

This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The following criteria were used to establish site significance:

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



Furthermore, The National Heritage Resources Act (Act No 25 of 1999, Sec 3) distinguishes nine criteria for places and objects to qualify as 'part of the national estate' if they have cultural significance or other special value. These criteria are:

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

## 6.1. Field Rating of Sites

Site significance classification standards prescribed by SAHRA (2006), and approved by ASAPA for the SADC region, were used for the purpose of this report. The recommendations for each site should be read in conjunction with section 9 of this report.

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

## 6.2 Impact Rating of Assessment

The criteria below are used to establish the impact rating of a site. as provided by the client:

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

the *degree* to which the impact can be mitigated.

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

$$S=(E+D+M)P$$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

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

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

## 7. BASELINE STUDY-DESCRIPTION OF SITES

It is important to note only the alignment of the proposed power line alternatives as indicated in Figure 6. The study area is flat with no major landscape features apart from Estow Kop to the south of the proposed alignments and a small dolerite ridge running roughly from north west to south east in the western portion of the study area. Vegetation is low and archaeological visibility is high (figure 9 - 11). A Single Khoe Khoe engraving site is located on the farm Prior Grange located 2.7km north from the closest alternative (Alternative 3) the site is listed at the database at the National Museum in Bloemfontein and reported on by Ouzman (2002). A Gravel road and railway line traverses the east of the study area in a North south direction. The railway line dates from the 1890's and have been realigned in places but the majority is still intact (Figure 8). Towards the end of the war around 8000 block houses were built by the Royal Engineers along the railway lines of South Africa and the remains of one of these, a Rice type blockhouse are located on the farm Prior Grange and was reconstructed (Figure 5). The site is located 530 meters south of the closest power line (alternative 1).

Individual occurrences of highly weathered MSA flakes are found widely scattered to the north of Estow Kop and along a low dolerite ridge in the western portion of the study area, no one concentration of artefacts were identified and these isolated finds does not constitute a site *per se*. The artefacts have faceted striking platforms characteristic of MSA and are almost entirely from granite. The artefacts are highly weathered and have a rolled appearance possibly the result of hill-wash or water related post-depositional processes.

The stone foundations of a rectangular structure were recorded situated between alternative 1 and 2. The site is located 34 meters south of alternative 2 and 46 meters north of alternative 1 and no direct impact is foreseen on the site.

None of the sites will be impacted on by the proposed power line alternatives apart from the ruin and the MSA scatters that will have a secondary acceptable impact. Site descriptions are therefore limited to these two heritage features.

