Cultural heritage impact assessment for the
PROPOSED DEVELOPMENT OF PHOTOVOLTAIC POWER PLANTS ON SEVEN DIFFERENT LOCATIONS IN NORTH WEST AND FREE STATE PROVINCES

CULTURAL HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF PHOTOVOLTAIC POWER PLANTS ON SEVEN DIFFERENT LOCATIONS IN NORTH WEST AND FREE STATE PROVINCES

Report No: 2014/JvS/040
Status: Final
Revision No: 0
Date: July 2014

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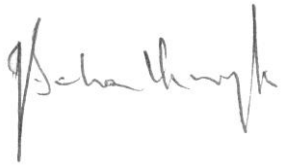
Declaration:

I, J.A. van Schalkwyk, declare that I do not have any financial or personal interest in the proposed development, nor its developers or any of their subsidiaries, apart from the provision of heritage assessment and management services.



J A van Schalkwyk (D Litt et Phil)
Heritage Consultant
July 2014

EXECUTIVE SUMMARY

CULTURAL HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF PHOTOVOLTAIC POWER PLANTS ON SEVEN DIFFERENT LOCATIONS IN NORTH WEST AND FREE STATE PROVINCES

It is proposed to construct, install and operate seven Photovoltaic (Solar) Power Projects, five of which are located in Free State Province and two in North West Province by the following SPV's:

- Delta Solar Power Plant (Pty) Ltd, Bloemhof region, North West Province
- Kappa Solar Power Plant (Pty) Ltd, Christiana region, North West Province
- Beta Solar Power Plant (Pty) Ltd, Hertzogville region, Free State Province
- Sonvanger Solar Power Plant (Pty) Ltd, Theunissen region, Free State Province
- Serurubele Solar Power Plant (Pty) Ltd, Bloemfontein region, Free State Province
- Sonneblom Solar Power Plant (Pty) Ltd), Bloemfontein region, Free State Province
- Oryx Solar Power Plant (Pty) Ltd, Koffiefontein region, Free State Province

In accordance with Section 38 of the NHRA, an independent heritage consultant was therefore appointed by **Subsolar** to conduct a Heritage Impact Assessment (HIA) to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the areas where it is planned to develop the photovoltaic power plants.

Seven different sites were surveyed, of which only two yielded heritage resources:

- **Delta Solar Power Plant (Pty) Ltd, Bloemhof region, North West Province**
    - *As no sites, features or objects of cultural significance were found in the study area, there would be no impact as a result of the proposed development.*
- **Kappa Solar Power Plant (Pty) Ltd, Christiana region, North West Province**

o Historic period

- An old farmstead consisting of a main house as well as some outbuildings (milk shed, store rooms, etc.) have been identified in the study area. A date of 1921 was added above the front door.

  According to current understanding of the proposed development, this site would be impacted on by the proposed development. It is recommended that if the farmstead cannot be avoided, it should be documented (mapped and photographed) in full before development takes place. If that is not possible, a buffer zone of at least 20 metres should be demarcated around the site. This can be determined from the last visible feature identified as forming part of the larger farmstead settlement unit.

- **Beta Solar Power Plant (Pty) Ltd, Hertzogville region, Free State Province**
    - *As no sites, features or objects of cultural significance were found in the study area, there would be no impact as a result of the proposed development.*
- **Sonvanger Solar Power Plant (Pty) Ltd, Theunissen region, Free State Province**
    - *As no sites, features or objects of cultural significance were found in the study area, there would be no impact as a result of the proposed development.*

- **Serurubele Solar Power Plant (Pty) Ltd, Bloemfontein region, Free State Province**

    - *As no sites, features or objects of cultural significance were found in the study area, there would be no impact as a result of the proposed development.*

- **Sonneblom Solar Power Plant (Pty) Ltd), Bloemfontein region, Free State Province**

    - *As no sites, features or objects of cultural significance were found in the study area, there would be no impact as a result of the proposed development.*

- **Oryx Solar Power Plant (Pty) Ltd, Koffiefontein region, Free State Province**

- Stone Age

    - A number of stone tools, all dating to the Middle Stone Age were identified in the vicinity of a rocky ridge in the northern section of the development site. The high ratio of cores and flakes to tools seems to indicate that this was a factory site where material, obtained from local outcrops, was worked into tools.

      It is recommended that this ridge, at least for the section indicated in green on the map (Fig. 39), is avoided. If this is not possible, a systematic surface collection should be done to recover some of the artefacts.

- Historic period
    - Two stone walled enclosures were identified on low outcrops. According to local tradition these features were built by early sheep herders to take shelter in during the night.

      It is anticipated that no development would take place on the outcrops. However, it is recommended the sites are marked off with danger tape during construction, leaving a buffer area of at least 5 metres from the outer edge of the stone walling.

J A van Schalkwyk
Heritage Consultant
July 2014

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GLOSSARY OF TERMS AND ABBREVIATIONS

TERMS

Study area: Refers to the entire study area as indicated by the client in the accompanying Fig. 1 & 2.

Stone Age: The first and longest part of human history is the Stone Age, which began with the appearance of early humans between 3-2 million years ago. Stone Age people were hunters, gatherers and scavengers who did not live in permanently settled communities. Their stone tools preserve well and are found in most places in South Africa and elsewhere.

Early Stone Age	2 000 000 - 150 000 Before Present
Middle Stone Age	150 000 - 30 000 BP
Late Stone Age	30 000 - until c. AD 200

Iron Age: Period covering the last 1800 years, when new people brought a new way of life to southern Africa. They established settled villages, cultivated domestic crops such as sorghum, millet and beans, and they herded cattle as well as sheep and goats. These people, according to archaeological evidence, spoke early variations of the Bantu Language. Because they produced their own iron tools, archaeologists call this the Iron Age.

Early Iron Age	AD 200 - AD 900
Middle Iron Age	AD 900 - AD 1300
Late Iron Age	AD 1300 - AD 1830

Historical Period: Since the arrival of the white settlers - c. AD 1840 - in this part of the country.

ABBREVIATIONS

ADRC	Archaeological Data Recording Centre
ASAPA	Association of Southern African Professional Archaeologists
BP	Before Present
CS-G	Chief Surveyor-General
EIA	Early Iron Age
ESA	Early Stone Age
LIA	Late Iron Age
LSA	Later Stone Age
HIA	Heritage Impact Assessment
MSA	Middle Stone Age
NASA	National Archives of South Africa
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Agency
SAHRA	South African Heritage Resources Agency

CULTURAL HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF PHOTOVOLTAIC POWER PLANTS ON SEVEN DIFFERENT LOCATIONS IN NORTH WEST AND FREE STATE PROVINCES

1. INTRODUCTION

It is proposed to construct, install and operate seven Photovoltaic (Solar) Power Projects, five of which are located in Free State Province and two in North West Province, by the following SPV's:

- Delta Solar Power Plant (Pty) Ltd, Bloemhof region, North West Province
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- Serurubele Solar Power Plant (Pty) Ltd, Bloemfontein region, Free State Province
- Sonneblom Solar Power Plant (Pty) Ltd), Bloemfontein region, Free State Province
- Oryx Solar Power Plant (Pty) Ltd, Koffiefontein region, Free State Province

South Africa's heritage resources, also described as the 'national estate', comprise a wide range of sites, features, objects and beliefs. According to Section 27(18) of the National Heritage Resources Act (NHRA), No. 25 of 1999, no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site.

In accordance with Section 38 of the NHRA, an independent heritage consultant was therefore appointed by **Subsolar** to conduct a Heritage Impact Assessment (HIA) to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the areas where it is planned to develop the solar power plants.

This HIA report forms part of the Environmental Impact Assessment (EIA) as required by the EIA Regulations in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and is intended for submission to the South African Heritage Resources Agency (SAHRA).

This report does not deal with development projects outside of or even adjacent to the study area as is presented in Section 5 of this report. The same holds true for heritage sites, except in a generalised sense where it is used to create an overview of the heritage potential in the larger region.

2. TERMS OF REFERENCE

2.1 **Scope of work**

The aim of this HIA, broadly speaking, is to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where it is planned to develop the photovoltaic power projects.

The scope of work for this study consisted of:

- Conducting of a desk-top investigation of the area, in which all available literature, reports, databases and maps were studied.
- A visit to the proposed development areas.

The objectives were to:

- Identify possible archaeological, cultural and historic sites within the proposed development areas;
- Evaluate the potential impacts of construction, operation and maintenance of the proposed development on archaeological, cultural and historical resources;
- Assess cumulative impacts;
- Recommend mitigation measures to ameliorate any negative impacts on areas of archaeological, cultural or historical importance.
- Consider relevant guidelines

2.2 **Limitations**

The investigation has been influenced by the following factors:

- Large sections of the regions in which the study areas are located have not yet been subjected to systematic archaeological surveys, creating huge gaps in available knowledge. Furthermore, most information that was generated in specific regions is based on impact assessments done for the purpose of development projects of some sort, with the result that it covers these regions only selectively.
- The unpredictability of buried archaeological remains.
- This report does not consider the palaeontological potential of the site.

3. HERITAGE RESOURCES

3.1 **The National Estate**

The NHRA (No. 25 of 1999) defines the heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations that must be considered part of the national estate to include:

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, including-
    - ancestral graves;
    - royal graves and graves of traditional leaders;
    - graves of victims of conflict;
    - graves of individuals designated by the Minister by notice in the Gazette;
    - historical graves and cemeteries; and
    - other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- sites of significance relating to the history of slavery in South Africa;
- movable objects, including-
    - objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;

- objects to which oral traditions are attached or which are associated with living heritage;
- ethnographic art and objects;
- military objects;
- objects of decorative or fine art;
- objects of scientific or technological interest; and
- books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

3.2 **Cultural significance**

In the NHRA, Section 2 (vi), it is stated that ‘‘cultural significance’’ means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This is determined in relation to a site or feature’s uniqueness, condition of preservation and research potential.

According to Section 3(3) of the NHRA, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of

- its importance in 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; and
- sites of significance relating to the history of slavery in South Africa.

A matrix was developed whereby the above criteria were applied for the determination of the significance of each identified site (see Appendix 1). This allowed some form of control over the application of similar values for similar identified sites.

4. STUDY APPROACH AND METHODOLOGY

4.1 **Extent of the Study**

This survey and impact assessment covers the seven different areas as presented in Section 5 and illustrated in the various Figures.

4.2 **Methodology**

4.2.1 *Preliminary investigation*

4.2.1.1 Survey of the literature
A survey of the relevant literature was conducted with the aim of reviewing the previous research done and determining the potential of the area. In this regard, various anthropological, archaeological, historical sources and heritage impact assessment reports were consulted – see list of references in Section 8 below.

- Information on events, sites and features in the larger region were obtained from these sources.

4.2.1.2 Data bases
The *Heritage Atlas Database,* the *Environmental Potential Atlas*, the *Chief Surveyor General* (CS-G) and the *National Archives of South Africa* (NASA) were consulted.

- Database surveys produced a number of sites located in the larger region of the proposed development. The original Title Deed for the farms were traced where possible and scrutinised for any information that it might contain.

4.2.1.3 Other sources
Aerial photographs and topocadastral and other maps were also studied - see the list of references below.

- Information of a very general nature was obtained from these sources.

In addition, the various land owners or their foremen were interviewed with regards to the occurrence of any heritage sites or features on their properties – see list of references below.

- Some very specific information was obtained from these sources.

4.2.2 *Field survey*

The areas that had to be investigated were identified by **Subsolar** by means of maps and *kml* files. The sites were surveyed by walking a number of transects over each. These can be seen in the track logs that are presented with each site description.

The *kml* files indicating the location of the study areas, as supplied by Subsolar, were loaded onto a Nexus 7 tablet. This was used, in Google Earth, during the field survey to access the various study areas.

Apart from the general transects that were walked across the survey areas, all hills, outcrops, clumps of trees (especially exotic trees), stream banks and water courses were specifically investigated.

The access roads and loop-in lines for the different development sites were also investigated.

4.2.3 *Documentation*

All sites, objects and structures that are identified are documented according to the general minimum standards accepted by the archaeological profession. Coordinates of individual localities are determined by means of the *Global Positioning System* (GPS) and plotted on a map. This information is added to the description in order to facilitate the identification of each locality.

The track log and identified sites were recorded by means of a Garmin Oregon 550 handheld GPS device. Photographic recording was done by means of a Canon EOS 550D digital camera. Map datum used: Hartebeeshoek 94 (WGS84).

Fig. 1. Types of landscape features that were specifically investigated.

5. DESCRIPTION OF THE AFFECTED ENVIRONMENT

5.1 Delta Solar Power Plant (Pty) Ltd, Bloemhof region, North West Province

5.1.1 *Site location and description*

This study area is located approximately 10km west of the town of Bloemhof in the North West Province (Fig. 2). It consists of an irregular shaped section of land, approximately 200ha in extent. For more detail, please see the Technical Summary presented below.

