

# Appendix E (8): Heritage Impact Assessment



# HERITAGE SCOPING REPORT

For the Proposed Botterblom Wind Energy Facility Northern Cape Province, South Africa

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**EXECUTIVE SUMMARY**

FE Botterblom (Pty) Ltd (hereafter the Applicant) is proposing the development of a wind energy facility (WEF) and associated infrastructure on a site located approximately 53 kilometres (km) north of Loeriesfontein in the Northern Cape province of South Africa. The proposed development, to be known as Botterblom WEF, will generate electricity which will feed into the National Grid. Enviro-Insight has been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the requisite environmental impact assessment (EIA) process for the WEF. HCAC was appointed to conduct a Heritage Impact Assessment for the project, this report is for the scoping phase of the project and is based on a desktop study.

A marked paucity of Stone Age material is evident for the greater study area (Morris 2013; van der Walt 2012 and Fourie 2011). Closer to the study area, on the crests of small hills several LSA sites is recorded (van Schalkwyk 2011, Webley and Halkett 2012, Orton 2014, van der Walt 2014). Further away, in the area around Klawervlei and Waterkuil (Morris 2013), later Stone Age sites on dunes at the fringes of pans are plentiful. From these studies, it is clear that the distribution of sites may be highly structured relative to resources, principally water (e.g., Beaumont *et al.* 1995) and on the crests of small hills possibly providing vantage points. Recorded features in the study area include Later Stone Age sites with a background scatter of Middle Stone Age artefacts (Beaumont *et al.* 1995). Recorded lithics are mainly on cryptocrystalline quartz probably derived from numerous dolerite dykes and sills in the Loeriesfontein area, associated with several breccia pipes described in the literature. These hydrothermal vent complexes are likely to have produced a variety of fine-grained siliceous materials, including cryptocrystalline quartz that was preferred for tool making by Stone Age communities. In addition to the Stone Age sites a historical farmstead, and memorial is also on record for the study area.

It is recommended that the study area should be subjected to Heritage Impact Assessment and during this study the potential impact on heritage resources will be determined as well as levels of significance of recorded heritage resources. The HIA should also provide management and mitigation measures should any significant sites be impacted upon, ensuring that all the requirements of the SAHRA are met. The study area is of moderate to high paleontological sensitivity and according to the SAHRIS palaeontological sensitivity map must be subjected to a desktop palaeontological assessment in the impact assessment phase.

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## 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 million to 300 000 years ago)

Middle Stone Age (300 000 to 30 000 years ago)

Late Stone Age (30 000 years ago until recent)

Historic (approximately AD 1840 to 1950)

Historic building (over 60 years old)

Lithics: Stone Age artefacts

## **1. INTRODUCTION**

HCAC was contracted by Enviro-Insight CC to conduct a heritage scoping study for the proposed Botterblom WEF. The project is located approximately 53km north of Loeriesfontein, 87 km west of Brandvlei and 146 km south of Pofadder in the Northern Cape (Figure 1 to 2). The heritage scoping report forms part of the EIA for the proposed project.

The aim of the scoping report is to identify possible heritage resources within the project area and to submit appropriate recommendations with regards to the responsible cultural resources management measures that might be required within the framework provided by Heritage legislation.

The report outlines the approach and methodology utilized for the Scoping phase of the project. The report includes information collected from various sources and consultations. Possible impacts are identified, and mitigation measures are proposed in the following report.