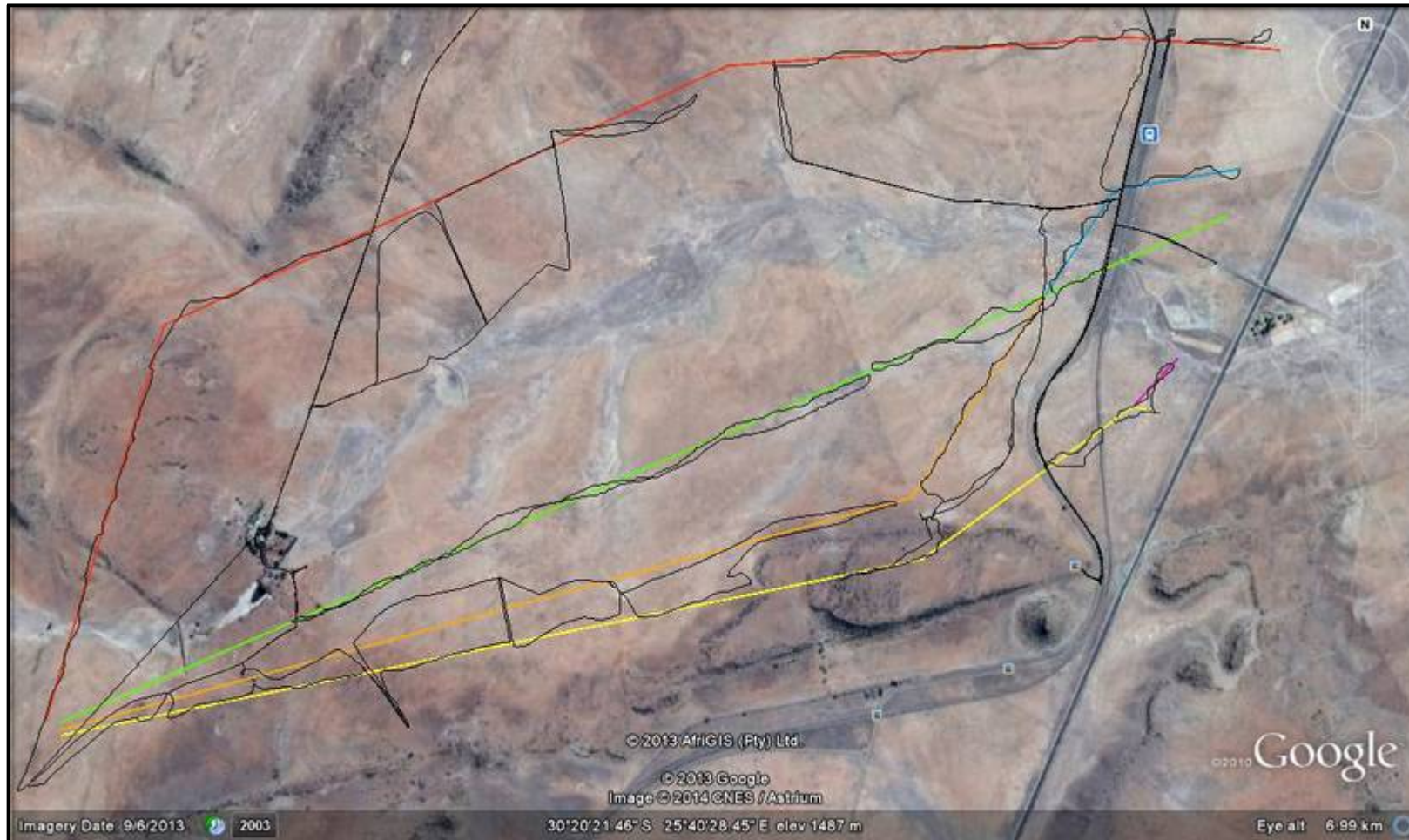


Figure 6: Google Earth image of the proposed power lines and track logs of the survey in black.