Property details					
Province	North West Province				
Magisterial district	Bloemhof				
Topo-cadastral map	2725CB, 2725DA				
Closest town	Bloemhof				
Farm name	Kareefontein 340HO				
Portions/Holdings	-				
Coordinates	Polygon (approximate)				
	No	Latitude	Longitude	No	Latitude	Longitude
	1	-27.63668	25.49542	2	-27.63765	25.49308
	3	-27.65529	25.50320	4	-27.65062	25.51332
	5	-27.64083	25.50728			

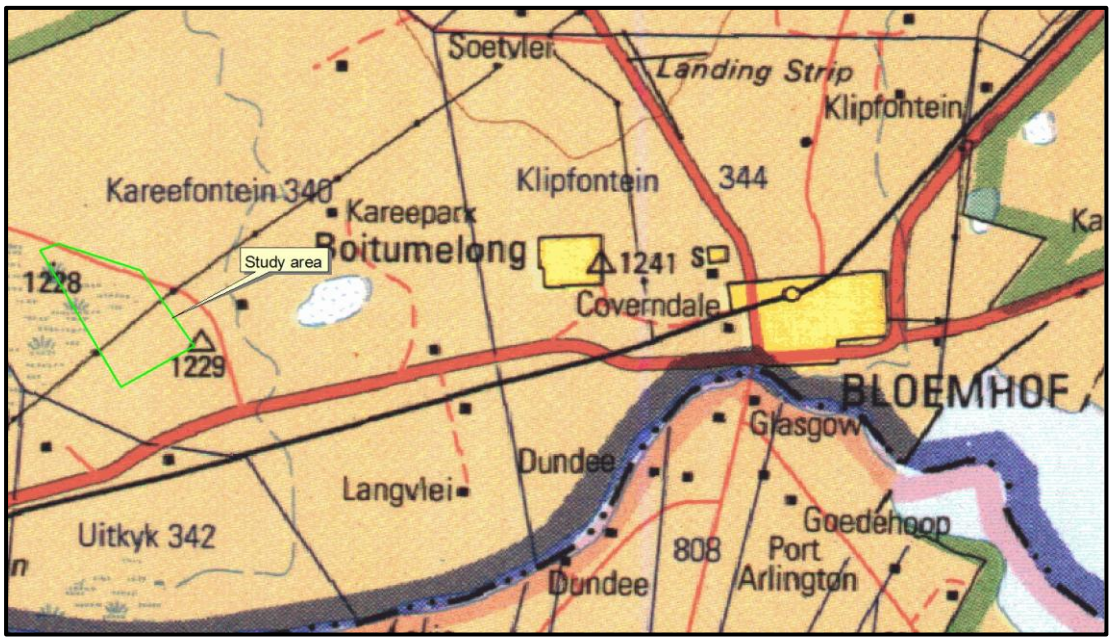

Fig. 2. Location of the study areas in regional context.
(Map 2724: Chief Surveyor-General)

The geology of the area is made up of sand, with andesite occurring to the east and west. The original vegetation is classified as Dry Sandy Highveld Grassland. The topography is described as plains and pans and the Vaal River occur about to 5 km to the south of the site. The study area is currently used for grazing purposes. A section of the area has also been subjected to excavations, probably as part of former alluvial diamond diggings.

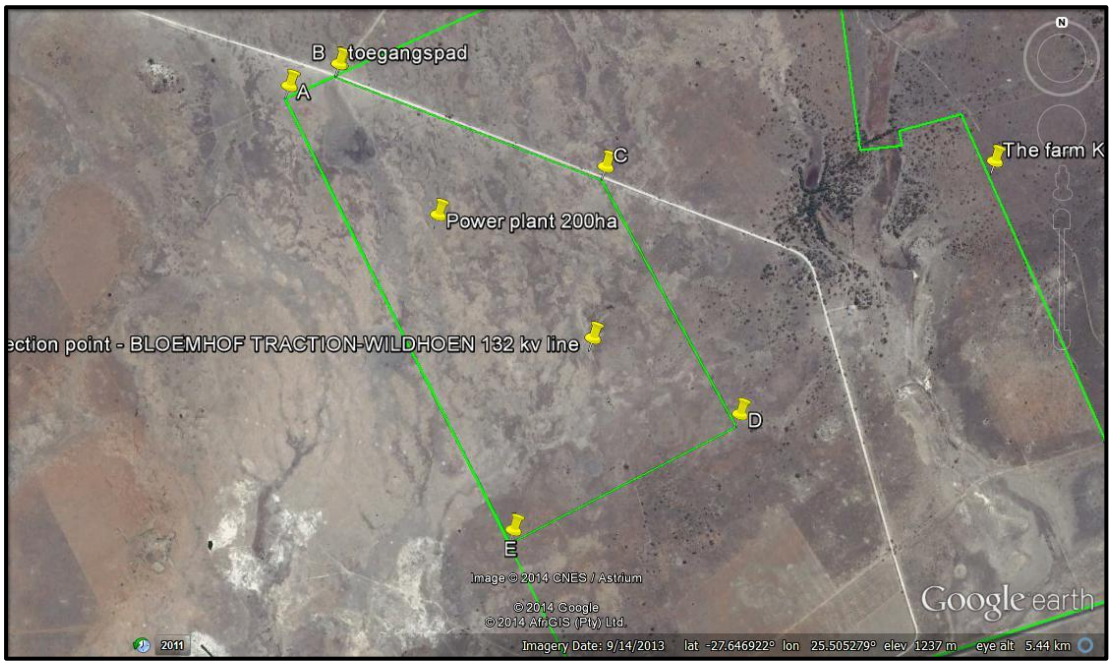

Fig. 3. Aerial view of the study area.
(Photo: Google Earth)

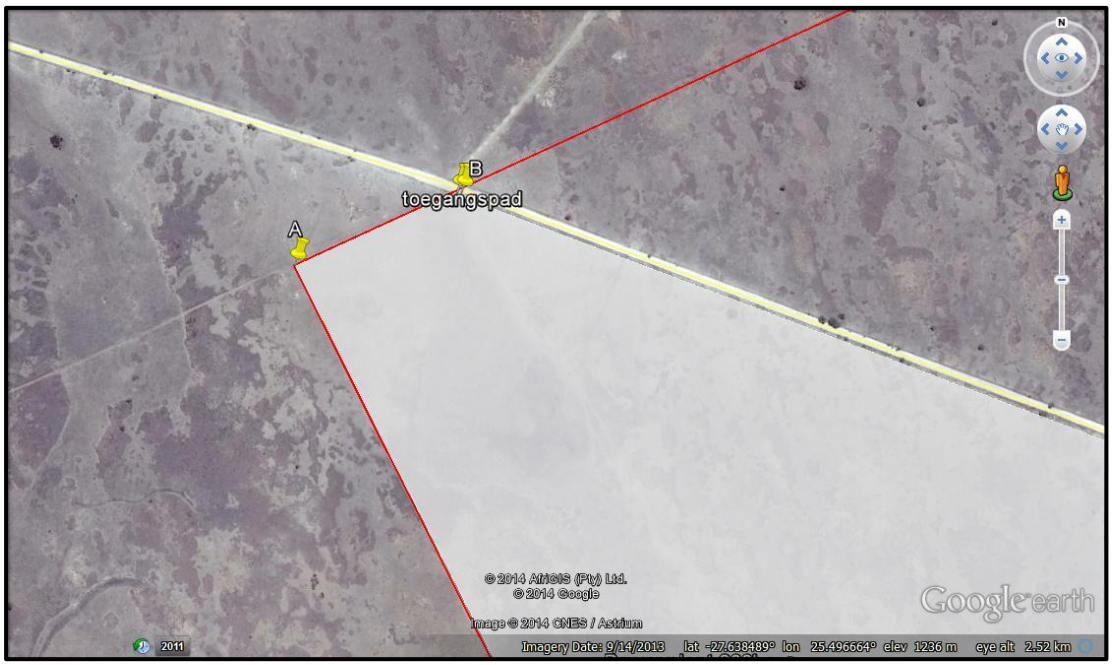

Fig. 4. Access route and loop-in lines.

Fig. 5. Views over the study area.

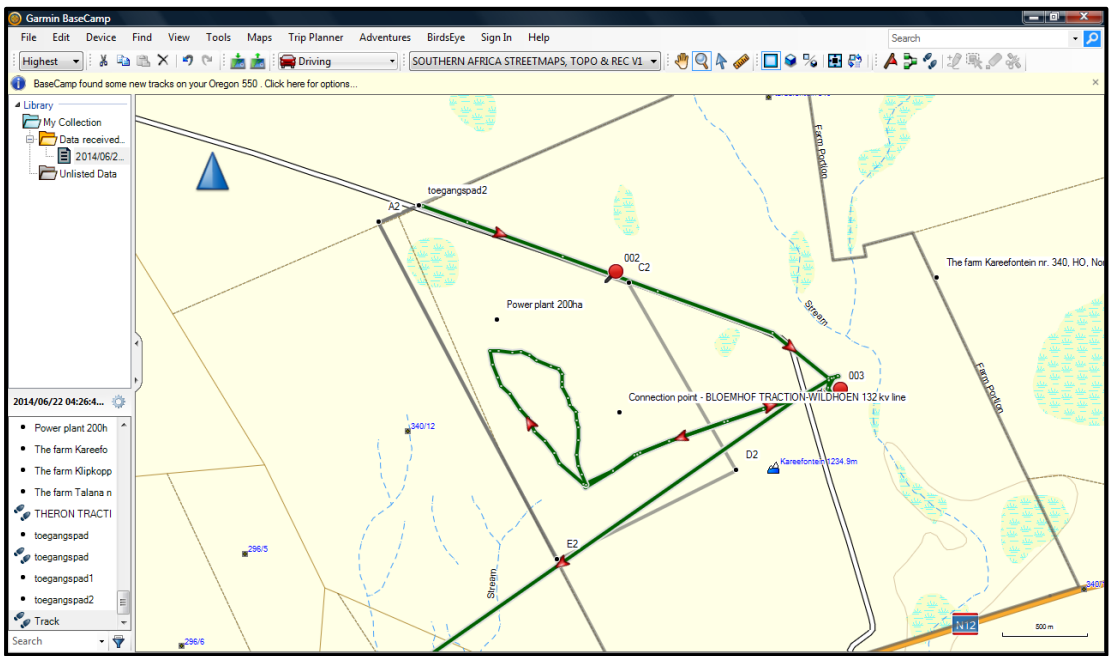

Fig. 6. Track log of the field survey.

5.1.2 ***Regional overview***

Habitation of the larger geographical area took place since Early Stone Age times, especially in the region of the Vaal River.

However, the biggest legacy dating to the Stone Age are the numerous sites with rock engravings found in the larger region. Some of the farms in the Christiana region known to have rock engravings are the Townlands and Twaalfkameelbomen, to mention but a few.

As yet, no sites dating to the Early Iron Age have been reported from the region and most sites date to the Late Iron Age. According to Breutz (1959) stone walled sites dating to the Late Iron Age and which can be linked to the Tswana occupation of the area, are found on a number of farms in the region, e.g. Waai Hoek and Brul Pan. However, the historic most important one, named Dithakong, is located some distance to the north-west. This site was first visited by early travellers such as Lichtenstein and John Campbell in the early part of the 19th century.

The town of Bloemhof was established on the farm Klipfontein, which belonged to John Barclay. It has been administered by a village council since 1917. Its name is said to derive from white lilies that grew wild in the region (Raper 2004).

The only heritage sites known to occur in the region of the study area are a few isolated graves. Fortunately, all of these occur out study area.

5.1.3 ***Identified heritage sites***

The following sites, features and objects of cultural significance have been identified to exist in the study region and their location is presented in Fig. 8 below:

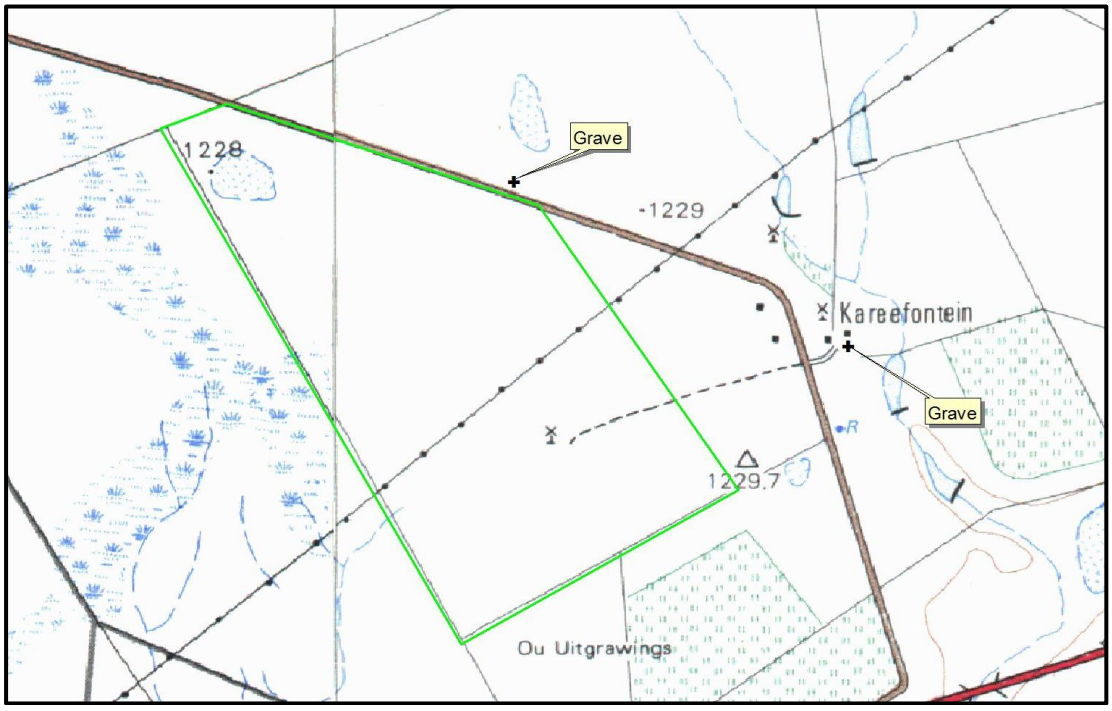

Fig. 7. Location of identified sites in relation to the development area.
(Map 2725CB, 2725DA: Chief Surveyor-General)

5.1.3.1 *Stone Age*

- No sites, features or objects dating to the Stone Age were identified in the study area.