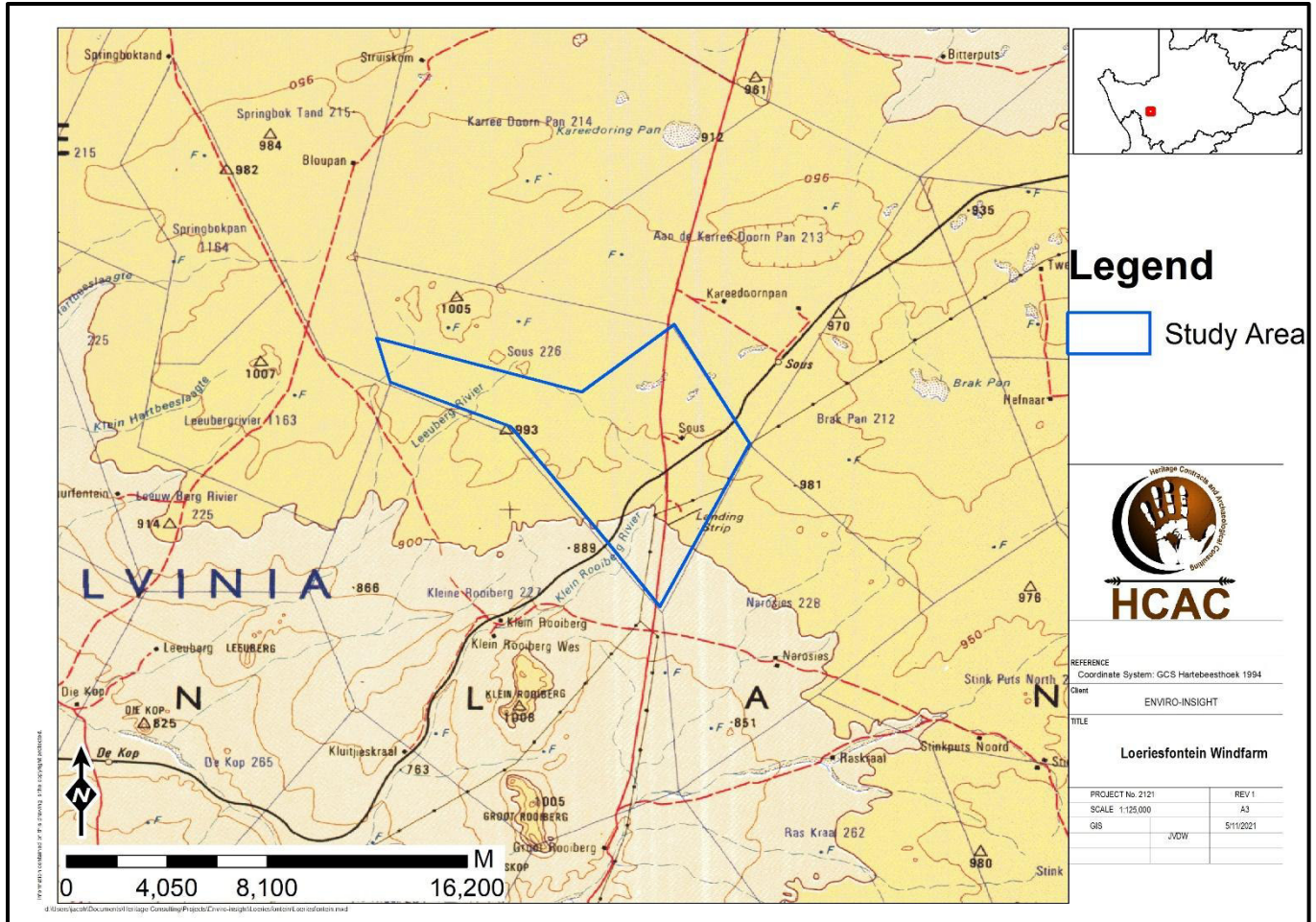


Figure 1. Regional setting of the study area.