### 7.1 Site Distribution Map

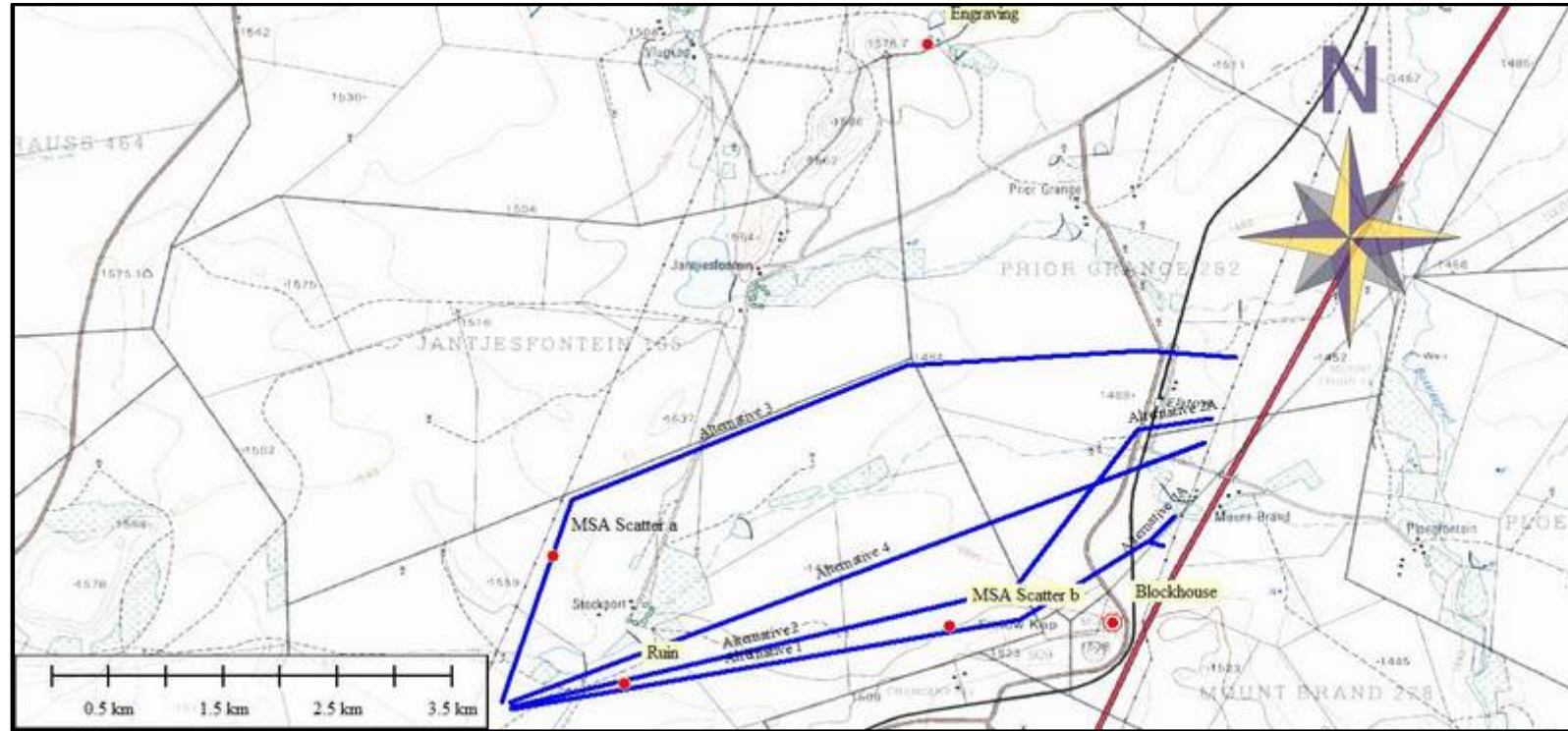


Figure 7: Showing the location of known sites in relation to the power line alternatives.



Figure 8. Railway line dating from the 1890's.



Figure 9. Environment in the eastern portion of the study area.





Figure 10. Environment in the northern portion of the study area.



Figure 11. Railway line in the southern portion of the study area.


## 7.2. Sites with Coordinates

Site Number	Landscape	Cultural Markers	Co ordinate
Ruin	Historical/recent	Stone foundations	S30 20 59.2 E25 39 11.0
MSA scatter a	Archaeological	Proximal end of a broken blade, triangular flake, miscellaneous flakes	S30 20 23.3 E25 38 50.8
MSA scatter b	Archaeological	Triangular flakes and chunks	S30 20 43.1 E25 40 43.3
Blockhouse	Historical	Rice blockhouse	S30 20 59.2 E25 39 11.0
Engraving	Archaeological	Petroglyphs	S30 17 58.0 E25 40 36.9

## 7.3. Site Descriptions

### 7.3.1. Low density MSA occurrence (MSA scatter a and b)

Field Number	MSA scatter a and b	1:50 000 map nr	3025 BC
Site Data	<b>Description:</b>		
Type of site	Open scatter		
Site categories	MSA		
Context	Isolated un-retouched flakes and chunks were noted along the northern boundary of the development footprint. Artefacts occur mostly as single artefacts with a density of between 1 - 2 artefacts per 30m <sup>2</sup> ) and recorded as an occurrence (Figure 7) and do not constitute a site. No archaeological stratigraphy is present and the artefact show a high degree of weathering possibly from being washed.		
Description of artefacts	The artefacts are weathered and out of context possibly from being washed. Diagnostic features on the tools consist of facets on the striking platform indicating Middle Stone Age occupation. Artefacts consist of chunks, a broken blade and pointed flakes		

	with a faceted striking platform mainly on granite.
<b>Photographs</b>	
	
Figure 12: Dorsal view of artefacts	
<b>Field Rating</b> (Recommended grading or field significance) of the site:	Generally Protected C
<b>Statement of Significance (Heritage Value)</b>	Low significance.

### Impact evaluation of the proposed project on heritage resources

#### MSA Scatter a – b

<b>Nature:</b> During the construction phase earthworks might impact on the recorded artefacts.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Low (2)	Low (2)
<b>Probability</b>	Probable (3)	Probable (3)
<b>Significance</b>	<b>24 (Low)</b>	<b>24 (Low)</b>
<b>Status (positive or</b>	Negative	Negative

<b>negative)</b>		
<b>Reversibility</b>	Not reversible	Not reversible
<b>Irreplaceable loss of resources?</b>	Yes	Yes
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b> The MSA occurrence is of low significance and no further action is necessary. (Please refer to section 8 for full details on recommendations).		
<b>Cumulative impacts:</b> Archaeological and cultural sites are non-renewable and impact on any archaeological context or material will be permanent and destructive.		
<b>Residual Impacts:</b> N.A		

### 7.3.2. Rectangular foundations

<b>Site Number</b>	Ruin	<b>1:50 000 map nr</b>	3025 BC
<b>Site Data</b>	<b>Description:</b>		
<b>Type of site</b>	Open site		
<b>Site categories</b>	Possible recent or historic dwellings foundation		
<b>Context</b>	The site consists of rectangular stone foundations measuring approximately 4x6 meters.		
<b>Cultural affinities, approximate age and significant features of the site;</b>	Based on what's left of the structure, it is not possible to determine if the site is older than 60 years. According to the owner it is the demolished remains of a farm labourer setup. Nothing is left of the walls etc. and only the foundations remain.		
<b>Description of artefacts</b>	Modern industrial artefacts, such as wire, glass and cans, are scattered over the site.		
<b>Photographs</b>			



Figure 13: Stone wall foundations.



Figure 14: General site conditions.