5.1.3.2 *Iron Age*

- No sites, features or objects dating to the Iron Age were identified in the study area.

5.1.3.3 *Historic period*

- No sites, features or objects dating to the historic period were identified in the study area.

5.1.4 ***Impact assessment***

As no sites, features or objects of cultural significance were found in the study area, there would be no impact as a result of the proposed development.

5.2 **Kappa Solar Power Plant (Pty) Ltd, Christiana region, North West Province**

5.2.1 ***Site location and description***

This study area is located approximately 24km southwest of the town of Christiana in the North West Province (Fig. 7). It consists of a rectangular shaped section of land, approximately 285ha in extent. For more detail, please see the Technical Summary presented below.

Property details						
Province	North West Province					
Magisterial district	Christiana					
Topo-cadastral map	2824BB, 2724DD					
Closest town	Christiana					
Farm name	Remaining extent of the farm Honesty 43					
Portions/Holdings	-					
Coordinates	Polygon (approximate)					
	No	Latitude	Longitude	No	Latitude	Longitude
	1	-28.02234	24.95827	2	-28.01429	24.95481
	3	-28.02677	24.92772	4	-28.03481	24.93106

The geology of the area is made up of tuff, changing to andesite in the south. The original vegetation is classified as Kimberly Thorn Bushveld. The topography is described as plains and pans and no hills, outcrops or rivers occur in the study area or immediate surrounding area. The study area is currently used for grazing purposes.

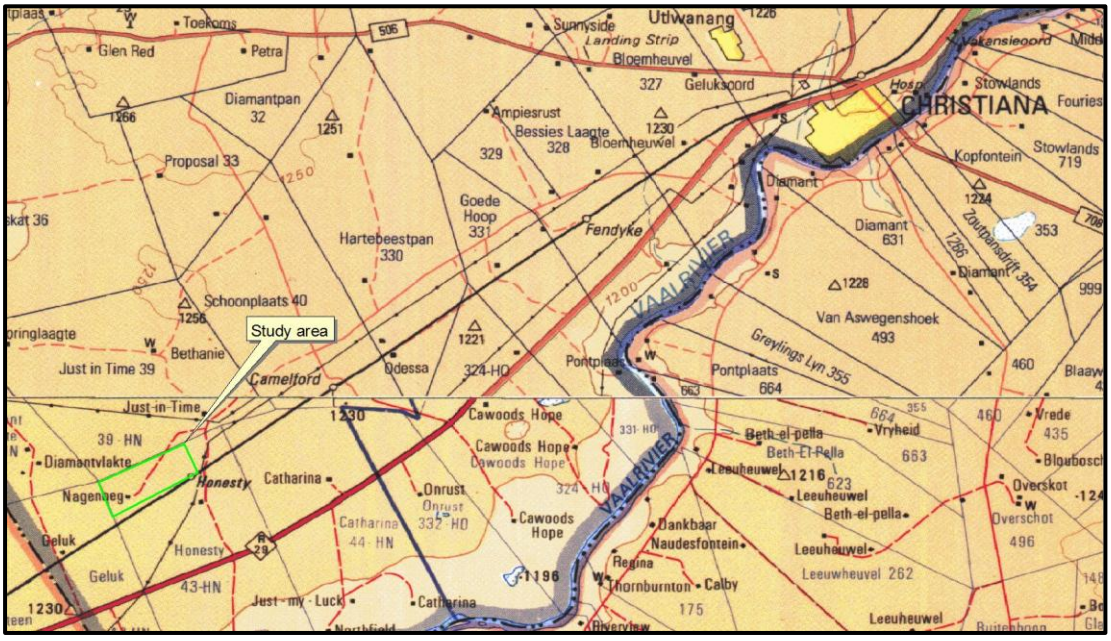

Fig. 8. Location of the study area in regional context.
(Map 2824: Chief Surveyor-General)

Fig. 9. Aerial view of the study area.
(Photo: Google Earth)

Fig. 10. Aerial view of the study area.

Fig. 11. Views over the study area looking north and east.

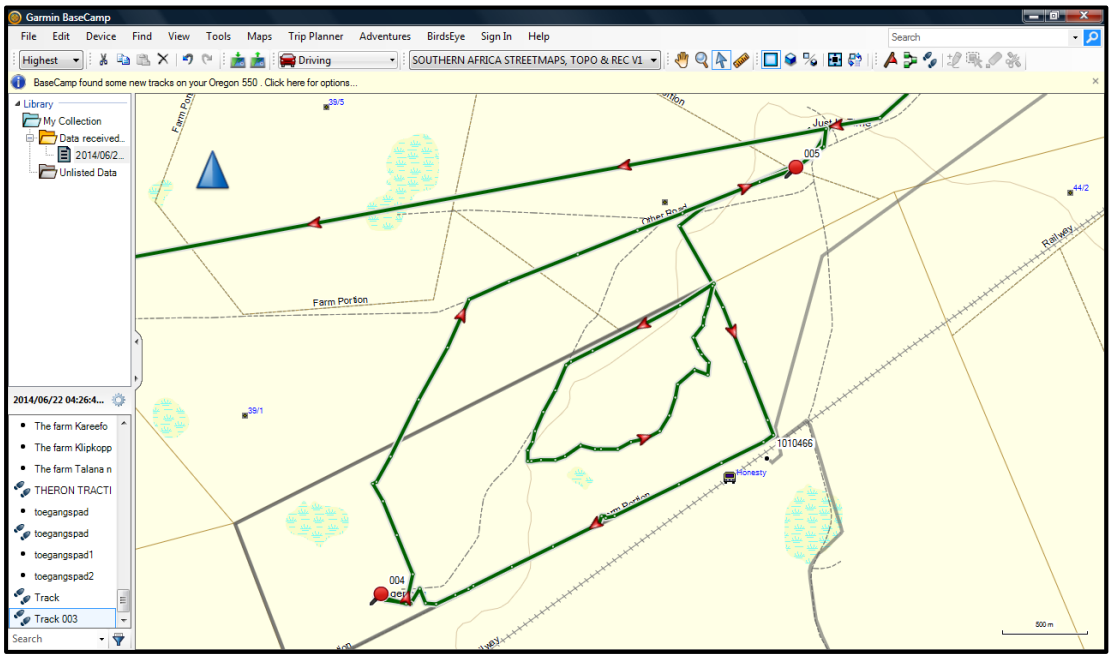

Fig. 12. Track log of the field survey.

5.2.2 ***Regional overview***

Habitation of the larger geographical area took place since Early Stone Age times, especially in the region of the Vaal River. However, the biggest legacy dating to the Stone Age are the numerous sites with rock engravings found in the larger region. Some of the farms in the Warrenton region known to have rock engravings are Fourteen Streams, to mention but a few (Dowson, Blundell & Hall 1992; Morris, Mngqolo, Blundell & Holliday 1995; Rossouw 2008).

As yet, no sites dating to the Early Iron Age have been reported from the region and most sites date to the Late Iron Age. According to Breutz (1959) stone walled sites dating to the Late Iron Age and which can be linked to the Tswana occupation of the area, are found on a number of farms in the region, e.g. Waai Hoek and Brul Pan. However, the historic most important one, named Dithakong, is located some distance to the north-west. This site was first visited by early travellers such as Lichtenstein and John Campbell in the early part of the 19th century.

The town of Christiana was established in 1895 on the farm Zoutpansdrift. It is named after Christina, the daughter of M.W. Pretorius, the first president of the South African Republic (ZAR). The town achieved municipal status in 1904 (Raper 2004).

The whole farm Honesty was originally granted to D R Janse van Vuuren on 16 October 1871. On 11 July 1895 it was transferred by Deed of Transfer 2328/1895 to J M Wessels.

5.2.3 ***Identified sites***

The following sites, features and objects of cultural significance have been identified to exist in the study region and their location is presented in Fig. 11 below:

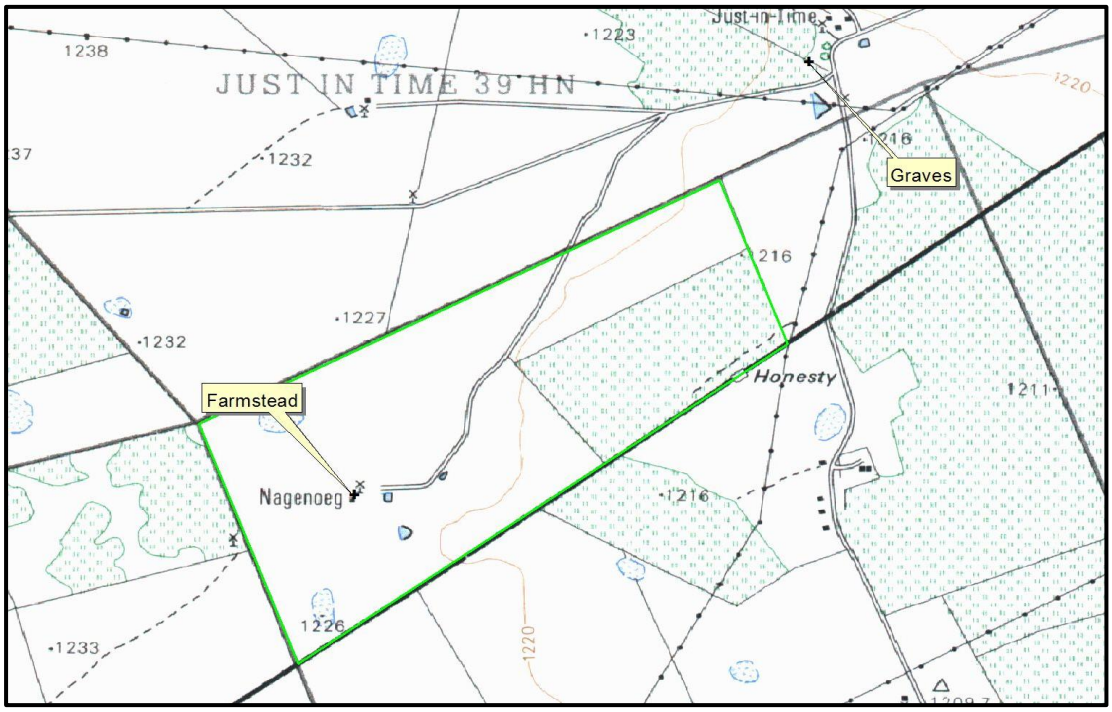

Fig. 13. Layout of the study area.
(Map 2824BB: Chief Surveyor-General)

5.2.3.1 *Stone Age*

- No sites, features or objects dating to the Stone Age were identified in the study area.

5.2.3.2 *Iron Age*

- No sites, features or objects dating to the Iron Age were identified in the study area.

5.2.3.3 *Historic period*

- *Farmstead*

NHRA Category	Buildings, structures, places and equipment of cultural significance	
Protection status		
General Protection - Section 34: Structures older than 60 years		
Location	S 28.03067	E 24.93587

Description
An old farmstead consisting of a main house as well as some outbuildings (milk shed, store rooms, etc.) have been identified in the study area. A date of 1921 was added above the front door. From the variety of material used in constructing the different rooms - dressed stone, sundried brick and fired bricks - it is deduced that the main structure was built in different phases. The roof as well as all the fitting has been removed and only the walls remain. These are in a bad state of repair and most are in the process of collapsing. The various outbuildings are totally in ruins and only vague outlines of the foundations remain. The garden consists of a number of large exotic trees (palms, Jacaranda, blue-gum, etc.). No graves were identified in the vicinity of the farmstead.
Significance
• High a regional level – Grade III Within the context of farming activities in the larger region, this site is viewed to be one of a limited number that would have occurred in the region, i.e. usually only one farmstead would be located on a farm. Due to the limited number of such features in the larger landscape, it can therefore be seen to have a high significance on a regional level.
Mitigation
According to current understanding of the proposed development, this site would be impacted on by the proposed development. It is recommended that if the farmstead cannot be avoided, it should be documented (mapped and photographed) in full before development takes place. If that is not possible, a buffer zone of at least 20 metres should be demarcated around the site. This can be determined from the last visible feature identified as forming part of the larger farmstead settlement unit.



