

**Heritage Impact Assessment (including Palaeontological Desk Assessment)
for a Mining Right Application on the Remaining Extent of Portion 1 (Paals
Werf) of the farm Saxendrift 20, near Prieska, Northern Cape**

Prepared by

Edward Matenga

(PhD Archaeology & Heritage, MPhil, Archaeology; Uppsala/Sweden)

31 March 2022



(AHSA) Archaeological and Heritage Services Africa (Pty) Ltd

Reg. No. 2016/281687/07

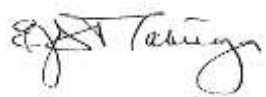
48 Jacqueline Street, The Reeds, 0157, Centurion, Pretoria

Email: e.matenga598@gmail.com.

Cell: +27 73 981 0637 / +2784 073 7774

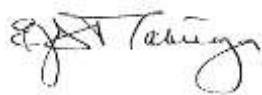
Website: www.archaeologicalheritage.co.za

| APPLICANT | ENVIRONMENTAL CONSULTANT |
|---------------------|--|
| COPTRA-SA (PTY) LTD | Wadala Mining and Consulting (Pty) Ltd |

| | Name | Signature | Date |
|---------------------|------------|--|---------------|
| FIELD WORK & REPORT | E. Matenga |  | 30 March 2022 |

DECLARATION OF INDEPENDENCE

AHSA Pty Ltd is an independent consultancy: I hereby declare that I have no interest, be it business, financial, personal or other vested interest in the undertaking of the proposed activity, other than remuneration for work performed in terms the National Heritage Resources Act (No 25 of 1999).



Full Name: Edward J. Matenga

Title / Position: Heritage Management Consultant

Qualifications: PhD (Archaeology & Heritage, Uppsala University, Sweden), MPhil (Uppsala), Certificate in the Integrated Conservation of Territories and Landscapes of Heritage Value (ICCROM, Rome)

TABLE OF CONTENTS

| | |
|--|----|
| ABBREVIATIONS | 4 |
| EXECUTIVE SUMMARY | 5 |
| 1. INTRODUCTION | 9 |
| 1.1. Location and physical setting | 9 |
| 2. LEGAL FRAMEWORK..... | 13 |
| 2.1. Section 38 of NHRA: Heritage Impact Assessments | 13 |
| 2.2. Definition of heritage (National Estate) | 13 |
| 2.3. Protection of buildings and structures older than 60 years | 13 |
| 2.4. Protection of archaeological sites..... | 14 |
| 2.5. Graves and burial grounds | 14 |
| 2.6. The National Environmental Management Act (No 107 of 1998) | 14 |
| 2.7. The Burra Charter on Conservation of Places of Cultural Significance..... | 15 |
| 3. METHODOLOGY AND THEORETICAL APPROACHES | 15 |
| 3.1. Literature survey | 15 |
| 3.2. Fieldwork | 16 |
| 4. ARCHAEOLOGICAL AND HISTORICAL CONTEXT..... | 17 |
| 4.1. Cultural sequence summary | 17 |
| 4.2. Appearance of hominids | 17 |
| 4.3. The Early Stone Age..... | 18 |
| 4.4. The Iron Age Culture [ca. 2000 years BP] | 19 |
| 4.5. Historical Context | 19 |
| 5. FINDINGS OF THE HERITAGE SURVEY | 20 |
| 5.1. The Stone Age..... | 20 |
| 5.2. The Iron Age | 20 |
| 5.4. Burial ground | 20 |
| 5.5. Significance ranking of findings | 23 |
| 5.6. Assessment of Impacts using the Heritage Impact Assessment Statutory Framework | 24 |
| 5.7. Risk Assessment of the findings..... | 25 |
| 6. CONCLUSION AND RECOMMENDATIONS | 25 |
| 7. CATALOGUE OF HERITAGE SITES | 26 |
| 8. REFERENCES..... | 43 |
| 9. MAPS OF THE TRACK LOG | 46 |

ABBREVIATIONS

| | |
|-------|---|
| EIA | Environmental Impact Assessment |
| HIA | Heritage Impact Assessment |
| LSA | Late Stone Age |
| LIA | Later Iron Age |
| PHRA | Provincial Heritage Resources Authority |
| MSA | Middle Stone Age |
| NHRA | National Heritage Resources Act |
| SAHRA | South African Heritage Resources Agency |

EXECUTIVE SUMMARY

1. A Heritage Impact Assessment (HIA) study was undertaken for a mining right application on the Remaining Extent of Portion 1 (Paals Werf) of the farm Saxendrift 20 near Prieska, in the Siyathemba Local Municipality, Northern Cape. The HIA report has been prepared in accordance with Section 38(8) of the National Heritage Resources Act (25/1999) which entailed a site visit and ground survey undertaken on 10 March 2022 to assess the heritage sensitivity of the area and to determine potential adverse impacts of the proposed activities on the heritage resources.
2. The findings of the heritage survey are summarised as follows:
3. *The Stone Age*
Stone Age tools occurred in all but two of the 18 recorded instances. The typology is dominated by scrapers, while there are a few blades. Handaxes were recorded in two instances; the handaxe is recognised as a type tool of the Early Stone Age period. Otherwise a majority of the finds date from the Middle Stone Age (MSA) to the Late Stone Age (LSA). No significant concentrations of artefacts were encountered.
4. *The Iron Age*
No Iron Age sites or relics were found on the property.
5. *Modern period*
A setting of stones (stones in a single file) forming a semi-circle was recorded (SXD 12). The purpose of the structure could not be ascertained. It was ranked as of low value.
6. *Burial ground*
No burial grounds were found or reported on the property.