<p><b>Field Rating</b> (Recommended grading or field significance) of the site:</p>	<p>Generally Protected C</p>
<p><b>Statement of Significance (Heritage Value)</b></p>	<p>Low significance based on the extent of destruction. Low -Medium Significance if the sites are older than 60 years.</p>

<p><b>Nature:</b> During the construction phase earthworks might impact on the recorded artefacts.</p>		
	<p><b>Without mitigation</b></p>	<p><b>With mitigation</b></p>
<p><b>Extent</b></p>	<p>Local (1)</p>	<p>Local (1)</p>
<p><b>Duration</b></p>	<p>Permanent (5)</p>	<p>Permanent (5)</p>
<p><b>Magnitude</b></p>	<p>Low (2)</p>	<p>Low (2)</p>
<p><b>Probability</b></p>	<p>Probable (3)</p>	<p>Probable (3)</p>
<p><b>Significance</b></p>	<p><b>24 (Low)</b></p>	<p><b>24 (Low)</b></p>
<p><b>Status (positive or negative)</b></p>	<p>Negative</p>	<p>Negative</p>
<p><b>Reversibility</b></p>	<p>Not reversible</p>	<p>Not reversible</p>
<p><b>Irreplaceable loss of resources?</b></p>	<p>Yes</p>	<p>Yes</p>
<p><b>Can impacts be mitigated?</b></p>	<p>Yes</p>	

<p><b>Mitigation:</b></p> <p>The remains of the dwelling are of low significance and no further action is necessary. (Please refer to section 8 for full details on recommendations).</p>
<p><b>Cumulative impacts:</b></p> <p>Archaeological and cultural sites are non-renewable and impact on any archaeological context or material will be permanent and destructive.</p>
<p><b>Residual Impacts:</b></p> <p>N.A</p>

## 8. RECOMMENDATIONS AND CONCLUSIONS

The impacts to heritage resources by the proposed power line alternatives for the Springfontein wind energy facility are considered to be low. There is a marked paucity of archaeological sites in the area where Gaigher (2013) investigated an area of approximately 85km<sup>2</sup> for the Springfontein wind energy facility, where studies conducted further west recorded a high frequency of Stone Age material (e.g. Van Ryneveld 2013). The only archaeological remains recorded in the study area consist of highly weathered isolated MSA artefacts scattered (**MSA scatter a-b**) over large areas close to ridges in the southern and western portion of the study area. These low frequency isolated artefacts are recorded as occurrences and does not constitute a site. These weathered occurrences are of low significance as they consist of ex situ surface material with no stratigraphy. The limited impact a small power line footprint will have on such a widely dispersed occurrence is extremely low and if alternative 1 or 3 are preferred no further mitigation is needed for this aspect. Apart from the Stone Age occurrences the demolished foundations of a rectangular stone structure was recorded located between alternative 1 and 2. No direct impact is foreseen on the site and if any of these two alternatives are preferred the site must be demarcated with danger tape during the construction phase. Two other sites are on record for the study area, the first is a Khoe Khoe engraving site next to a spring (Ouzman 2002). This site is located 2.7 km north of alternative 3 and no impact is foreseen on the site. The second site consist of a reconstructed Rice blockhouse located on a neighbouring farm 500 meters south of alternative 1 and again no impact is foreseen on the site. From a heritage point of view the impact on heritage resources will be extremely low and all 4 power line alternatives are acceptable.

A paleontological study was commissioned by Heritage Contracts and Archaeological Consulting CC by Dr Barry Millstead. His report is attached as Annexure A.

Due to the subsurface nature of archaeological material and unmarked graves the possibility of the occurrence of unmarked or informal graves and subsurface finds cannot be excluded. If during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find.

If the recommendations as made in section 8 of this report are adhered to (subject to approval from SAHRA) there is from an archaeological point of view no reason why the development should not proceed. If any possible finds such as tool scatters, bone or fossil remains are exposed or noticed during construction, the operations must be stopped and a qualified archaeologist must be contacted to assess the find.

## **9. PROJECT TEAM**

Jaco van der Walt, Project Manager and Archaeologist

Liesl Bester, Archival Specialist

## **10. STATEMENT OF COMPETENCY**

I (Jaco van der Walt) am a member of ASAPA (no 159), and accredited in the following fields of the CRM Section of the association: Iron Age Archaeology, Colonial Period Archaeology, Stone Age Archaeology and Grave Relocation. This accreditation is also valid for/acknowledged by SAHRA and AMAFA.

I have been involved in research and contract work in South Africa, Botswana, Zimbabwe, Mozambique, DRC and Tanzania; having conducted more than 300 AIAs since 2000.



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ANNEXURE A: DESKTOP PALAEOLOGICAL IMPACT ASSESSMENT REPORT ON THE SITE OF A 132 KV POWER LINE FOR THE SPRINGFONTEIN WIND ENERGY POWER FACILITY, NEAR SPRINGFONTEIN, FREE STATE PROVINCE