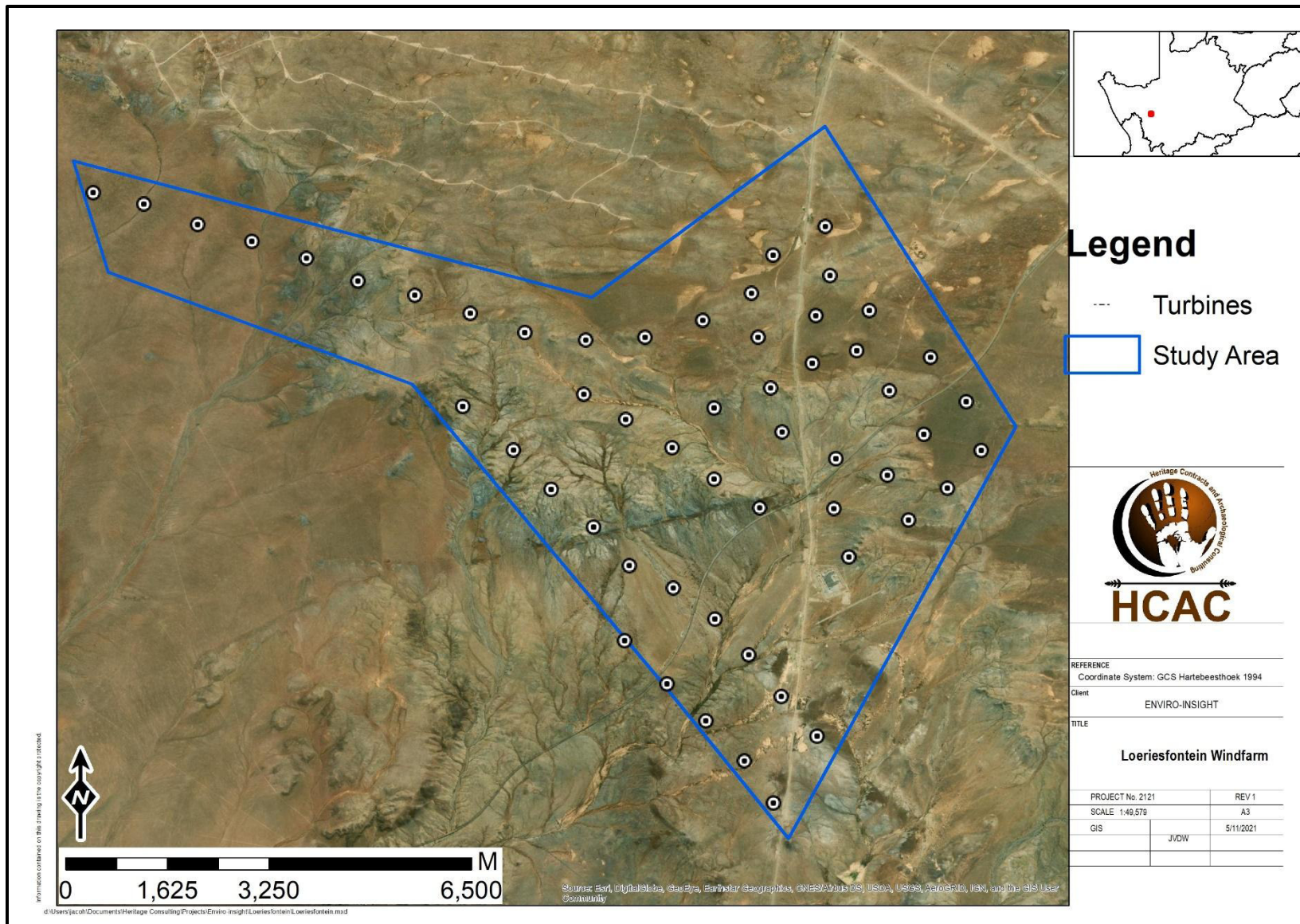


Figure 2. Proposed layout of the WEF.

## 1.1 Terms of Reference

The main aim of this scoping report is to determine if any known heritage resources occur within the study area and to predict the occurrence of any possible heritage significant sites that might present a fatal flaw to the proposed project. The objectives of the scoping report were to:

- » Conduct a desktop study:
  - \* Review available literature, previous heritage studies and other relevant information sources to obtain a thorough understanding of the archaeological and cultural heritage conditions of the area;
  - \* Gather data and compile a background history of the area;
  - \* Identify known and recorded archaeological and cultural sites;
  - \* Determine whether the area is renowned for any cultural and heritage resources, such as Stone Age sites, Iron Age sites, informal graveyards or historical homesteads.
  
- » Report

The reporting of the scoping component is based on the results and findings of the desk-top study, wherein potential issues associated with the proposed project will be identified, and those issues requiring further investigation through the IA Phase highlighted. Reporting will aim to identify the potential impacts of the proposed project activity on heritage resources. Reporting will also consider alternatives should any significant sites be impacted on by the proposed project. This is done to assist the developer in managing heritage resources in a responsible manner, in order to protect, preserve and develop them within the framework provided by Heritage Legislation.

## 1.2 Nature of the development

The Botterblom WEF will consist of up to 54 wind turbines, with a generation capacity of up to 6.5 MW per turbine. Each turbine will have a hub height of up to 150m and a rotor diameter of up to 175m. The final turbine model to be utilised will only be determined closer to the time of construction, depending on the technology available at the time. Additional ancillary infrastructure to the WEF would include underground and above-ground cabling between project components, onsite substation/s, foundations to support turbine towers, internal/ access roads (up to 10 m in width) linking the wind turbines and other infrastructure on the site, and permanent workshop area and office for control, maintenance, and storage. As far as possible, existing roads will be utilised and upgraded (where needed) with the relevant stormwater infrastructure and gates constructed as required. The perimeter of the proposed WEF may be enclosed with suitable fencing. A formal laydown area for the construction period, containing a temporary maintenance and storage building along with a guard cabin will also be established.

Additionally, the Applicant is proposing to construct the associated on-site substation and power line, both with a capacity of up to 132kV. This would feed into the existing national electricity grid at the Helios Main Transmission Substation (MTS) located within the property itself. This associated electrical infrastructure will require a separate Environmental Authorisation and is being conducted as a part of a separate Basic Assessment (BA) process.