7. Table 2: Inventory of sites

| SITE NO | LATITUDE | LONGITUDE | PERIOD | DESCRIPTION | RANKING | MITIGATION |
|---------|---------------|---------------|---------------|---|----------|-------------------|
| SXD01 | 29°18'42.10"S | 23°19'48.20"E | MSA/LSA | Flat area with red gravels, sparse thorns. 2 cores, 1 scraper, 1 flake. | Local 3C | No further action |
| SXD02 | 29°18'45.70"S | 23°19'40.80"E | MSA/LSA | Flat area with red gravel and calcrete mix. 6 lithics – 4 scrapers, 2 blades. | Local 3C | No further action |
| SXD03 | 29°18'27.30"S | 23°19'42.80"E | MSA/LSA | Flat terrain with red gravel, calcrete gravel and exposed calcrete hard pan. | Local 3C | No further action |
| SXD04 | 29°18'23.80"S | 23°19'35.20"E | MSA/LSA | Southern edge of the glacial tillite deposits, moderate to dense black thorn cover. 8 lithics – 6 scrapers, 2 blades. | Local 3C | No further action |
| SXD05 | 29°18'18.97"S | 23°19'27.20"E | MSA/LSA | On the edge of a stream cutting through glacial tillite deposits. Sparse thorn bushes. 4 lithics found – flakes | Local 3C | No further action |
| SXD06 | 29°17'53.10"S | 23°19'11.00"E | MSA/LSA | On the glacial tillites, red gravel on a gentle slope which forms the valley side of a stream. 5 lithics – 1 crude handaxe, 2 blades, 1 broken parallel blade, 1 scraper. | Local 3C | No further action |
| SXD07 | 29°17'22.20"S | 23°18'53.90"E | MSA/LSA | On the glacial tillite deposits. Fine calcrete waste and exposures of hardpan. 2 Lithics – scraper and blade. | Local 3C | No further action |
| SXD08 | 29°16'53.00"S | 23°18'40.20"E | MSA/LSA | Flat terrain, fine calcrete gravel and exposures of solid calcrete surface. 6 lithics - 1 blade, 3 scrapers, 2 flakes. | Local 3C | No further action |
| SXD09 | 29°16'52.70"S | 23°18'42.40"E | MSA/LSA | Northern part of the property overlooking the Orange River. 3 lithics - flake scrapers. | Local 3C | No further action |
| SXD10 | 29°17'42.90" | 23°18'52.90"E | MSA/LSA | Summit of the glacial tillite deposits, red stones on the surface. 3 scrapers. | Local 3C | No further action |
| SXD11 | 29°17'32.10"S | 23°18'55.60"E | 20th Century? | Setting of stones forms a semi-circle or horseshoe opening to the north. | Local 3C | No further action |
| SXD12 | 29°17'58.10"S | 23°19'10.00"E | MSA/LSA | Glacial tillite deposits, red gravel on the surface, sparse black thorn bushes. A scraper and handaxe. | Local 3C | No further action |

| | | | | | | |
|-------|---------------|---------------|--------------------------|--|----------|----------------------|
| SXD13 | 29°18'27.30"S | 23°19'42.80"E | 20 th century | Trigonometrical beacon at an altitude an altitude of 1058 m AMSL. | Local 3C | Will not be affected |
| SXD14 | 29°18'48.80"S | 23°19'42.00"E | MSA/LSA | Southern part of the property. Flat terrain with surface calcrete gravel and red stones. 4 lithics – 2 blades, 2 flakes. | Local 3C | Wil not be affected |
| SXD15 | 29°18'55.80"S | 23°20'2.80"E | MSA/LSA | Southern part of the property with surface red gravels. Black thorn bushes. 2 scrapers. | Local 3C | Wil not be affected |
| SXD16 | 29°19'12.90"S | 23°20'16.20"E | MSA/LSA | Southern part of the property with surface red gravels and calcrete waste. Black thorn bushes. Flake waste. | Local 3C | Wil not be affected |
| SXD17 | 29°19'32.20"S | 23°20'10.80" | ESA | Southern part of the property with surface red stones and calcrete gravel. Sparse black thorn bushes. 1 handaxe. | Local 3C | Wil not be affected |
| SXD18 | 29°19'34.70"S | 23°20'18.60" | MSA/LSA | Southern part of the property with surface red gravels. Sparse trees. Flake waste. | Local 3C | Wil not be affected |

8. Significance ranking of findings

| GRADE | RANKING | SIGNIFICANCE | NO OF SITES |
|-------|------------|---|-------------|
| 1 | National | Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 1, 2 or 3A heritage resources | 0 |
| 2 | Provincial | Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 2 heritage resources | 0 |
| 3A | Local | Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 3A heritage resources | 0 |
| 3B | Local | Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3B heritage resources | 0 |
| 3C | Local | Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3C heritage resources | 18 |
| | | TOTAL | 18 |

9. Conclusion and Recommendations

As the heritage sensitivity of the property is considered to be low, the mine can be given a greenlight to ahead. The study is mindful that some important discoveries may occur during the prospecting and mining phases. If this happens operations should be halted, and the provincial heritage resources authority or SAHRA notified in order for an investigation and evaluation to be undertaken.

1. INTRODUCTION

A Heritage Impact Assessment (HIA) study was undertaken for a mine prospecting right application on the Remaining Extent of Portion 1 (Paals Werf) of the farm Saxendrift 20 near Prieska, in the Siyathemba Local Municipality, Northern Cape. The HIA report has been prepared in accordance with Section 38(8) of the National Heritage Resources Act (25/1999) which entailed a site visit and ground survey undertaken on 10 March 2022 to assess the heritage sensitivity of the area and to determine potential adverse impacts of the proposed activities on the heritage resources. Prospecting for minerals entail the following activities which may result in the disturbance or destruction of heritage resources:

- Open excavations and trenches
- Test pits
- Drilling
- Opening of temporary service roads
- Location of processing plant

1.1. Location and physical setting

Portion 1 of the Farm Saxendrift 20 is situated between the R357 road from Douglas to Prieska and the Orange River. At a distance of 50 km from Douglas along the R357 Rd, there is an access gravel road offsetting north to the farm a distance of 4 km from the main road (Figure 1). The southern part of farm is generally flat with surface red-brown gravels mixed with calcrete waste. The Rooikoppie gravels represent a derived or delation deposit formed on top of the calcrete by liberation of durable clasts from the calcrete during chemical weathering and deflation. They are stained red by oxidation which creates an iron oxide slip. A northern portion of the farm which overlooks the Orange River consists of an elevated deposit of glacial tillites. It is believed that millions years before the present the thick ice sheets that covered the earth started to melt leaving behind massive deposits of heterogenous deposits which became the Dwyka tillites which flank the mid-Orange River. A number of streams cutting across the Dwyka tillites into the Orange River created small valleys, spurs and low ridge. In a central area south above the tillite deposits, there are superficial deposits of Kalahari sands. Vegetation is karoo scrub dominated by the black thorn *Acacia mellifera subsp. Detinens* (*haakbos* in Afrikaans) (Figures 2 -6).



Fig 1. Google-Earth map shows the location the farm Saxendrift 20 between the Orange River and R357 road from Douglas to Prieska in the Northern Cape Province



Figure 2. In a central part of the farm at the point where the ground dips north towards the Orange River, there are dense black thorn bushes, surface grit, a mixture of red gravels and calcrete



Figure 3: Glacial tillite deposits and a stream cutting a course north into the Orange River



Figure 4: Rooikoppie gravel occurs in a south central part of the property



Fig 5. Exposures of solid calcrete surface in the northern part of the farm towards the Orange River



Fig 6. In a central part of the farm on top of tillite deposit, there superficial layer of Kalahari sands which can be seen on the edge of the unpaved road

2. LEGAL FRAMEWORK

A number of sections of the National Heritage Resources Act (No 25/1999) are applied with regard to Heritage Impact Assessments - Sections 34, 35, 36 and 38.