Fig. 14. Views of the identified farmstead.

5.2.4 ***Impact assessment***

(See Appendix 3 for the methodology applied)

Environmental Parameter	**Colonial Period - farmsteads**
Issue/Impact/Environmental Effect/Nature	The various features are subject to damage. Variety of interconnected elements makes up the whole. Impact on part therefore implies an impact on the whole
Extent	Local
Probability	Definite
Reversibility	Reversible with human intervention
Magnitude	Moderate
Duration	Medium term
Significance Rating	Sites have a high significance on a region level – viewed as NHRA Grade III sites.
Mitigation measures	All of these sites should be avoided as far as possible. Mitigation should take the form of isolating known sites and declare them as no-go zones with sufficient large buffer zones around them for protection. In exceptional cases mitigation can be implemented after required

	procedures have been followed.

Significance of potential impact

Environmental Parameter	Magnitude	Reversibility	Extent	Duration	Probability	Ranking
Colonial farmsteads	4	3	2	5	4	**56 (High)**

5.3 **Beta Solar Power Plant (Pty) Ltd, Hertzogville region, Free State Province**

5.3.1 ***Site location and description***

This study area is located approximately 17km east of the town of Hertzogville in the Free State Province (Fig. 13). It consists of an irregular shaped section of land, approximately 180ha in extent. For more detail, please see the Technical Summary presented below.

Property details						
Province	Free State Province					
Magisterial district	Hertzogville					
Topo-cadastral map	2825BA					
Closest town	Hertzogville					
Farm name	Talana 1241					
Portions/Holdings	-					
Coordinates	Polygon (approximate)					
	No	Latitude	Longitude	No	Latitude	Longitude
	1	-28.16520	25.67060	2	-28.17601	25.66864
	3	-28.17496	25.69103	4	-28.17253	25.69509

The geology of the area is made up of shale, changing to dolerite in the east. The original vegetation is classified as Dry Sandy Highveld Grassland. The topography is described as plains and pans and no hills, outcrops or rivers occur in the study area or immediate surrounding area. The study area is currently used for grazing purposes, although some sections have been ploughed in the past.

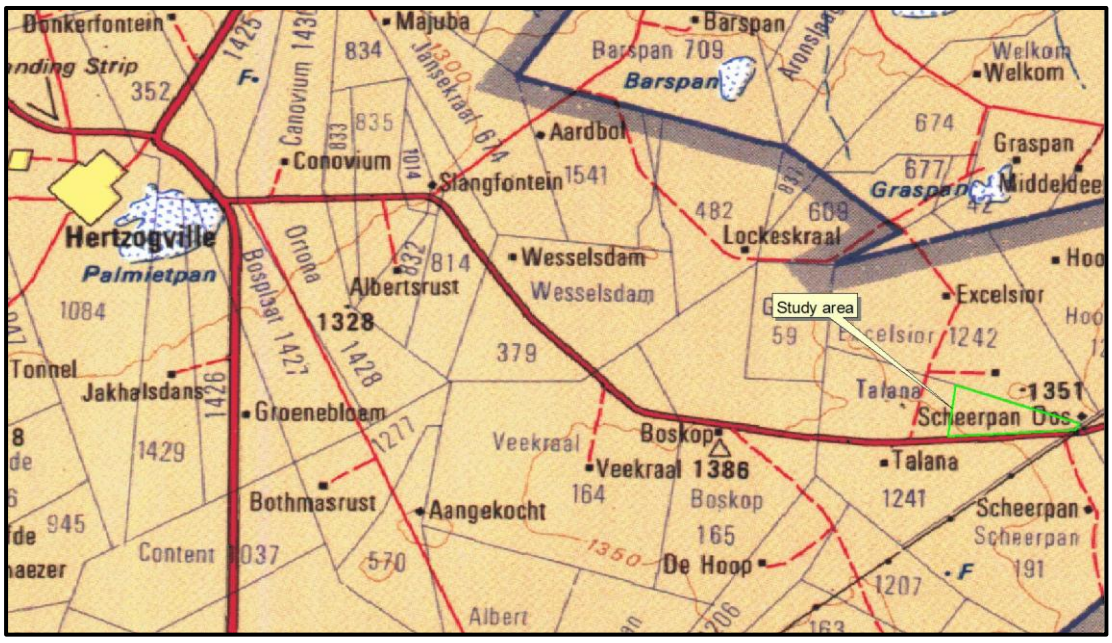

Fig. 15. Location of the study area in regional context.
(Map 2824: Chief Surveyor-General)

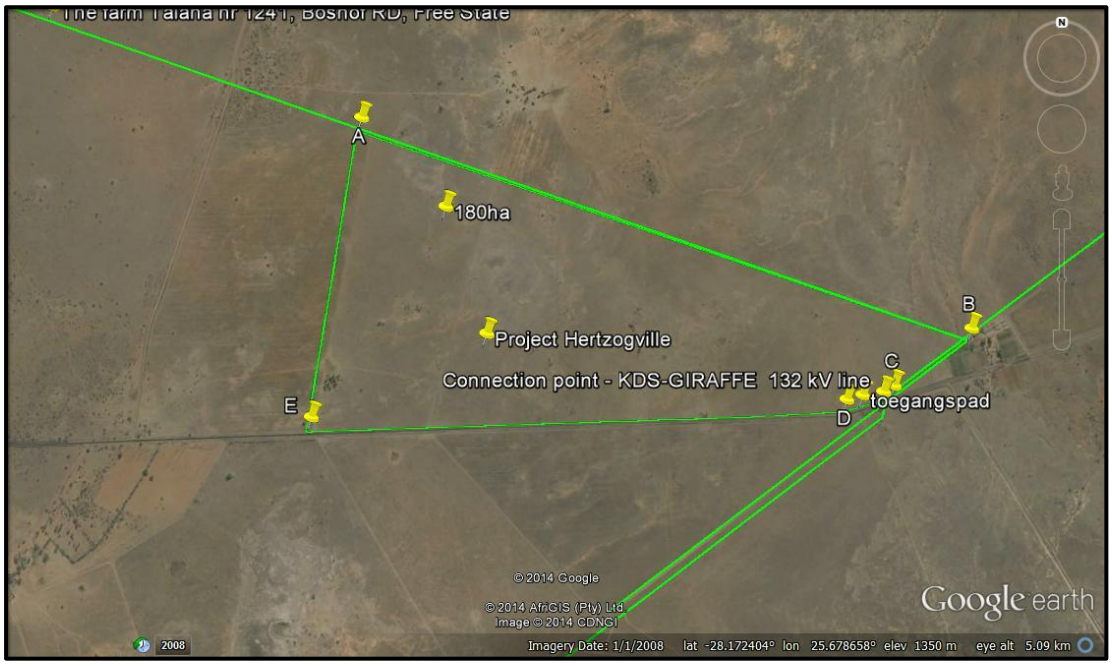

Fig. 16. Layout of the study area.
(Photo: Google Earth)

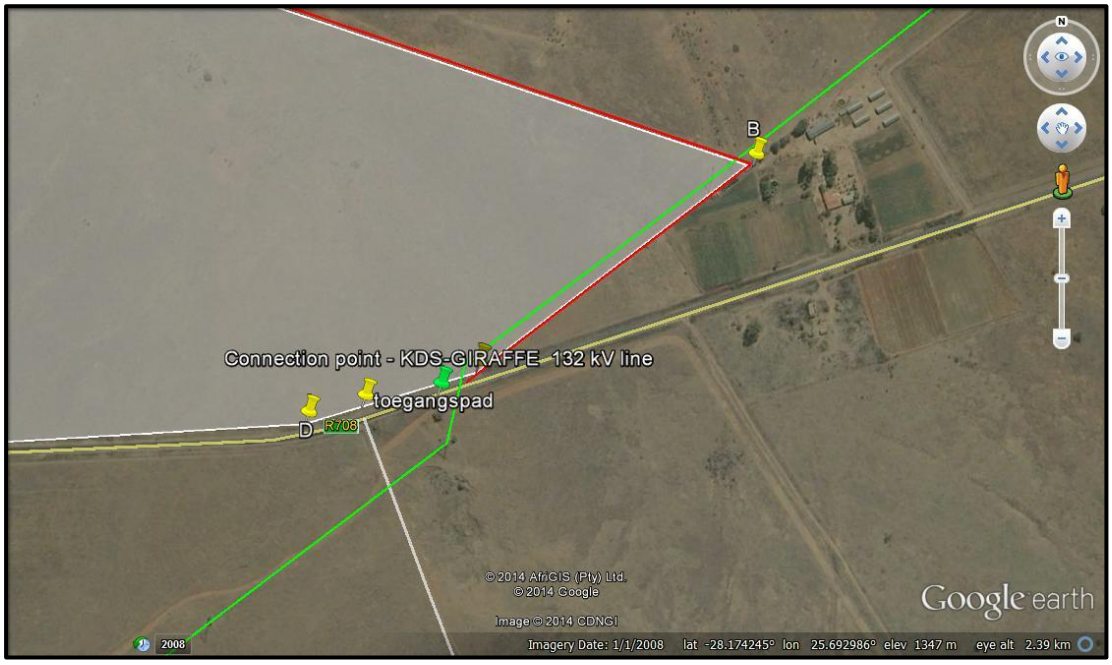

Fig. 17. Access routes and loop-in lines.

Fig. 18. Views over the study area.

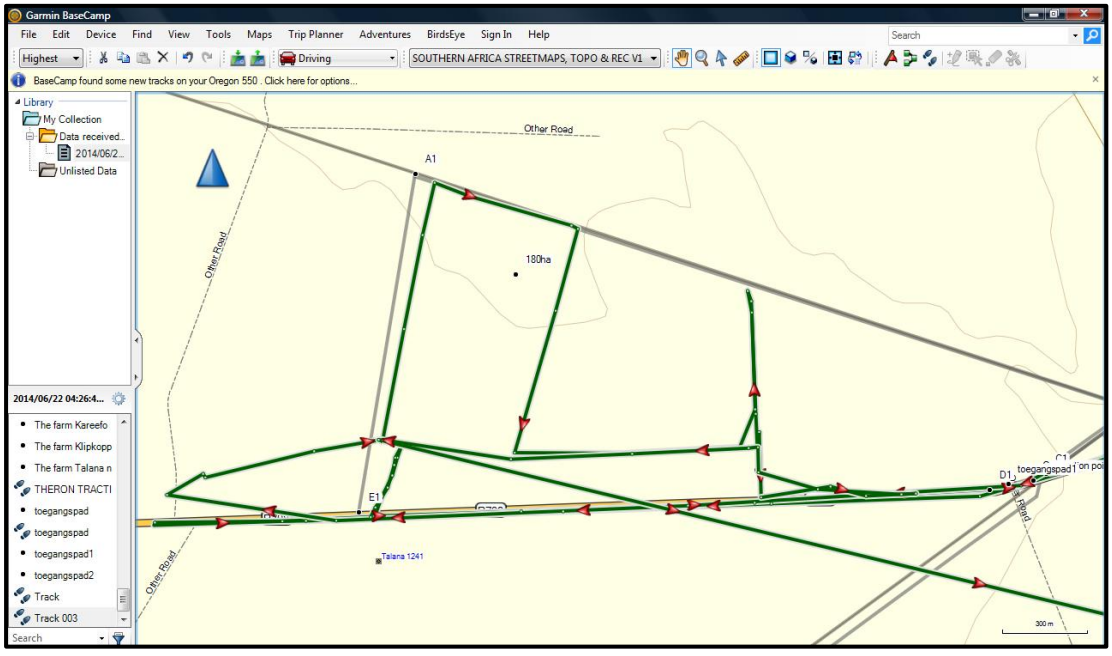

Fig. 19. Track log of the field survey.

5.3.2 ***Regional overview***

Very little is known about pre-colonial settlement in the region. This is probably the result of a very low occupation of the region by humans. This, in turn, is probably the result of the fact that there are very little resources, e.g. hills, outcrops and rivers in the region which were preferred by humans to settle in its vicinity.

The town of Hertzogville was founded in 1915 and named after Genl. J.B.M. Hertzog, former Prime Minister of the Union of South Africa. It attained municipal status in 1924 (Raper 2004).