### **1.3 The receiving environment**

The study area comprises relatively flat or gently undulating plains with shallow soil and shale exposures subject to considerable sheet erosion. Vegetation is sparse so that archaeological traces, likely to be at the surface in this erosional context, are likely to be very visible. If the site is visited in future sites might be exposed through sheet erosion.

Loeriesfontein falls within the bioregion described by Mucina *et al* (2006) as the Trans-Escarpment Succulent Karoo Bioregion and within the Succulent Karoo Biome. The vegetation type which occurs on the site is described as Hantam Karoo. Land use in the study area is characterized by agriculture, dominated by sheep farming; however, the carrying capacity of the region is very low. The study area is flat with rolling topography. Larger hills are present at a distance from the site to the South-west. The climate can be described as arid to semi-arid with rainfall occurring from November to April.

## **2. APPROACH AND METHODOLOGY**

The assessment is to be undertaken in two phases, a Scoping phase and a Heritage Impact Assessment phase as part of the Environmental Impact Assessment process, this report concerns the scoping phase. The aim of the scoping phase is to assess the study area at a desktop level to compile a background history of the study area, to identify possible heritage issues or fatal flaws that should be avoided during development.

This was accomplished by means of the following phases (the results are represented in section 4 of this report):

### **2.1 Literature search**

A literature search was conducted utilising data from published articles on the archaeology and history of the area. 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.

### **2.2 Information collection**

SAHRIS was consulted to collect data from CRM practitioners who undertook work in the area to provide the most comprehensive account of the history of the area where possible.

### **2.3 Public consultation**

A full public consultation process will be facilitated by Enviro-Insight CC. Any heritage concerns raised during this process will be addressed in the HIA.

### **2.4 Google Earth and mapping survey**

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

### **2.5 Genealogical Society of South Africa**

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

### 3. LEGISLATION

For this project the National Heritage Resources Act, 1999 (Act No. 25 of 1999) is of importance and the following sites and features are protected:

- a. Archaeological artefacts, structures and sites older than 100 years
- b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography
- c. Objects of decorative and visual arts
- d. Military objects, structures and sites older than 75 years
- e. Historical objects, structures and sites older than 60 years
- f. Proclaimed heritage sites
- g. Grave yards and graves older than 60 years
- h. Meteorites and fossils
- i. Objects, structures and sites of scientific or technological value.

The national estate that includes the following:

- a. Places, buildings, structures and equipment of cultural significance
- b. Places to which oral traditions are attached or which are associated with living heritage
- c. Historical settlements and townscapes
- d. Landscapes and features of cultural significance
- e. Geological sites of scientific or cultural importance
- f. Archaeological and palaeontological importance
- g. Graves and burial grounds
- h. Sites of significance relating to the history of slavery
- i. Movable objects (e.g. archaeological, palaeontological, meteorites, geological specimens, military, ethnographic, books etc.)

Section 34 (1) of the act deals with structures which is older than 60 years. Section 35(4) of this act deals with archaeology, palaeontology and meteorites. Section 36(3) of the National Heritage Resources Act, deals with human remains older than 60 years. Unidentified/unknown graves are also handled as older than 60 until proven otherwise.

### 3.1 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. 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. National and Provincial Monuments are recognised for conservation purposes. The following interrelated criteria were used to establish site significance:

- » The unique nature of a site;
- » The integrity of the archaeological/cultural heritage deposit;
- » 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 or is known);
- » The preservation condition of the site;
- » Potential to answer present research questions.

The criteria above will be used to place identified sites within SAHRA's (2006) system of grading of places and objects which form part of the national estate. This system is approved by ASAPA for the SADC region. The recommendations for each site should be read in conjunction with section 10 of this report.