2.1. Section 38 of NHRA: Heritage Impact Assessments

Section 38 of the NHRA states the nature and scale of development which triggers a HIA:

38. (1) *Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—*

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50 m in length;

(c) any development or other activity which will change the character of a site—

*(i) **exceeding 5 000 m² in extent**¹; or*

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m² in extent; or

(e) any other category of development provided for in the regulations by SAHRA or a provincial heritage resources authority,

must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

2.2. Definition of heritage (National Estate)

Section 3 lists a wide range of cultural phenomena which could be defined as heritage, or the *National Estate* (3(2)). Section 3(3) outlines criteria upon which heritage value is ascribed. This Section is useful as a field checklist for the identification of heritage resources.

2.3. Protection of buildings and structures older than 60 years

Section 34 provides automatic protection for buildings and structures more than 60 years old until it can be proven that they do not have heritage value:

¹ Areal extent of the proposed development triggers the HIA.

- (1) *No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.*

2.4. Protection of archaeological sites

Section 35 (4) of the NHRA prohibits the destruction of archaeological, palaeontological and meteorite sites:

No person may, without a permit issued by the responsible heritage resources authority—

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;

(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;

(c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or

(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

2.5. Graves and burial grounds

Section 36 of the NHRA provides for the protection of certain graves and burial grounds. Graves are generally classified under the following categories:

- Graves younger than 60 years;
- Graves older than 60 years, but younger than 100 years;
- Graves older than 100 years; and
- Graves of victims of conflict
- Graves of individuals of royal descent
- Graves that have been specified as important by the Ministers of Arts and Culture.

This study is however mindful of public sensibilities about the sanctity of graves and burial grounds whether they are protected by the law or not.

2.6. The National Environmental Management Act (No 107 of 1998)

This act states that a survey and evaluation of cultural resources must be done in areas where development projects that will affect the environment will be undertaken. The impact of the

development on these resources should be determined and proposals for the mitigation thereof are made. Environmental management is a much broader undertaking to cater for cultural and social needs of people. Any disturbance of landscapes and sites that constitute the nation's cultural heritage should be avoided as far as possible and where this is not possible the disturbance should be minimized and remedied.

2.7. The Burra Charter on Conservation of Places of Cultural Significance

Some generic principles and standards for the protection of heritage resources in South Africa are drawn from international charters and conventions. In particular South Africa has adopted the **ICOMOS Australia Charter for the Conservation of Places of Cultural Significance (the Burra Charter 1999)** as a benchmark for best practice in heritage management.

3. METHODOLOGY AND THEORETICAL APPROACHES

3.1. Literature survey

A review of all available relevant literature included reports of previous HIAs conducted in the Vaal-Orange River Basins. Most literature is now available on internet portals. Plan documents were made available. This author is familiar with the area having conducted a number of Heritage Impact Assessment studies in the last five years:

Matenga E. 2019. *Phase I Heritage Impact Assessment (including Palaeontological Desk Assessment) Requested in terms of Section 38 of the National Heritage Resources Act No 25/1999 for the Proposed Mine Prospecting on a Portion of the Remaining Extent of the Farm Remhoogte 152 Prieska, Northern Cape Province.* As with Saxendrift 120, the farm Remhoogte 152 is located between the Orange River and the R357 road from Douglas to Prieska, 40 km west of Saxendrift. Scatters of stone tools comprising mainly scrapers, cores, flake waste and blades were recorded. A relatively high frequency of blades was noticed in comparison to encounters during other studies in the area. The predominant raw material was chert; dolomite were encountered in one instance. There was a significant occurrence of cores suggesting manufacturing activity. A grinding stone was a rare find.

Matenga, E. 2019. *Phase I Heritage Impact Assessment (including palaeontological assessment) requested in terms of section 38 of the national heritage resources act no 25/1999 for the proposed mine prospecting and application for mining right on a portion of the remaining extent of the farm Kransfontein 19 & portion 2 (de rust) of the farm Kransfontein 19.* These properties are set against the south bank of the Orange River 10km east of the farm Saxendrift 20. Low density scatters of lithics

observed comprising mainly scrapers, flakes and a few blades and cores. Twenty-one (21) sites were recorded. Sites in the central part of the property indicate possible raw material source areas, but no specific workshop locales could be defined to warrant further investigation. A burial ground with 22 graves was recorded (page 8).

Matenga, E. 2017. *Phase I Heritage Impact Assessment (including Palaeontological Desk Assessment) Requested in terms of Section 38 of the National Heritage Resources Act (No 25/1999) for the Proposed Mine Prospecting on the Remaining Extent of Portion 1 of the Farm Viegulands Put 42, Prieska District, Northern Cape Province.* As with Saxendrift 20, the farm Viegulands Put 42 is located between the Orange River and the R357 Rd from Douglas to Prieska, 20 km west of Saxendrift. Low density scatters of lithics were recorded on the property. The stone tools comprised mainly scrapers, flakes and a few blades and cores. The artifacts were of a Middle Stone Age/ Late Stone Age date, except a single occurrence of a handaxe which possibly dated to the Early Stone Age (Page 22).

3.2. Fieldwork

The author visited the farm on 10 March 2022 in the company of an assistant. The ground survey was undertaken by means of a vehicle which followed prepared tracks. Along the way we stopped to undertake random surveys of the tracks. The plain on the southern part of the farm was easy to walk. Black thorn (*swarthaak*) cover over the ridges, spurs and stream valleys on the northern part of the farm presented slowed down the survey off the tracks.

4. ARCHAEOLOGICAL AND HISTORICAL CONTEXT

An outline of the cultural sequence in South Africa is presented here as a theoretical framework for the identification of features / structures and objects of archaeological, historical and cultural interest.

4.1. Cultural sequence summary²

Table 1: Cultural Sequence in South Africa

| PERIOD | EPOCH | ASSOCIATED CULTURAL GROUPS | TYPICAL MATERIAL EXPRESSIONS |
|---|------------------------------|--|--|
| Early Stone Age 2.5m – 250 000 YCE | Pleistocene | Early Hominids: <i>Australopithecines</i> <i>Homo habilis</i> <i>Homo erectus</i> | Typically large stone tools such as hand axes, choppers and cleavers. |
| Middle Stone Age 250 000 – 25 000 YCE | Pleistocene | First <i>Homo sapiens</i> species | Typically smaller stone tools such as scrapers, blades and points. |
| Late Stone Age 20 000 BC – present | Pleistocene / Holocene | <i>Homo sapiens</i> including San people | Typically small to minute stone tools such as arrow heads, points and bladelets. |
| Early Iron Age / Early Farmer Period c300 – 900 AD (or earlier) | Holocene | Iron Age Farmers | Typically distinct ceramics, bead ware, iron objects, grinding stones. |
| Later Iron Age 900ADff | Holocene | Iron Age Farmers, emergence of complex state systems | Typically distinct ceramics, evidence of long distance trade and contacts |
| (ii) Mapungubwe (K2) | 1350AD | | Metals including gold, long distance exchanges |
| (ii) Historical period | Tswana / Sotho, Nguni people | Iron Age Farmers | Stone walls Mfecance / Difaqane |
| (iii) Colonial period | 19 th Century | European settlers / farmers / missionaries/ industrialisation | Buildings, Missions, Mines, metals, glass, ceramics |