5.3.3 ***Identified sites***

The following sites, features and objects of cultural significance have been identified to exist in the study region and their location is presented in Fig. 17 below:

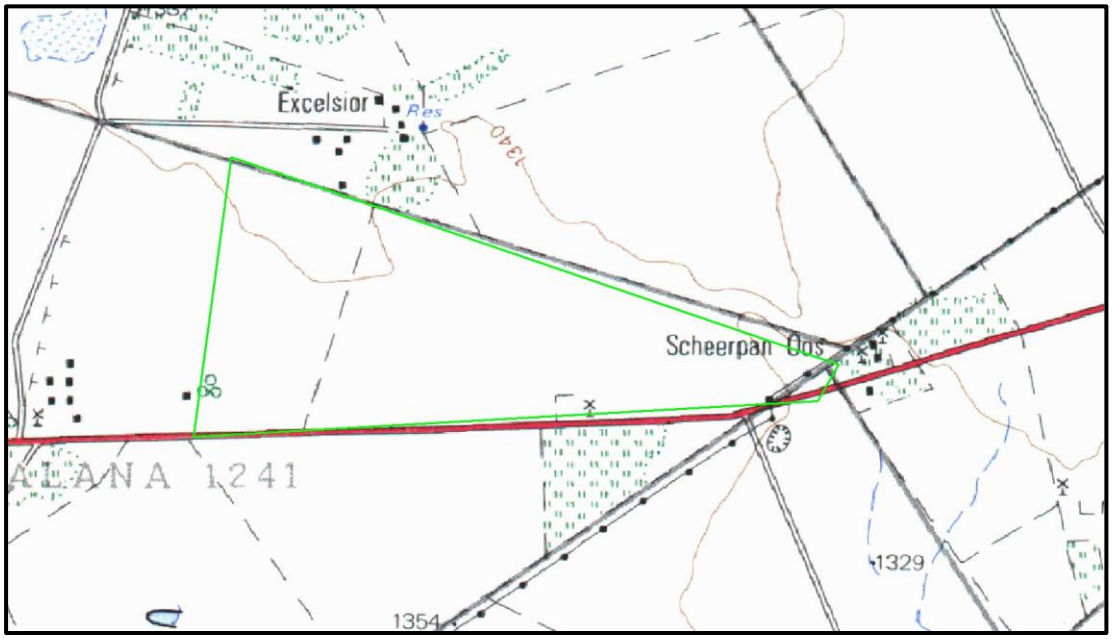

Fig. 20. Layout of the study area.
(Map 2825BA: Chief Surveyor-General)

5.3.3.1 *Stone Age*

- No sites, features or objects dating to the Stone Age were identified in the study area.

5.3.3.2 *Iron Age*

- No sites, features or objects dating to the Iron Age were identified in the study area.

5.3.3.3 *Historic period*

- No sites, features or objects dating to the historic period were identified in the study area.

5.3.4 ***Impact assessment***

As no sites, features or objects of cultural significance were found in the study area, there would be no impact as a result of the proposed development.

5.4 **Sonvanger Solar Power Plant (Pty) Ltd, Theunissen region, Free State Province**

5.4.1 ***Site location and description***

This study area is located about 4km southwest of the town centre of Theunissen in the Free State Province (Fig. 18). It consists of an irregular shaped section of land, approximately 264ha in extent. For more detail, please see the Technical Summary presented below.

Property details						
Province	Free State					
Magisterial district	Theunissen					
Topo-cadastral map	2826BCA					
Closest town	Theunissen					
Farm name	Karreebooms Vallei 258					
Portions/Holdings	-					
Coordinates	Polygon (approximate)					
	No	Latitude	Longitude	No	Latitude	Longitude
	1	-28.43947	26.68011	2	-28.42761	26.66931
	3	-28.43017	26.66715	4	-28.42857	26.66426
	5	-28.41778	26.66839	5	-28.42250	26.68606

The geology of the area is made up of mudstone and the original vegetation is classified as Dry Sandy Highveld Grassland. The topography is described as lowlands with hills. No rivers occur in the study area or immediate surrounding area. The study area can be described as greenfield veld and is currently used for agricultural (grazing) purposes.

Fig. 21. Location of the study area in regional context.
(Map 2826: Chief Surveyor-General)

Fig. 22. Aerial view of the study area.
(Photo: Google Earth).

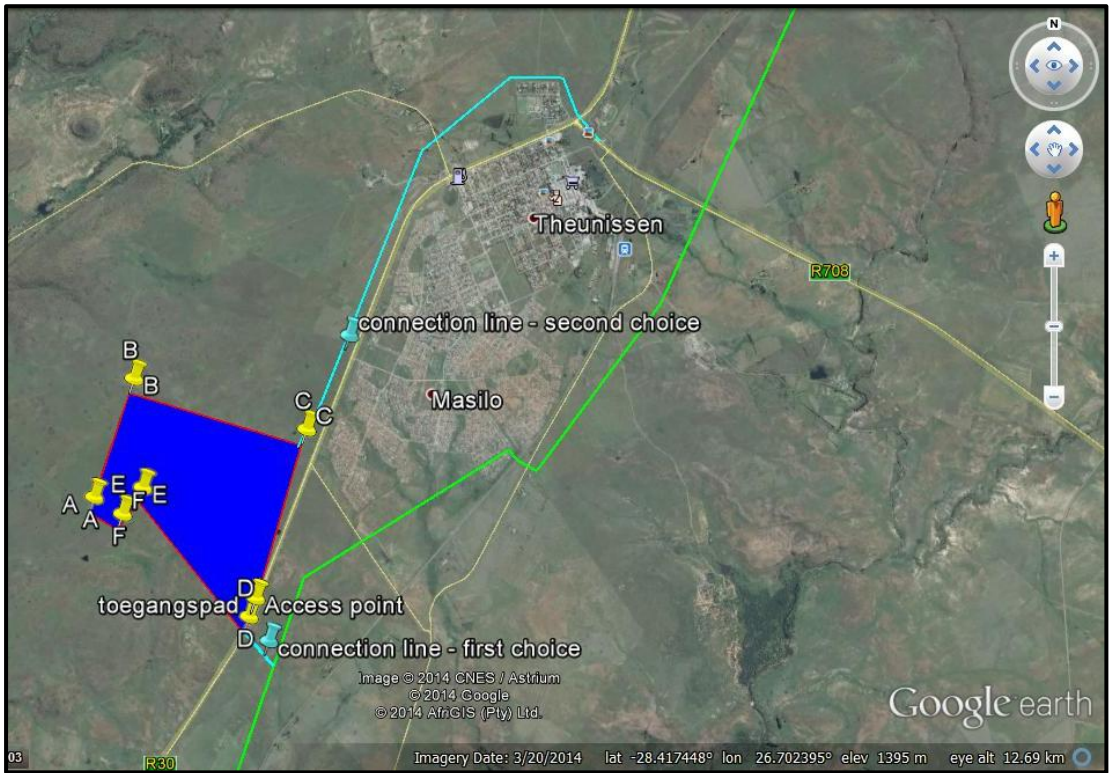

Fig. 23. Access routes and loop-in lines.

Fig. 24. View over the study area.

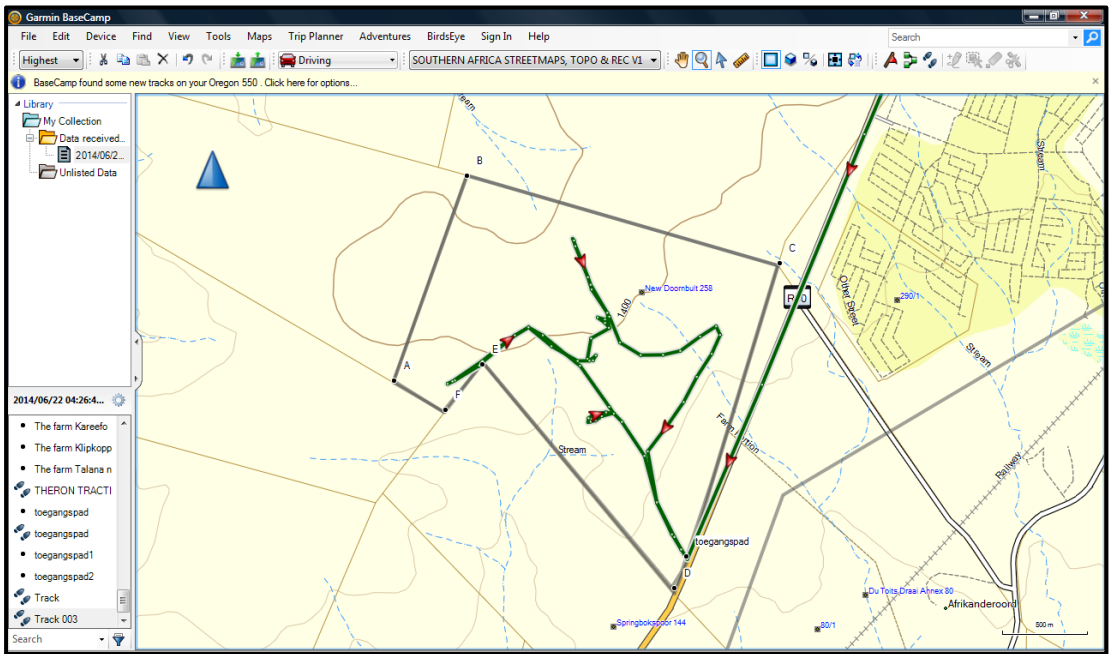

Fig. 25. Track log of the field survey.

5.4.2 ***Regional overview***

Very little is known about pre-colonial settlement in the region. This is probably the result of a very low occupation of the region by humans. This, in turn, is probably the result of the fact that there are very little resources, e.g. hills, outcrops and rivers in the region which were preferred by humans to settle in its vicinity.

The town of Theunissen was laid out in 1907 on the farms Smaldeel and a portion of Poortje and attained municipal status in 1912. It was first known as Smaldeel, but the name was changed to Theunissen in honour of Commandant H. Theunessin, who obtained permission for its establishment (Raper 2004).

According to the “Land Certificaat” dated 25 Aug 1867 the farm Karreebooms Vallei originally belonged to A H le Roux.

Two formal cemeteries are located on the northern side of the town. The second choice for the connection line will pass within 160 metres from each of these. This distance is viewed to be sufficient far away in order not to have an impact on the cemeteries.

5.4.3 ***Identified sites***

The following sites, features and objects of cultural significance have been identified to exist in the study region and their location is presented in Fig. 22 below:

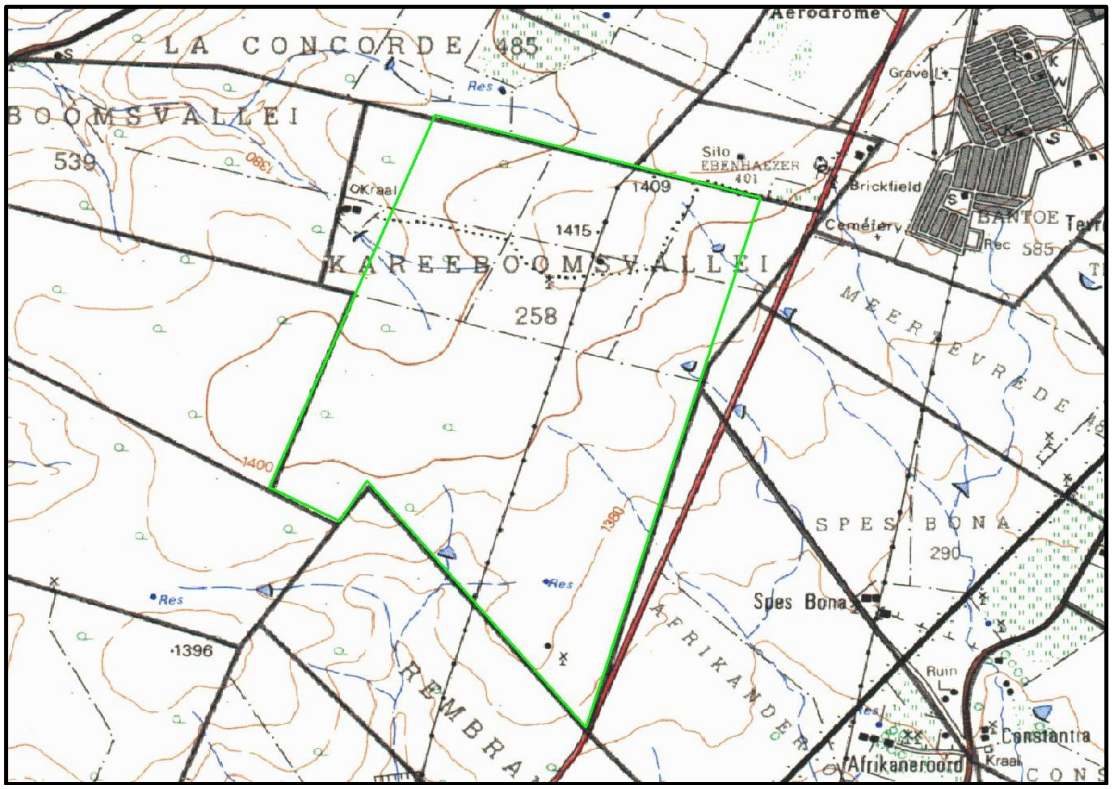

Fig. 26. Layout of the study area.
(Map 2826BC: Chief Surveyor-General)

5.4.3.1 *Stone Age*

- No sites, features or objects dating to the Stone Age were identified in the study area.

5.4.3.2 *Iron Age*

- No sites, features or objects dating to the Iron Age were identified in the study area.

5.4.3.3 *Historic period*

- No sites, features or objects dating to the historic period were identified in the study area.

5.4.4 ***Impact assessment***

As no sites, features or objects of cultural significance were found in the study area, there would be no impact as a result of the proposed development.

5.5 **Serurubele Solar Power Plant (Pty) Ltd, Bloemfontein region, Free State Province**

5.5.1 ***Site location and description***

This study area is located about 16km southeast of the town centre of Bloemfontein (Fig. 23). It consists of an irregular shaped section of land, approximately 250ha in extent. For more detail, please see the Technical Summary presented below.