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



## 4. REGIONAL OVERVIEW

### 4.1 General Information

#### 4.1.1. Literature search

The following reports were conducted in the immediate vicinity of the study area and were consulted for this report:

Author	Year	Project	Findings
Morris, D.	2007	Archaeological Specialist input with respect to the upgrading railway infrastructure on the Sishen-Saldanha ore line in the vicinity of Loop 7a near Loeriesfontein. McGregor Museum.	Minimal finds of Stone Age artefacts
Fourie, W.	2011	Heritage Impact Assessment for the proposed Solar Project on the farm Kaalspruit, Loeriesfontein.	Lithic Scatter
Almond, J. E.	2011	Palaeontological Desktop Study for the Proposed Mainstream Wind Farm Near Loeriesfontein, Namaqua District Municipality, Northern Cape Province.	2 sites were recorded
Van Schalkwyk, J.	2011	Heritage Impact Assessment for the proposed establishment of a wind farm and PV facility by Mainstream Renewable Power in the Loeriesfontein Region, Northern Cape Province.	LSA Sites
Van der Walt, J.	2012	Archaeological Impact Assessment for the proposed Hantam PV Solar Energy Facility on the farm Narosies 228, Loeriesfontein, Northern Cape Province	No Sites
Webley, L. Halkett, D.	2012	Heritage Impact Assessment: Proposed Loeriesfontein Photo-Voltaic Solar Power Plant On Portion 5 of the Farm Klein Rooiberg 227, Northern Cape Province.	LSA Sites
Morris, D.	2013	Specialist Input for the Environmental Basic Assessment And Environmental Management Program for the Khobab Wind Energy Facility: Power Line Route Options, Access Road And Substation Positions.	LSA Sites
Orton, J.	2014	Heritage Impact Assessment for the proposed re-alignment of the authorized 132kV Power Line for the Loeriesfontein 2 WEF, Calvinia Magisterial District, Northern Cape	LSA sites, historical farmstead and engravings
Van der Walt, J.	2017	Heritage walk down Helios Power Line	Stone Age Artefacts and historical farm stead

#### **4.1 2. Public consultation**

A public participation process is facilitated by Enviro-Insight as per the EIA process and the results will be included in the HIA.

#### **4.1.3. Google Earth and mapping survey**

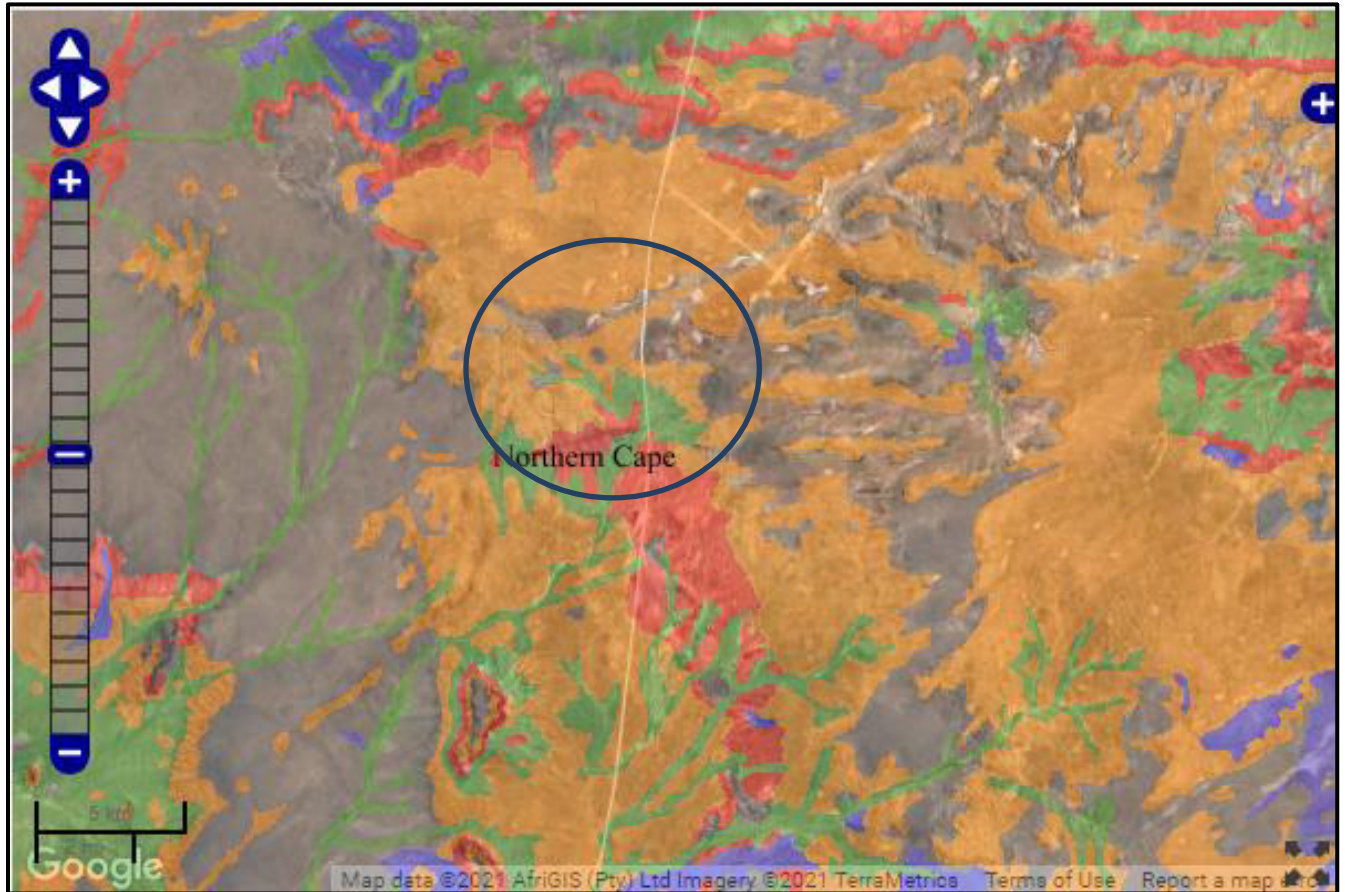
Google Earth and 1:50 000 maps of the area was utilised to identify possible places where archaeological sites might be located.