4.2. Appearance of hominids

South Africa has yielded a very good fossil record of the ancient hominids. These are remains of proto-humans which appeared in South Africa more than 3million years ago. Three famous sites in Gauteng, Limpopo and Northwest Provinces have been collectively named the Cradle of Humankind and inscribed as UNESCO World Heritage Site as a serial nomination.³ One of these sites Taung near Vryburg is 240 km northwest of the study area. To our knowledge no hominid sites have been reported in the vicinity of the study area.

² Adapted from Exigo Consultancy. 2015. Frances Baard District Municipality: Proposed Nkandla Extension 2 Township Establishment, Erf 258 Nkandla, Hartswater, Northern Cape Province.

³ Deacon, J. and N. Lancaster. 1986. *Later Quaternary Palaeoenvironments of Southern Africa*. Oxford: Oxford University Press.

4.3. The Early Stone Age

4.3.1. *The Early Stone Age (2 million to 250 000 years BP)*

The Stone Age dates back more than 2 million years representing a more explicit beginning of the cultural sequence divided into three epochs, the Early, Middle and Late Stone Ages. These early people made stone and bone implements. Material evidence is found in caves, rock-shelters and on river sides and edges of streams, and very rarely seen in open country. Such tools bore a consistent shape such as the pear-shaped handaxe, cleavers and core tools (Deacon & Deacon, 1999). These tool industries have been called Oldowan and Acheulean and were probably used to butcher large animals such as elephants, rhinoceros and hippopotamus. Acheulean artefacts are usually found near sites where they were manufactured and thus in close proximity to the raw material or at kill sites. The early hunters are classified as hominids meaning that they had not evolved to the present human form.

A good profile of the Stone Age in the Northern Cape has been reconstructed from many heritage impact assessments that have been conducted in recent years. Locales along and adjacent to the Orange – Vaal River basin have yielded evidence of great interest.⁴ Further north the Wonderwerk Cave has become a benchmark for the characterisation of the Stone Age. Excavations reveal a long sequence of occupation spanning the Early (ESA), Middle (MSA) and Later Stone Ages.⁵

4.3.2. *Middle Stone Age (MSA) [250 000 yrs – 30 000 yrs BP]*

The Middle Stone Age (MSA), which appeared 250 000 years ago, is marked by the introduction of a new tool kit which included prepared cores, parallel-sided blades and triangular points hafted to make spears. By then humans had become skilful hunters, especially of large grazers such as wildebeest, hartebeest and eland. It is also believed that by then, humans had evolved significantly to become anatomically modern. Caves were used for shelter suggesting permanent or semi-permanent settlement. Furthermore there is archaeological evidence from some of the caves indicating that people had mastered the art of making fire.⁶ A number of field surveys carried out around in the Orange River attest to the presence of Middle Stone Age tools comprising mostly scrapers and blades.

4.3.3. *Late Stone Age (LSA)[40 000 yrs to ca2000 yrs BP]*

By the beginning of the LSA, humans are classified as *Homo sapiens* which refer to the modern physical form and thinking capabilities. Several behavioural traits are exhibited, such as rock art and purposeful

⁴ Morris, D. 2009. Phase 1 Archaeological Impact Assessment at Bucklands Settlement near Douglas, Northern Cape, p3.

⁵ <http://www.southafrica.net/za/en/articles/entry/article-southafrica.net-the-wonderwerk-cave>.

⁶ Deacon, J & H. Deacon. 1999. *Human Beginnings in South Africa*. Cape Town: David Philip.

burials with ornaments, became a regular practice. LSA technology is characterised by microlithic scrapers and segments made from very fine-grained rock. Spear hunting continued, but LSA people also hunted small game with bows and poisoned arrows. Because of poor preservation, open sites become of less value compared to rock shelters. The practitioners of the Late Stone Age as with Rock Art are ancestors of the Khoisan.⁷ Rock engravings are found on the farm Katlani on the north bank of the Orange River 30 km upstream from Saxendrift.

4.4. The Iron Age Culture [ca. 2000 years BP]

The Iron Age culture supplanted the Stone Age at least 2000 years ago, associated with the introduction of farming and use of several metals and pottery. Iron Age communities are believed to have been speakers of Bantu languages who practiced agriculture and kept domestic animals such as cattle, sheep, goat and chickens. There is however increasing evidence that sheep and probably cattle as well might have moved into the area much earlier than the Iron Age.⁸

There are few if any sites attributed to the EIA in the western parts of the country. Most IA settlements are concentrated in the eastern part of South Africa (Phillipson 2005). The woodland zone was preferred for settlement, but there is strong possibility that transhumant pastoralism was practiced and seasonal hunting camps were established in the inhospitable western regions of the country. The Later Iron Age is marked by the presence of extensive stonewalled settlements such as the Tlhaping capital at Dithakong near Kuruman.⁹

4.5. Historical Context

The study area is historically home to the various groups of Tswana speakers certainly descending from the Iron Age and possibly some with Stone Age roots. Prieska, located 70km west of the study area, was established in the 1870s becoming a municipality in 1878. The town is historically associated with a Cape Afrikaner revolt in 1900, which was suppressed by Lord Kitchener. This happened during the Anglo-Boer War, and the rebels involved were moved to the Transvaal. As a precaution the British

⁷ Gaigher, S. 2012. Heritage Impact Assessment Report for the proposed establishment of the Prieska Solar Energy facility located east of Prieska on Portion 3 of the Farm Holsoot 47, Northern Cape Province, p15.

⁸ Evers, T. M. 1988. *Recognition of Groups in the Iron Age of Southern Africa*. Unpublished PhD Thesis, University of Witwatersrand. Huffman 2007. *A Handbook on the Iron Age*. Scottsville: UKZN Press

⁹ De Jong 2010: De Jong, R.C. 2010. Heritage impact assessment report: proposed manganese and iron ore mining right application in respect of the remainder of the farm Paling 434, Hay Registration Division, Northern Cape. Unpublished report prepared for Kai Batla Minerals Industry Consultants. Pretoria: Cultmatrix, p

forces established a fort on the hills outside the town. There is a British Military memorial garden in town.¹⁰

Douglas, situated at the confluence of the Orange and Vaal Rivers 50 km east of the study area was founded in 1848 as a mission station by the Reverend Isaac Hughes. In 1867, a group of Europeans from Griquatown signed an agreement to establish the town which was named after Sir Robert Percy Douglas, Lieutenant Governor of the Cape Colony. Douglas was the scene of bloody encounters between the British army and Boer commandos in January 1900. There are archaeological rock engravings at the confluence of the Vaal and Orange Rivers.¹¹

The above is the context for the identification of heritage resources in the study area.