Property details						
Province	Free State Province					
Magisterial district	Bloemfontein					
Topo-cadastral map						
Closest town	Bloemfontein					
Farm name	Blydschap 504					
Portions/Holdings	Remaining extent					
Coordinates	Polygon (approximate)					
	No	Latitude	Longitude	No	Latitude	Longitude
	1	-29.23936	26.30229	2	-29.25928	26.31629
	3	-29.25955	26.29326			

The geology of the area is made up of mudstone, changing to dolerite south of the study area. The original vegetation is classified as Dry Sandy Highveld Grassland. The topography is described as plains and pans and no hills or rivers occur in the study area or immediate surrounding area. The study area can be described as greenfield veld and is currently used for agricultural (grazing) purposes.

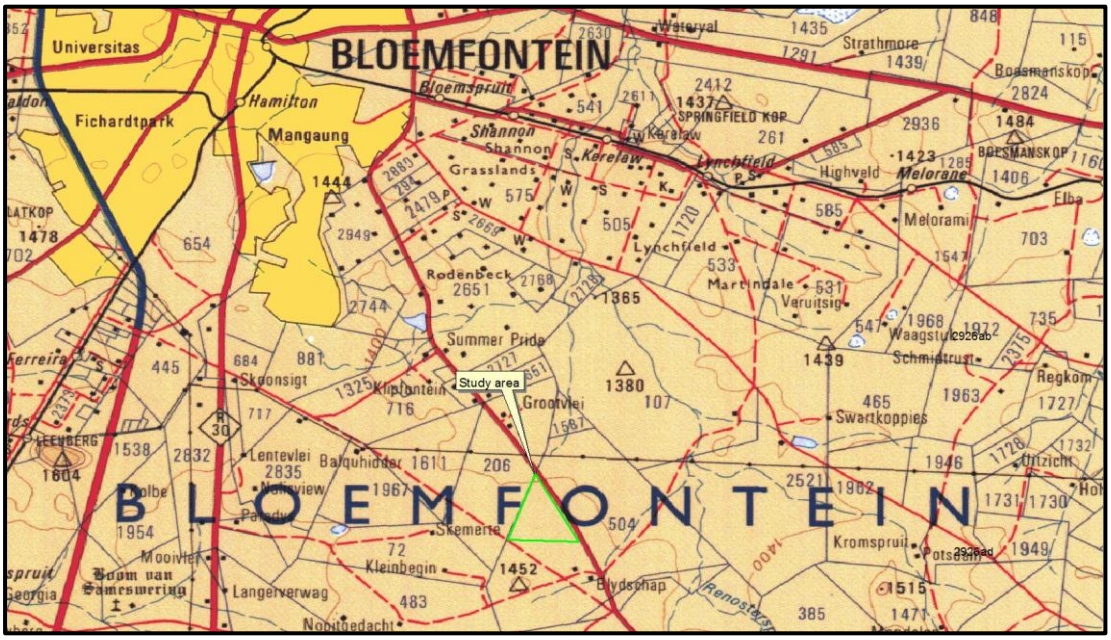

Fig. 27. Location of the study area in regional context.
(Map 2926: Chief Surveyor-General)

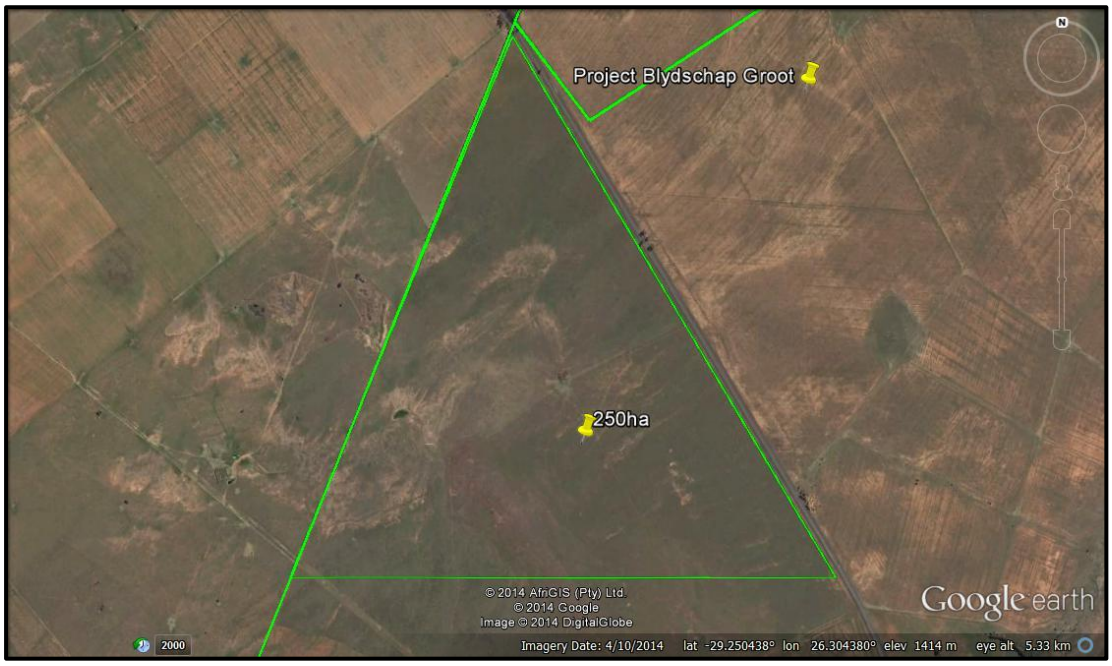

Fig. 28. Aerial view of the study area.
(Photo: Google Earth).

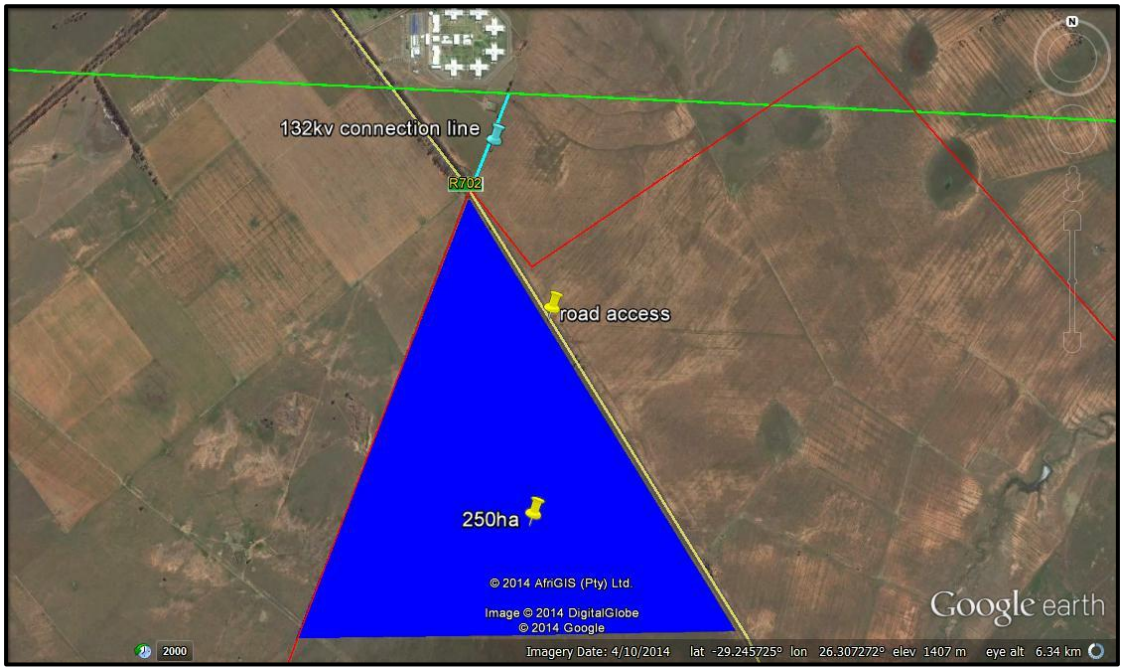

Fig. 29. Access routes and loop-in lines.

Fig. 30. View over the study area.

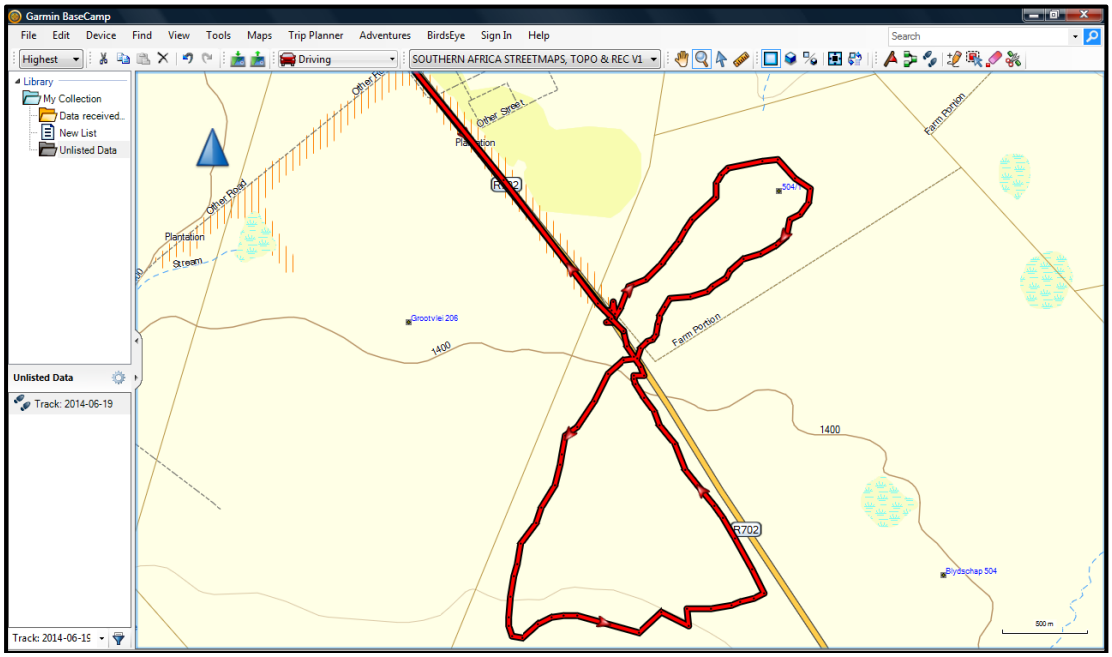

Fig. 31. Track log of the field survey.

5.5.2 ***Regional overview***

Stone tools dating to the various phases of the Stone Age are reported to occur all over the larger region. No stratified sites are known from the region.

A number of rock engraving sites dating to the Later Stone Age are known to exist in the larger region, some even in the city of Bloemfontein.

The city of Bloemfontein was established in 1846 by Major H.D. Warden on the farm Bloemfontein that was originally owned by Maritz Pretorius, a man of Griqua origin. It attained municipal status in 1880 (Raper 2004). The rise of Bloemfontein coincided with the discovery of diamonds and later with the gold of the Witwatersrand region. It became a stop-over for transport riders and later a stopover point for the railways.

The farm Blydschap belonged to P B Wiese as per TA 18215 dated 18 June 1890.

5.5.3 ***Identified sites***

The following sites, features and objects of cultural significance have been identified to exist in the study region and their location is presented in Fig. 20 below:

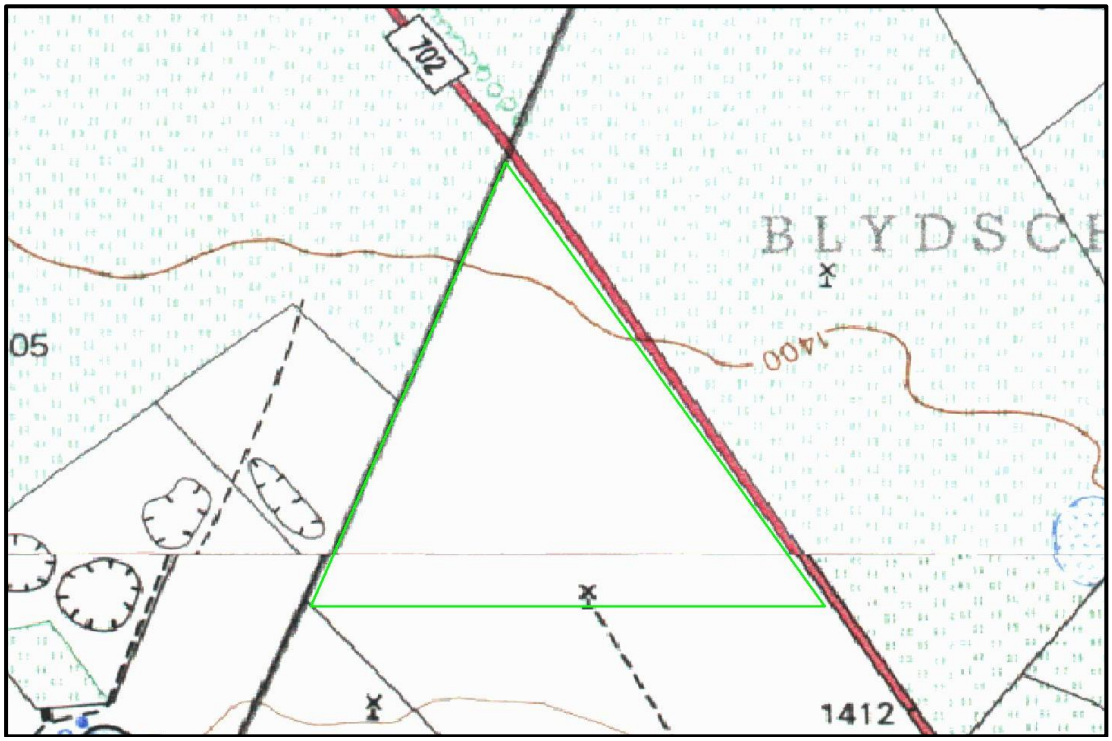

Fig. 32. Layout of the study area.
(Map 2926AB: Chief Surveyor-General)

5.5.3.1 *Stone Age*

- No sites, features or objects dating to the Stone Age were identified in the study area.