#### **4.1.4. Genealogical Society of South Africa**

No grave sites are indicated within the study area.

#### 4.2. Palaeontology

The study area ranges from moderate to very high palaeontological sensitivity (Figure 3) and further studies will be required in the EIA phase.



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

Figure 3. Palaeontological sensitivity map of the study area (blue polygon).

### **4.3 Archaeological and Historical Information Available on the Study Area”**

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

#### **4.3.1. Stone Age**

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

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

A marked paucity of Stone Age material is evident for the greater study area (Morris 2013; van der Walt 2012 and Fourie 2011). The area is characterised by highly eroded undulating surfaces and plains that lack features that might have focused past human activity. In contrast to this type of environment numerous small hills and pans occur to the west. On the crests of these small hills several LSA sites is recorded (van Schalkwyk 2011, Webley and Halkett 2012, Orton 2014, van der Walt 2014). Further away, in the area around Klawervlei and Waterkuil (Morris 2013) Later Stone Age sites on dunes at the fringes of pans are plentiful. From these studies, it is clear that the distribution of sites may be highly structured relative to resources, principally water (e.g., Beaumont *et al.* 1995) and on the crests of small hills. Recorded features include LSA sites with a background scatter of MSA artefacts (Beaumont *et al.* 1995). Recorded lithics are mainly on cryptocrystalline quartz probably derived from numerous dolerite dykes and sills in the Loeriesfontein area, associated with several breccia pipes described in the literature. These hydrothermal vent complexes are likely to have produced a variety of fine-grained siliceous materials, including cryptocrystalline quartz.

#### 4.3.2. Historical aspects

The project is in close proximity of the small town of Loeriesfontein, and the history of this town is therefore of importance. There are various theories as to where the name “Loeriesfontein” had its origin. The most likely of these is that the town is named after the Grey Loerie, a bird species that was apparently abundant in the area in the past. It is not known when this name first came into use. (Möller 1988)

One of the earliest white travellers who surveyed and drew maps of the area in which Loeriesfontein is today situated, was the secretary of Lord Macartney, John Barrow. In the late 1790s, Barrow drew up a map of the Northern Cape area. Place names like Kubiskow, Kamdani, Hantam River and Onder-Bokkeveld were indicated on the map, but Loeriesfontein was not yet present. Loeriesfontein was, in fact, first indicated on a map in 1860. In that year, the Land Surveyor, J. M. Wentzel received an order to measure and draw up the crown land farm known as Loeriesfontein. (Möller 1988).

In 1899, the first police station and police cells were erected at Loeriesfontein. By January 1904, when Loeriesfontein elected its first Town Council, there were 643 white and 436 coloured individuals living there. The first white church in the town was established in 1916. (Möller 1988) The town received municipal status in 1958, and hereafter several other developments took place. Loeriesfontein was provided with electricity in June 1960, and in 1972 the town got its own coat of arms. In 1985, the town had a population of 357 whites, 1538 coloureds and 15 blacks. (Möller 1988)

The Cape Military Police Station seems to have been located on the farm, Narosies, up until 1905, when it was abolished. (Cape Town Archives Repository 1905) This may serve as evidence that the farm was in public ownership in the early 1900s.