5. FINDINGS OF THE HERITAGE SURVEY

5.1. The Stone Age

Stone Age tools occurred in all but two of the 18 recorded instances. The typology is dominated by scrapers, while there are a few blades. Handaxes were recorded in two instances; The handaxe is recognised as a type tool of the Early Stone Age period. Otherwise a majority of the finds date from the Middle Stone Age (MSA) to the Late Stone Age (LSA). No significant concentrations of artefacts were encountered.

5.2. The Iron Age

No Iron Age sites or relics were found on the property.

5.3. Modern period

A setting of stones (stones in a single file) forming a semi-circle was recorded (SXD 12). The purpose of the structure could not be ascertained. It was ranked as of low value.

5.4. Burial ground

No burial grounds were found or reported on the property.

¹⁰ Gaigher, S. 2012. Heritage Impact Assessment Report for the proposed establishment of the Prieska Solar Energy facility located east of Prieska on Portion 3 of the Farm Holsoot 47, Northern Cape Province.

¹¹ The Douglas Archives. Found at:

http://www.douglashistory.co.uk/history/Places/douglas_northerncape.htm#.YkW8BShBzIU

Table 2: Inventory of sites

| SITE NO | LATITUDE | LONGITUDE | PERIOD | DESCRIPTION | RANKING | MITIGATION |
|---------|---------------|---------------|--------------------------|---|----------|----------------------|
| SXD01 | 29°18'42.10"S | 23°19'48.20"E | MSA/LSA | Flat area with red gravels, sparse thorns. 2 cores, 1 scraper, 1 flake. | Local 3C | No further action |
| SXD02 | 29°18'45.70"S | 23°19'40.80"E | MSA/LSA | Flat area with red gravel and calcrete mix. 6 lithics – 4 scrapers, 2 blades. | Local 3C | No further action |
| SXD03 | 29°18'27.30"S | 23°19'42.80"E | MSA/LSA | Flat terrain with red gravel, calcrete gravel and exposed calcrete hard pan. | Local 3C | No further action |
| SXD04 | 29°18'23.80"S | 23°19'35.20"E | MSA/LSA | Southern edge of the glacial tillite deposits, moderate to dense black thorn cover. 8 lithics – 6 scrapers, 2 blades. | Local 3C | No further action |
| SXD05 | 29°18'18.97"S | 23°19'27.20"E | MSA/LSA | On the edge of a stream cutting through glacial tillite deposits. Sparse thorn bushes. 4 lithics found – flakes | Local 3C | No further action |
| SXD06 | 29°17'53.10"S | 23°19'11.00"E | MSA/LSA | On the glacial tillites, red gravel on a gentle slope which forms the valley side of a stream. 5 lithics – 1 crude handaxe, 2 blades, 1 broken parallel blade, 1 scraper. | Local 3C | No further action |
| SXD07 | 29°17'22.20"S | 23°18'53.90"E | MSA/LSA | On the glacial tillite deposits. Fine calcrete waste and exposures of hardpan. 2 Lithics – scraper and blade. | Local 3C | No further action |
| SXD08 | 29°16'53.00"S | 23°18'40.20"E | MSA/LSA | Flat terrain, fine calcrete gravel and exposures of solid calcrete surface. 6 lithics - 1 blade, 3 scrapers, 2 flakes. | Local 3C | No further action |
| SXD09 | 29°16'52.70"S | 23°18'42.40"E | MSA/LSA | Northern part of the property overlooking the Orange River. 3 lithics - flake scrapers. | Local 3C | No further action |
| SXD10 | 29°17'42.90" | 23°18'52.90"E | MSA/LSA | Summit of the glacial tillite deposits, red stones on the surface. 3 scrapers. | Local 3C | No further action |
| SXD11 | 29°17'32.10"S | 23°18'55.60"E | 20th Century? | Setting of stones forms a semi-circle or horseshoe opening to the north. | Local 3C | No further action |
| SXD12 | 29°17'58.10"S | 23°19'10.00"E | MSA/LSA | Glacial tillite deposits, red gravel on the surface, sparse black thorn bushes. A scraper and handaxe. | Local 3C | No further action |
| SXD13 | 29°18'27.30"S | 23°19'42.80"E | 20 th century | Trigonometrical beacon at an altitude of 1058 m AMSL. | Local 3C | Will not be affected |

| | | | | | | |
|-------|---------------|---------------|---------|--|----------|---------------------|
| SXD14 | 29°18'48.80"S | 23°19'42.00"E | MSA/LSA | Southern part of the property. Flat terrain with surface calcrete gravel and red stones. 4 lithics – 2 blades, 2 flakes. | Local 3C | Wil not be affected |
| SXD15 | 29°18'55.80"S | 23°20'2.80"E | MSA/LSA | Southern part of the property with surface red gravels. Black thorn bushes. 2 scrapers. | Local 3C | Wil not be affected |
| SXD16 | 29°19'12.90"S | 23°20'16.20"E | MSA/LSA | Southern part of the property with surface red gravels and calcrete waste. Black thorn bushes. Flake waste. | Local 3C | Wil not be affected |
| SXD17 | 29°19'32.20"S | 23°20'10.80" | ESA | Southern part of the property with surface red stones and calcrete gravel. Sparse black thorn bushes. 1 handaxe. | Local 3C | Wil not be affected |
| SXD18 | 29°19'34.70"S | 23°20'18.60" | MSA/LSA | Southern part of the property with surface red gravels. Sparse trees. Flake waste. | Local 3C | Wil not be affected |



Figure 7: Google Earth map shows the location of heritage sites

5.5. Significance ranking of findings

| GRADE | RANKING | SIGNIFICANCE | NO OF SITES |
|-------|------------|---|-------------|
| 1 | National | Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 1, 2 or 3A heritage resources | 0 |
| 2 | Provincial | Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 2 heritage resources | 0 |
| 3A | Local | Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 3A heritage resources | 0 |
| 3B | Local | Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3B heritage resources | 0 |
| 3C | Local | Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3C heritage resources | 18 |
| | | TOTAL | 18 |

5.6. Assessment of Impacts using the Heritage Impact Assessment Statutory Framework

Section 38 of the NHRA

Section 38 (Subsection 3) of the National Heritage Resources Act also provides a schedule of tasks to be undertaken in an HIA process:

Section 38(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

Heritage resources were recorded in 18 places (see Table 2 above).