5.5.3.2 *Iron Age*

- No sites, features or objects dating to the Iron Age were identified in the study area.

5.5.3.3 *Historic period*

- No sites, features or objects dating to the historic period were identified in the study area.

5.5.4 ***Impact assessment***

As no sites, features or objects of cultural significance were found in the study area, there would be no impact as a result of the proposed development.

5.6 **Sonneblom Solar Power Plant (Pty) Ltd), Bloemfontein region, Free State Province**

5.6.1 ***Site location and description***

This study area is located about 16km southeast of the town centre of Bloemfontein (Fig. 17 & 18). It consists of an irregular shaped section of land, approximately 171ha in extent. For more detail, please see the Technical Summary presented below.

Property details						
Province	Free State Province					
Magisterial district	Bloemfontein					
Topo-cadastral map	2926AB					
Closest town	Bloemfontein					
Farm name	Blydschap 504					
Portions/Holdings	Portion 1					
Coordinates	Polygon (approximate)					
	No	Latitude	Longitude	No	Latitude	Longitude
	1	-29.23889	26.30252	2	-29.23075	26.30571
	3	-29.22754	26.31817	4	-29.23241	26.32298
	5	-29.24253	26.30569			

The geology of the area is made up of mudstone, changing to dolerite south of the study area. The original vegetation is classified as Dry Sandy Highveld Grassland. The topography is described as plains and pans and no hills or rivers occur in the study area or immediate surrounding area. The study area can be described as greenfield veld and is currently used for agricultural (grazing) purposes.

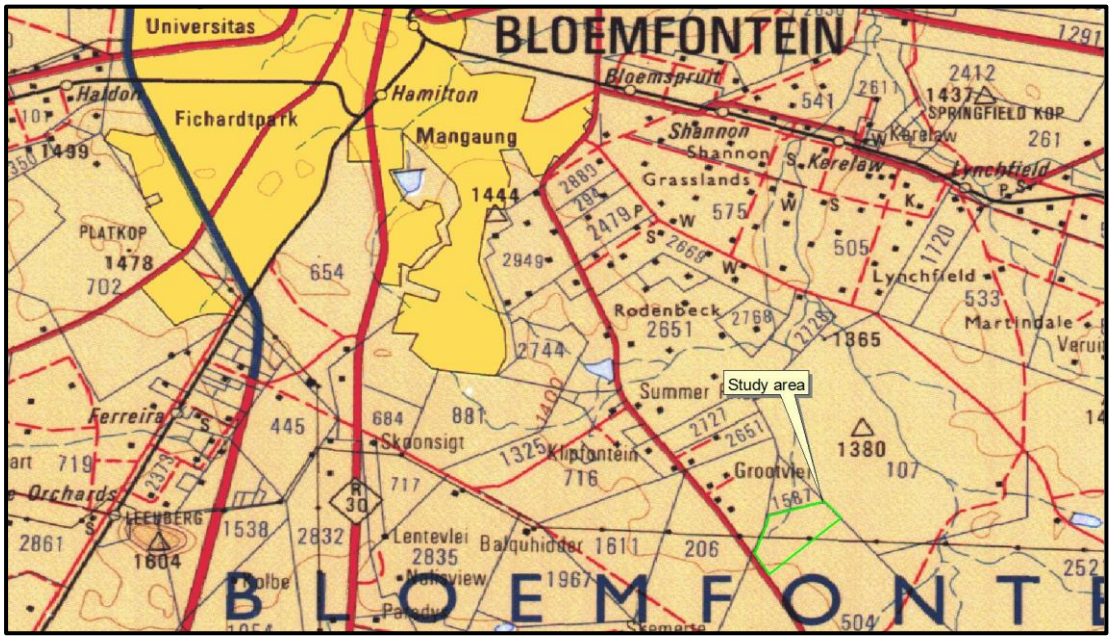

Fig. 33. Location of the study area in regional context.
(Map 2926: Chief Surveyor-General)

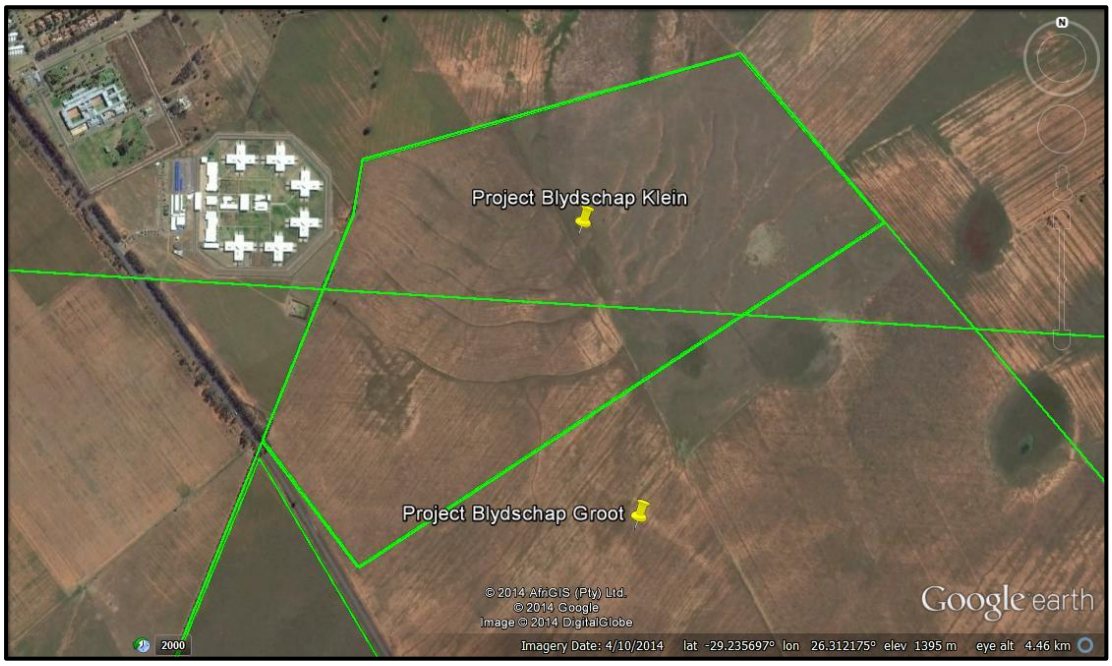

Fig. 34. Aerial view of the study area.
(Photo: Google Earth).

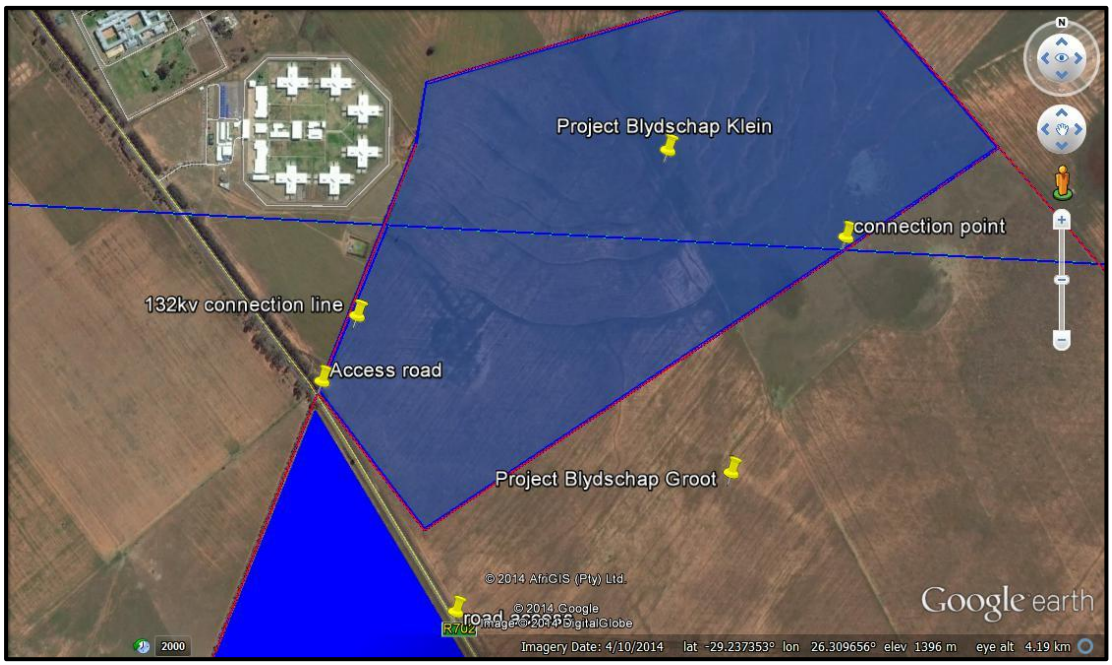

Fig. 35. Access routes and loop-in lines.

Fig. 36. View over the study area.

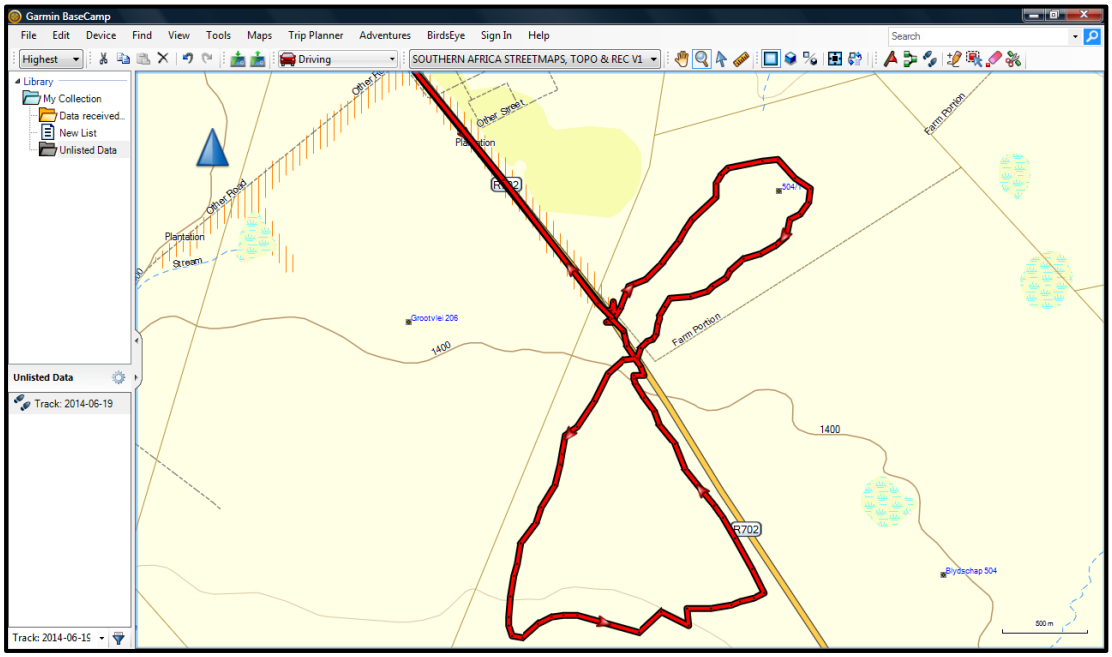

Fig. 37. Track log of the field survey.

5.6.2 ***Regional overview***

Stone tools dating to the various phases of the Stone Age are reported to occur all over the larger region. No stratified sites are known from the region.

A number of rock engraving sites dating to the Later Stone Age are known to exist in the larger region, some even in the city of Bloemfontein.

The city of Bloemfontein was established in 1846 by Major H.D. Warden on the farm Bloemfontein that was originally owned by Maritz Pretorius, a man of Griqua origin. It attained municipal status in 1880 (Raper 2004). The rise of Bloemfontein coincided with the discovery of diamonds and later with the gold of the Witwatersrand region. It became a stop-over for transport riders and later a stopover point for the railways.

The farm Blydschap belonged to P B Wiese as per TA 18215 dated 18 June 1890.