#### 4.3.3. Anglo-Boer War

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

#### 4.3.4. Cultural Landscape

The area is undeveloped and characterised by sparse vegetation used for grazing. The pre-colonial landscape consists of widespread Stone Age occupation. The study area is surrounded by renewable energy facilities, gravel roads, power lines and railroad infrastructure and the proposed development and will have an impact on the cultural landscape.

### 5. PROBABILITY OF OCCURRENCE OF SITES

Based on the above information, it is possible to determine the probability of finding archaeological and cultural heritage sites within the study area to a certain degree. For the purposes of this section of the report the following terms are used – low, medium and high probability. Low indicates that no known occurrences of sites have been found previously in the general study area, medium probability indicates some known occurrences in the general study area are documented and can therefore be expected in the study area and a high probability indicates that occurrences have been documented close to or in the study area and that the environment of the study area has a high degree of probability having sites.

#### » Palaeontological landscape

Fossil remains. *Medium - High probability.*

» Archaeological And Cultural Heritage Landscape

NOTE: *Archaeology is the study of human material and remains (by definition) and is not restricted in any formal way as being below the ground surface.*

*Archaeological remains dating to the following periods can be expected within the study area:*

» Stone Age finds

*ESA: Medium to High Probability*

*MSA: Medium to High Probability*

*LSA: Medium to High Probability*

*LSA –Herder: Medium to High Probability*

» Iron Age finds

*EIA: Low Probability*

*MIA: Low Probability*

*LIA: Low -Medium Probability*

» Historical finds

*Historical period: Medium to High Probability*

*Historical dumps: Low-Medium Probability*

*Structural remains: Medium to High Probability*

*Cultural Landscape: low probability*

» Living Heritage

*For example, rainmaking sites: Low Probability*

» Burial/Cemeteries

*Burials over 100 years: Medium to High Probability*

*Burials younger than 60 years: Medium to High Probability*

*Subsurface excavations including ground levelling, landscaping, and foundation preparation can expose any number of these.*

## **6. ASSUMPTIONS AND LIMITATIONS**

The study area was not subjected to a field survey and this together with an impact assessment will be conducted in the EIA phase. It is assumed that information obtained for the wider area is applicable to the study area. The author acknowledges that the brief literature review is not exhaustive on the literature of the area. Due to the subsurface nature of archaeological artefacts, the possibility exists that some features or artefacts may not have been discovered/recorded during the survey, similarly the possible occurrence of graves and other cultural material cannot be excluded. This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components would have been highlighted through the public consultation process if relevant. It is possible that new information could come to light in future, which might change the results of this scoping report.

## **7. FINDINGS**

Previous studies in the area recorded several heritage sites mostly related to the Stone Age (LSA sites and MSA background scatter). These sites are marked by ostrich eggshell fragments and lithics on Cryptocrystalline silicate (CCS) and hornfells often on elevated areas and close to water sources. The distribution of the Stone Age sites is spatially illustrated in Figure 4. A historical farmstead (Figure 5), and memorial is also on record for farm Sous 226 at S30° 28' 33.2", E19° 33' 52.4" (Figure 6). This farmstead was also recorded by Orton (2014) and Van der Walt (2017).