(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

There are no Grade I or Grade II sites.

(c) An assessment of the impact of the development on such heritage resources

All the sites are considered of low significance and no further action is warranted.

(i) 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

The mining sector in the Northern Cape is expanding and poised to contribute significantly to the South African economy. Mining is labour intensive and can contribute immensely to alleviate the current high levels of unemployment. General improvement in the quality of livelihoods in local communities and the country at large is expected.

(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

Stakeholder consultations were conducted within the scope of the broader environmental impact assessment. No objections were raised concerning the impact of the mining on heritage resources.

(f) If heritage resources will be adversely affected by the proposed development, the consideration of alternatives

An Environmental Control Officer will be trained to curate chance heritage finds.

(g) Plans for mitigation of any adverse effects during and after the completion of the proposed development.

In the event of discovery of heritage resources deemed of significance during exploration or mining, the Provincial Heritage Resources Authority or SAHRA will be informed immediately and an archaeologist or heritage expert called to attend.


5.7. Risk Assessment of the findings

| EVALUATION CRITERIA | RISK ASSESSMENT |
|--|---|
| Description of potential impact | Negative impacts range from partial to total destruction of surface and under-surface movable/immovable relics. |
| Nature of Impact | Negative impacts can both be direct or indirect. |
| Legal Requirements | Sections 34, 35, 36, 38 of National Heritage Resources Act No. 25 (1999). |
| Stage/Phase | Prospecting for minerals (test pits, drilling); Mining Phase. |
| Extent of Impact | Ground clearing and open cast mining can result in damage and destruction of archaeological resources above and below the surface not seen during the survey. |
| Duration of Impact | Any accidental destruction of surface or subsurface relics is not reversible, but can be mitigated. |
| Intensity | Uncertain. |
| Probability of occurrence | Medium. |
| Confidence of assessment | High. |
| Level of significance of impacts before mitigation | Medium. |
| Mitigation measures | If archaeological or other heritage relics deemed of high significance are found during the exploration phase, heritage authorities will be advised immediately and a heritage specialist will be called to attend. |
| Level of significance of impacts after mitigation | Low. |
| Cumulative Impacts | None. |
| Comments or Discussion | None. |

6. CONCLUSION AND RECOMMENDATIONS

As the heritage sensitivity of the property is considered to be low, the mining can be given a greenlight to go ahead. The study is mindful that some important discoveries may occur during the prospecting and mining phases. If this happens operations should be halted, and the provincial heritage resources authority or SAHRA notified in order for an investigation and evaluation to be undertaken.

7. CATALOGUE OF HERITAGE SITES

| SITE NO | COORDINATES | | PERIOD |
|---|---|---------------|---------|
| SXD01 | 29°18'42.10"S | 23°19'48.20"E | MSA/LSA |
|  | | | |
| DESCRIPTION: Flat area with red gravels, sparse thorns. 2 cores, 1 scraper, 1 flake. | | | |
| HERITAGE SIGNIFICANCE | Evidence of hunter-gatherer activities during the MSA/LSA | | |
| MITIGATION | No further action required. | | |

| SITE NO | COORDINATES | | PERIOD |
|---------|---------------|---------------|---------|
| SXD02 | 29°18'45.70"S | 23°19'40.80"E | MSA/LSA |



DESCRIPTION: Flat area with red gravel and calcrete mix. 6 lithics – 4 scrapers, 2 blades.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

| SITE NO | COORDINATES | | PERIOD |
|---------|---------------|---------------|---------|
| SXD03 | 29°18'27.30"S | 23°19'42.80"E | MSA/LSA |



DESCRIPTION: Flat terrain with red gravel, calcrete gravel and exposed calcrete hard pan.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

| SITE NO | COORDINATES | | PERIOD |
|---------|---------------|---------------|---------|
| SXD04 | 29°18'23.80"S | 23°19'35.20"E | MSA/LSA |



DESCRIPTION: Southern edge of the glacial tillite deposits, moderate to dense black thorn cover. 8 lithics – 6 scrapers, 2 blades.

| | |
|------------------------------|---|
| HERITAGE SIGNIFICANCE | Evidence of hunter-gatherer activities during the MSA/LSA |
|------------------------------|---|

| | |
|-------------------|-----------------------------|
| MITIGATION | No further action required. |
|-------------------|-----------------------------|

| SITE NO | COORDINATES | | PERIOD |
|---------|---------------|---------------|---------|
| SXD05 | 29°18'18.97"S | 23°19'27.20"E | MSA/LSA |



DESCRIPTION: On the edge of a stream cutting through glacial tillite deposits. Sparse thorn bushes. 4 lithics found – flakes.

| | |
|------------------------------|---|
| HERITAGE SIGNIFICANCE | Evidence of hunter-gatherer activities during the MSA/LSA |
|------------------------------|---|

| | |
|-------------------|-----------------------------|
| MITIGATION | No further action required. |
|-------------------|-----------------------------|

| SITE NO | COORDINATES | | PERIOD |
|---------|---------------|---------------|---------|
| SXD06 | 29°17'53.10"S | 23°19'11.00"E | MSA/LSA |



DESCRIPTION: On the glacial tillites, red gravel on a gentle slope which forms the valley side of a stream. 5 lithics – 1 crude handaxe, 2 blades, 1 broken parallel blade, 1 scraper.

| | |
|------------------------------|---|
| HERITAGE SIGNIFICANCE | Evidence of hunter-gatherer activities during the MSA/LSA |
|------------------------------|---|

| | |
|-------------------|-----------------------------|
| MITIGATION | No further action required. |
|-------------------|-----------------------------|

| SITE NO | COORDINATES | | PERIOD |
|---------|---------------|---------------|---------|
| SXD07 | 29°17'22.20"S | 23°18'53.90"E | MSA/LSA |



DESCRIPTION: On the glacial tillite deposits. Fine calcrete waste and exposures of hardpan. 2 Lithics – scraper and blade.

| | |
|------------------------------|---|
| HERITAGE SIGNIFICANCE | Evidence of hunter-gatherer activities during the MSA/LSA |
|------------------------------|---|

| | |
|-------------------|-----------------------------|
| MITIGATION | No further action required. |
|-------------------|-----------------------------|

| SITE NO | COORDINATES | | PERIOD |
|---------|---------------|---------------|---------|
| SXD08 | 29°16'53.00"S | 23°18'40.20"E | MSA/LSA |



DESCRIPTION: Flat terrain, fine calcrete gravel and exposures of solid calcrete surface. 6 lithics - 1 blade, 3 scrapers, 2 flakes.

| | |
|------------------------------|---|
| HERITAGE SIGNIFICANCE | Evidence of hunter-gatherer activities during the MSA/LSA |
|------------------------------|---|

| | |
|-------------------|-----------------------------|
| MITIGATION | No further action required. |
|-------------------|-----------------------------|

| SITE NO | COORDINATES | | PERIOD |
|---------|---------------|---------------|---------|
| SXD09 | 29°16'52.70"S | 23°18'42.40"E | MSA/LSA |



DESCRIPTION: Northern part of the property overlooking the Orange River. 3 lithics - flake scrapers.

| | |
|------------------------------|---|
| HERITAGE SIGNIFICANCE | Evidence of hunter-gatherer activities during the MSA/LSA |
| MITIGATION | No further action required. |

| SITE NO | COORDINATES | | PERIOD |
|---------|--------------|---------------|---------|
| SXD10 | 29°17'42.90" | 23°18'52.90"E | MSA/LSA |




DESCRIPTION: Summit of the glacial tillite deposits, red stones on the surface. 3 scrapers.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

| SITE NO | COORDINATES | | PERIOD |
|---|---------------|--|---------------------------|
| SXD11 | 29°17'32.10"S | 23°18'55.60"E | 20 th Century? |
|  | | | |
| DESCRIPTION: Setting of stones form a semi-circle or horseshoe opening to the north. | | | |
| HERITAGE SIGNIFICANCE | | Significance of the feature uncertain. | |
| MITIGATION | | No further action required. | |

| SITE NO | COORDINATES | | PERIOD |
|---------|---------------|---------------|---------|
| SXD12 | 29°17'58.10"S | 23°19'10.00"E | MSA/LSA |



DESCRIPTION: Glacial tillite deposits, red gravel on the surface, sparse black thorn bushes. A scraper and handaxe.

| | |
|------------------------------|--|
| HERITAGE SIGNIFICANCE | Evidence of hunter-gatherer activities during the Stone Age. |
|------------------------------|--|

| | |
|-------------------|-----------------------------|
| MITIGATION | No further action required. |
|-------------------|-----------------------------|

| SITE NO | COORDINATES | | PERIOD |
|---------|---------------|---------------|--------------------------|
| SXD13 | 29°18'27.30"S | 23°19'42.80"E | 20 th Century |



DESCRIPTION: Trigonometrical beacon at an altitude of 1058 m AMSL.

| | |
|------------------------------|--|
| HERITAGE SIGNIFICANCE | Cadastral survey reference point used in the 20 th century. |
| MITIGATION | Will not be affected. |

| SITE NO | COORDINATES | | PERIOD |
|---------|---------------|---------------|---------|
| SXD14 | 29°18'48.80"S | 23°19'42.00"E | MSA/LSA |



DESCRIPTION: Southern part of the property. Flat terrain with surface calcrete gravel and red stones. 4 lithics – 2 blades, 2 flakes.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

| SITE NO | COORDINATES | | PERIOD |
|---------|---------------|--------------|---------|
| SXD15 | 29°18'55.80"S | 23°20'2.80"E | MSA/LSA |



DESCRIPTION: Southern part of the property with surface red gravels. Black thorn bushes. 2 scrapers.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.

| SITE NO | COORDINATES | | PERIOD |
|---------|---------------|---------------|---------|
| SXD16 | 29°19'12.90"S | 23°20'16.20"E | MSA/LSA |



DESCRIPTION: Southern part of the property with surface red gravels and calcrete waste. Black thorn bushes. Flake waste.

HERITAGE SIGNIFICANCE

Evidence of hunter-gatherer activities during the MSA/LSA

MITIGATION

No further action required.


| SITE NO | COORDINATES | | PERIOD |
|---------|---------------|--------------|--------|
| SXD17 | 29°19'32.20"S | 23°20'10.80" | ESA |



DESCRIPTION: Southern part of the property with surface red stones and calcrete gravel. Sparse black thorn bushes. 1 handaxe.

| | |
|------------------------------|---|
| HERITAGE SIGNIFICANCE | Evidence of hunter-gatherer activities during the MSA/LSA |
|------------------------------|---|

| | |
|-------------------|-----------------------------|
| MITIGATION | No further action required. |
|-------------------|-----------------------------|

| SITE NO | COORDINATES | | PERIOD |
|---|---|--------------|---------|
| SXD18 | 29°19'34.70"S | 23°20'18.60" | MSA/LSA |
|  | | | |
| <p>DESCRIPTION: Southern part of the property with surface red gravels. Sparse trees. Flake waste.</p> | | | |
| HERITAGE SIGNIFICANCE | Evidence of hunter-gatherer activities during the MSA/LSA | | |
| MITIGATION | No further action required. | | |

8. REFERENCES

Deacon, J. and N. Lancaster. 1986. Later Quaternary Palaeo-environments of Southern Africa. Oxford: Oxford University Press.

De Jong, R. C. 2010. Heritage Impact Assessment Report: Proposed Manganese and Iron Ore Mining Right Application in Respect of the Remainder of the Farm Paling 434, Hay Registration Division, Northern Cape Province. Cultmatrix.

- Evers, T. M. 1988.** *Recognition of Groups in the Iron Age of Southern Africa*. Unpublished PhD Thesis, University of Witwatersrand.
- Huffman 2007.** *A Handbook on the Iron Age*. Scottsville: UKZN Press
- Exigo Consultancy. 2015.** Frances Baard District Municipality: Proposed Nkandla Extension 2 Township Establishment, Erf 258 Nkandla, Hartswater, Northern Cape Province.
- Gaigher, S. 2012.** Heritage Impact Assessment Report for the proposed establishment of the Prieska Solar Energy facility located east of Prieska on Portion 3 of the Farm Holsoot 47, Northern Cape Province.
- Huffman, T. N. 2007.** *A Handbook of the Iron Age*. Cape Town: UKZN Press
- The National Heritage Resource Act (25 of 1999)
- Matenga E. 2019.** Phase I Heritage Impact Assessment (including palaeontological assessment) Requested in terms of Section 38 of the National Heritage Resources Act No 25/1999 for the Proposed Mine Prospecting on a Portion of the Remaining Extent of the Farm Remhooghte 152 Prieska, Northern Cape Province.
- Matenga, E. 2019.** Phase I Heritage Impact Assessment (including palaeontological assessment) requested in terms of section 38 of the national heritage resources act no 25/1999 for the proposed mine prospecting and application for mining right on a portion of the remaining extent of the farm Kransfontein 19 & portion 2 (de rust) of the farm Kransfontein 19.
- Matenga, E. 2017.** Phase I Heritage Impact Assessment (including palaeontological assessment) Requested in terms of Section 38 of the National Heritage Resources Act (No 25/1999) for the Proposed Mine Prospecting on the Remaining Extent of Portion 1 of the Farm Viegulands Put 42, Prieska District, Northern Cape Province.
- Phillipson, D. W. 2005.** *African Archaeology*. Cambridge: University of Cambridge Press.
- Morris, D. 2009.** Report on a Phase 1 Archaeological Impact Assessment at Bucklands Settlement near Douglas, Northern Cape.
- Muller, C. F. J. 1986.** *Five Hundred Years: A History of South Africa*. 5th Edition. Pretoria.
- Schalkwyk, J 2015.** Heritage scoping assessment for the proposed Perseus-Kronos 765kv Transmission Power Line and Substations Upgrade, Northern Cape and Free State Provinces.