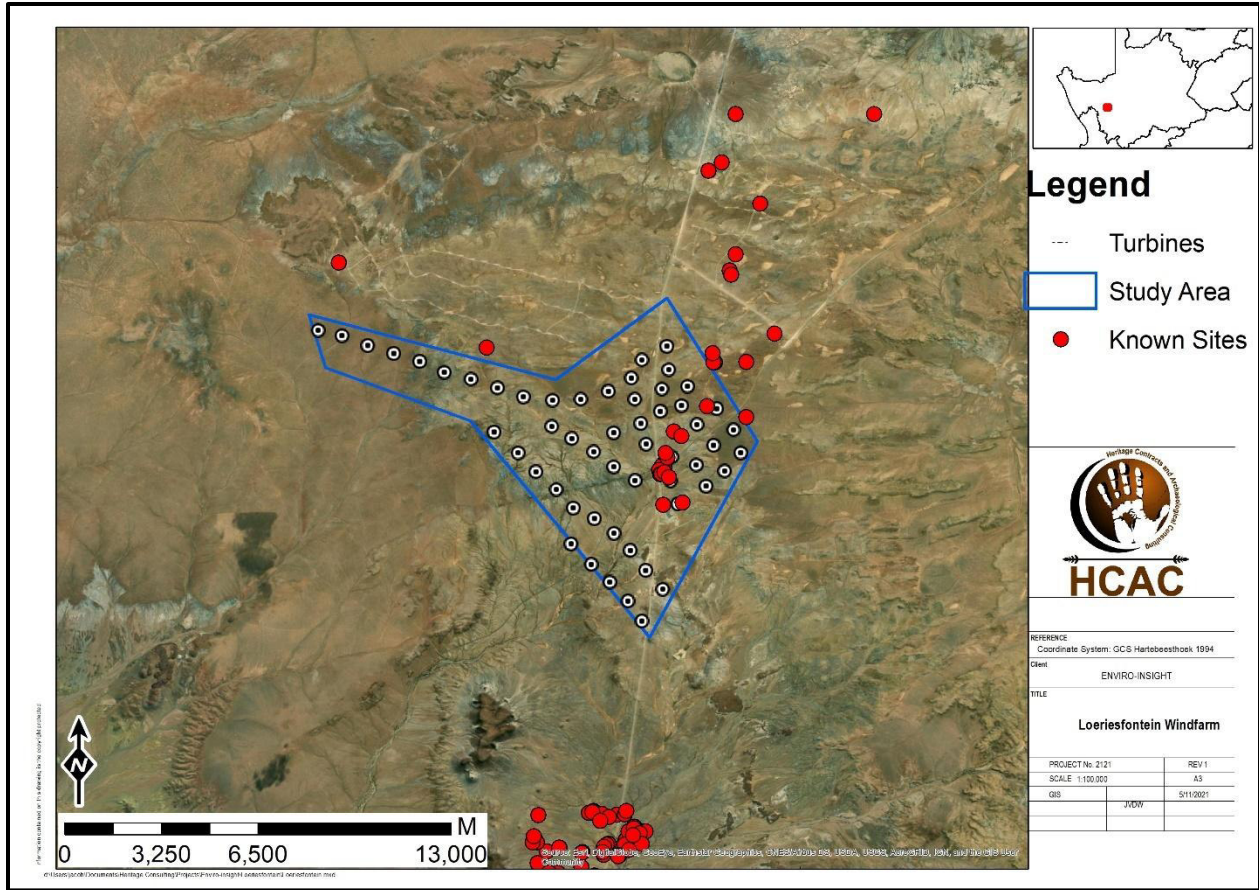


Figure 4. Known sites in relation to the layout.





Figure 5. Farmstead in the study area.



Figure 6. Inscription on the memorial.



Figure 7. General view of the memorial.

## 8. POTENTIAL SIGNIFICANCE OF HERITAGE RESOURCES

Based on the current information obtained for the area at a desktop level it is anticipated that any archaeological sites that occur within the proposed development area will have a Generally Protected A (GP.A) field rating and all sites should be mitigatable. Graves are of high social significance (Field rating GP A) and can be expected anywhere on the landscape.

## **9. CONCLUSION AND PLAN OF STUDY FOR EIA**

This scoping study recorded numerous Stone Age features, a historical farmstead, and memorial within the study area. These features, if impacted on, will require mitigation as a second phase of study. Therefore, to comply with the National Heritage Resources Act (Act 25 of 1999) it is recommended that a Phase 1 Heritage Impact Assessment must be undertaken for the study area. During the HIA the potential impact on heritage resources will be determined as well as levels of significance of recorded heritage resources. The HIA will also provide management and mitigation measures should any significant sites be impacted upon, ensuring that all the requirements of the SAHRA are met. The study area is of moderate to very high paleontological sensitivity and according to the SAHRIS palaeontological sensitivity map must be subjected to a desktop palaeontological assessment in the impact assessment phase.

## **10 LIST OF PREPARERS**

Jaco van der Walt (Archaeologist and project manager)

## **11. STATEMENT OF COMPETENCY**

The author of the report is a member of the Association of Southern African Professional Archaeologists and is also accredited in the following fields of the Cultural Resource Management (CRM) Section, member number 159: Iron Age Archaeology, Colonial Period Archaeology, Stone Age Archaeology and Grave Relocation. He is also a member of the Association of Professional Heritage Practitioners (#114). Jaco is also an accredited CRM Archaeologist with SAHRA and AMAFA.

Jaco has been involved in research and contract work in South Africa, Afghanistan, Botswana, Mozambique, Zimbabwe, Zambia, Guinea, Tanzania, Afghanistan, and the DRC and conducted well over 500 AIAs since he started his career in CRM in 2000. This involved several mining operations, Eskom transmission and distribution projects and renewable energy developments. The results of several of these projects were presented at international and local conferences.

## 12. STATEMENT OF INDEPENDENCE

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 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.



**SIGNATURE:**

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