Websites

- <http://www.southafrica.net/za/en/articles/entry/article-southafrica.net-the-wonderwerk-cave>.
- The Douglas Archives. Found at:
- http://www.douglashistory.co.uk/history/Places/douglas_northerncape.htm#.YkW8BShBzIU

Legislation and Policies

National Heritage Resources Act (No 25: 1999)

National Environmental Management Act (No 107/1998)

ICOMOS Australia Charter for the Conservation of Places of Cultural Significance (the Burra Charter 1999)

The ICOMOS Charter for the Conservation of Historic Towns and Urban Areas (the Washington Charter 1987)

9. MAPS OF THE TRACK LOG



Figure (i): Overview map of the track log

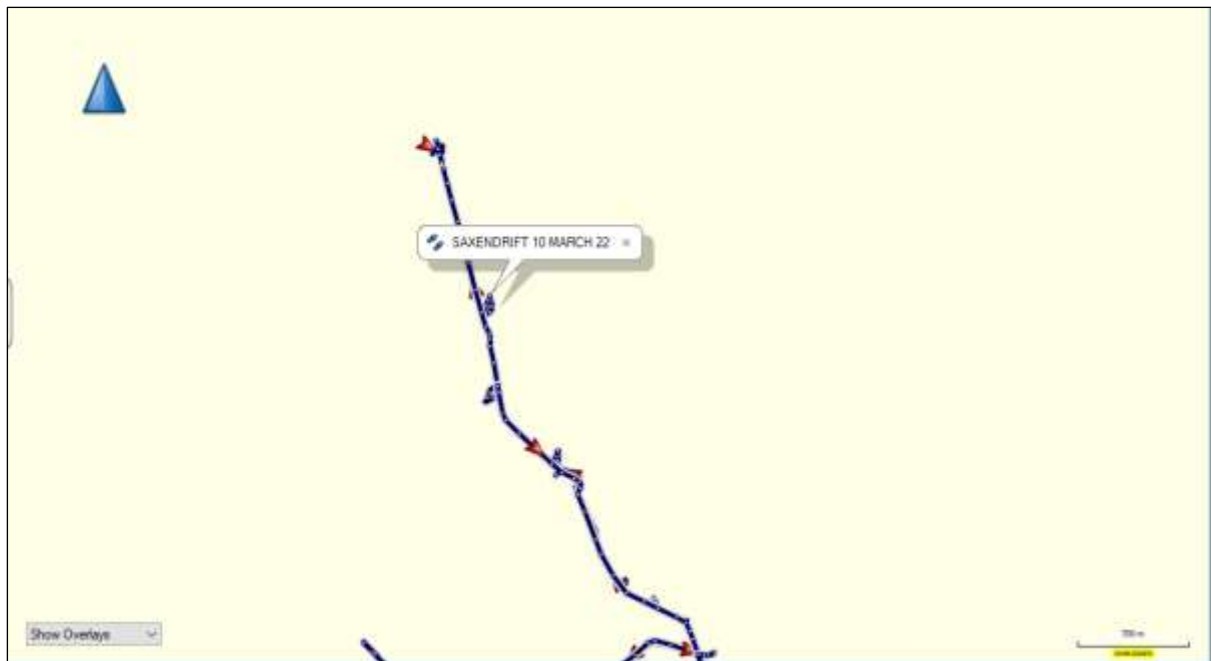


Figure (ii): Track map, northern part of the property

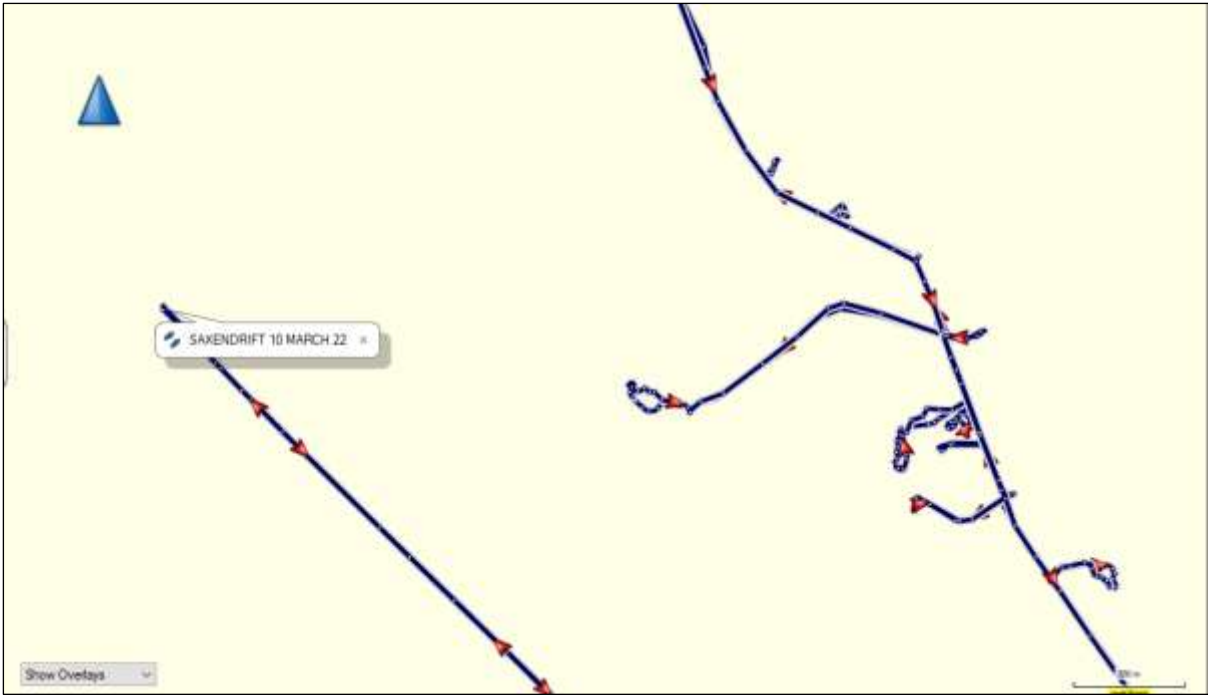


Figure (iii) Track log map, central area of the property



Figure (iv): Tracklog map, southern part of the property