5.6.3 ***Identified sites***

The following sites, features and objects of cultural significance have been identified to exist in the study region and their location is presented in Fig. 32 below:

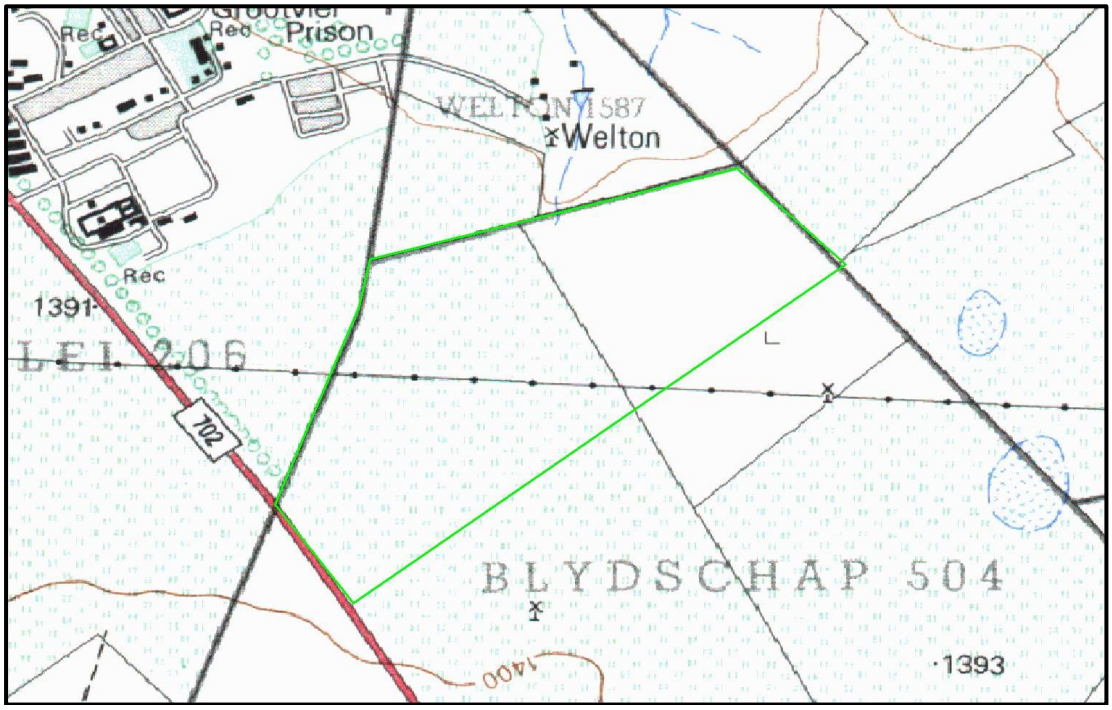

Fig. 38. Layout of the study area.
(Map 2926AB: Chief Surveyor-General)

5.6.3.1 *Stone Age*

- No sites, features or objects dating to the Stone Age were identified in the study area.

5.6.3.2 *Iron Age*

- No sites, features or objects dating to the Iron Age were identified in the study area.

5.6.3.3 *Historic period*

- No sites, features or objects dating to the historic period were identified in the study area.

5.6.4 ***Impact assessment***

As no sites, features or objects of cultural significance were found in the study area, there would be no impact as a result of the proposed development.

5.7 **Oryx Solar Power Plant (Pty) Ltd, Koffiefontein region, Free State Province**

5.7.1 ***Site location and description***

This study area is located about 5km northeast of the town of Koffiefontein in the Free State Province (Fig. 17 & 18). It consists of a triangular section of land, approximately 200ha in extent. For more detail, please see the Technical Summary presented below.

Property details						
Province	Free State Province					
Magisterial district	Koffiefontein					
Topo-cadastral map	2925AC					
Closest town	Koffiefontein					
Farm name	Klipkoppies 1246 (also known as Lentelus 1119)					
Portions/Holdings	-					
Coordinates	Polygon (approximate)					
	No	Latitude	Longitude	No	Latitude	Longitude
	1	-29.38309	25.06126	2	-29.36599	25.05648
	3	-29.38308	25.06129			

The geology of the area is made up of shale and the original vegetation is classified as Kimberley Thorn Bushveld. The topography is described as slightly irregular plains and pans and no hills or rivers occur in the study area or immediate surrounding area.

The study area can be described as greenfield veld and is currently used for agricultural (grazing) purposes.

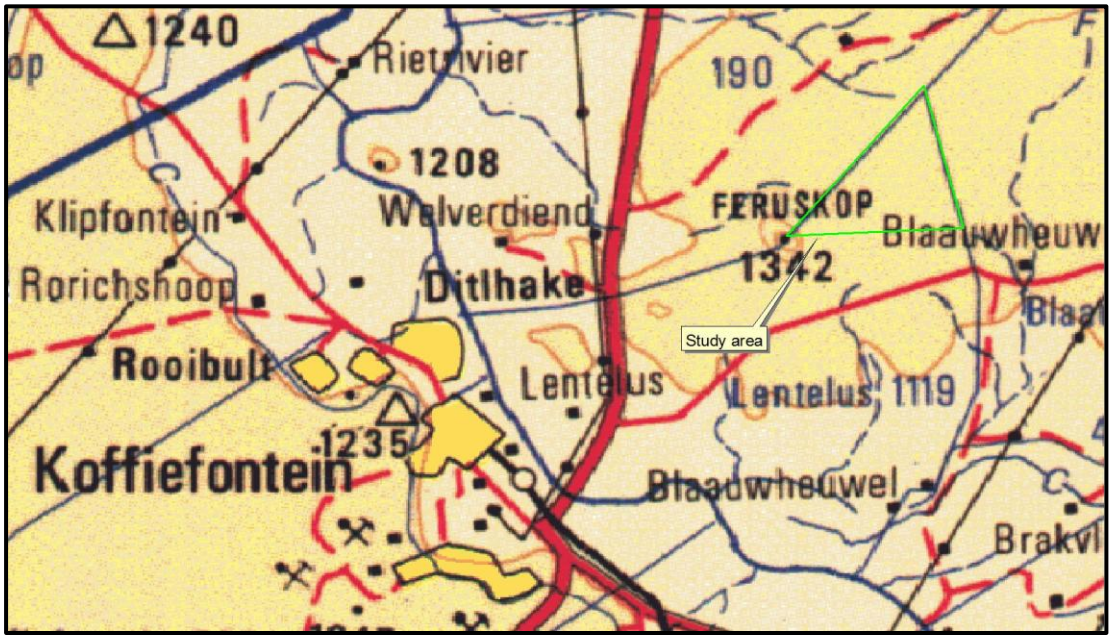

Fig. 39. Location of the study area in regional context.
(Map 2924: Chief Surveyor-General)

Fig. 40. Aerial view of the study area.
(Photo: Google Earth).

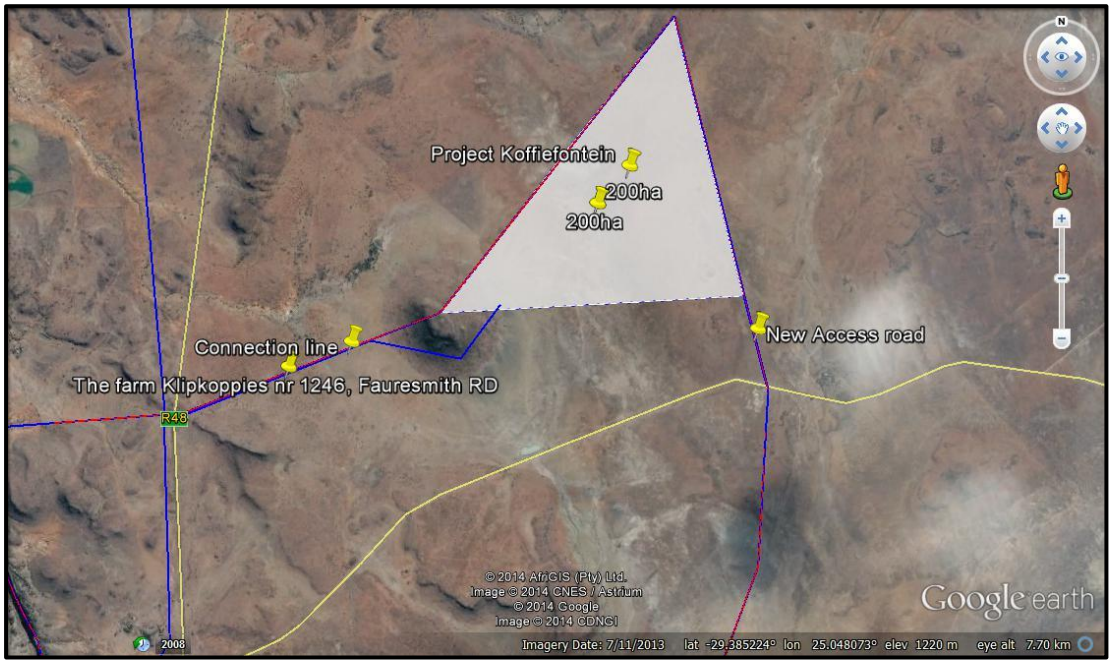

Fig. 41. Access routes and loop-in lines.

Fig. 42. View over the study area.

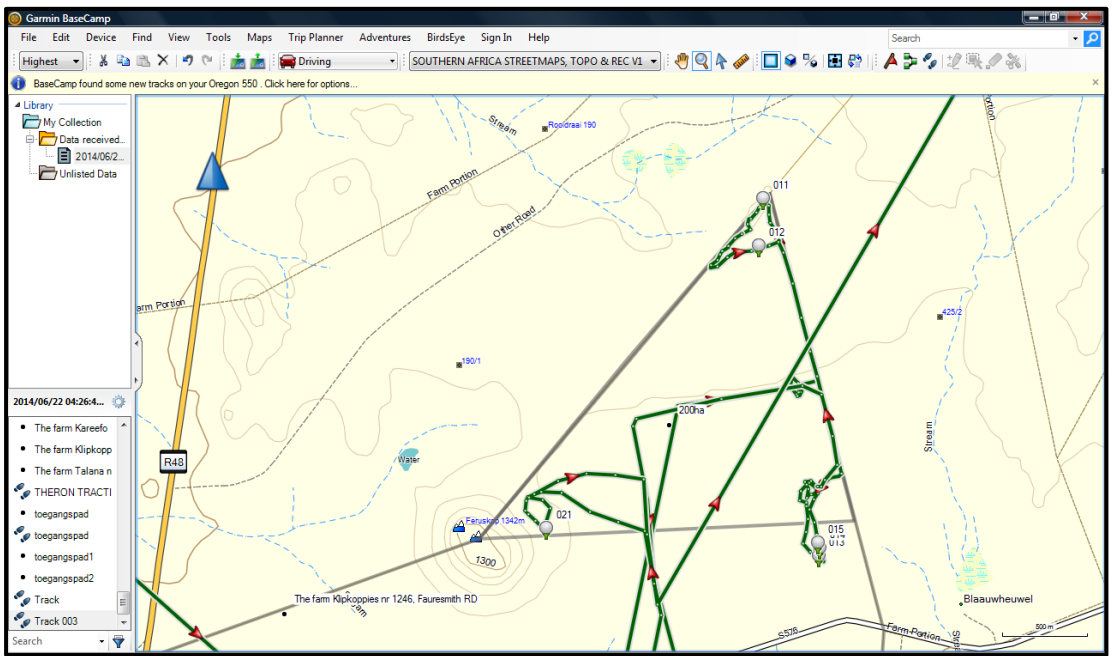

Fig. 43. Track log of the field survey.

5.7.2 ***Regional overview***

Stone tools dating to the various phases of the Stone Age are reported to occur all over the larger region. Stone Age tools associated with the Early and Middle Stone Age are apparently common in the area, especially along the Riet River. These are viewed as find spots rather than sites per se. That means that as most of these are surface finds, they are viewed to be out of context and do not have any significance. No stratified sites are known from the region.

A number of rock engraving sites dating to the Later Stone Age as well as the historic period are known to exist in the larger region, especially in the region on the eastern side of the Riet River. In the latter case, people riding horse are depicted (Fig 36). Many of these engravings from different sites have been removed and are "exhibited" in the town of Koffiefontein.

A number of stone walled settlement sites, classified by Maggs (1976) as type R ruins, occur north and south of the study area (Fig. 36). These sites represent a transitional phase between Khoi herders settling permanently and Iron Age Tswana-speaking people entering the area. These settlements were first described by William Burchell during the first two decades of the 19th century. A large number of graves, located in close vicinity to the Riet River, have been archaeologically investigated (Humphreys 1970, 1997, 2009; Morris 1992; Ouzman 2001).

The town of Koffiefontein grew out of a diamond diggers' camp and was proclaimed a town in 1892. The origin of its name is uncertain (Raper 2004). During the Anglo-Boer War, a block house was erected on a hill on the farm Klipkoppies, overlooking the town of Koffiefontein (Fig. 36). During the Second World War an internment camp was established here, in which 2000 Italian POW's and a large number of South African internees were detained.

The farm Klipkoppies was originally known as Lenterus.

Fig. 44. Type of heritage sites in the larger region.

5.7.3 ***Identified sites***

The following sites, features and objects of cultural significance have been identified to exist in the study region and their location is presented in Fig. 37 below:

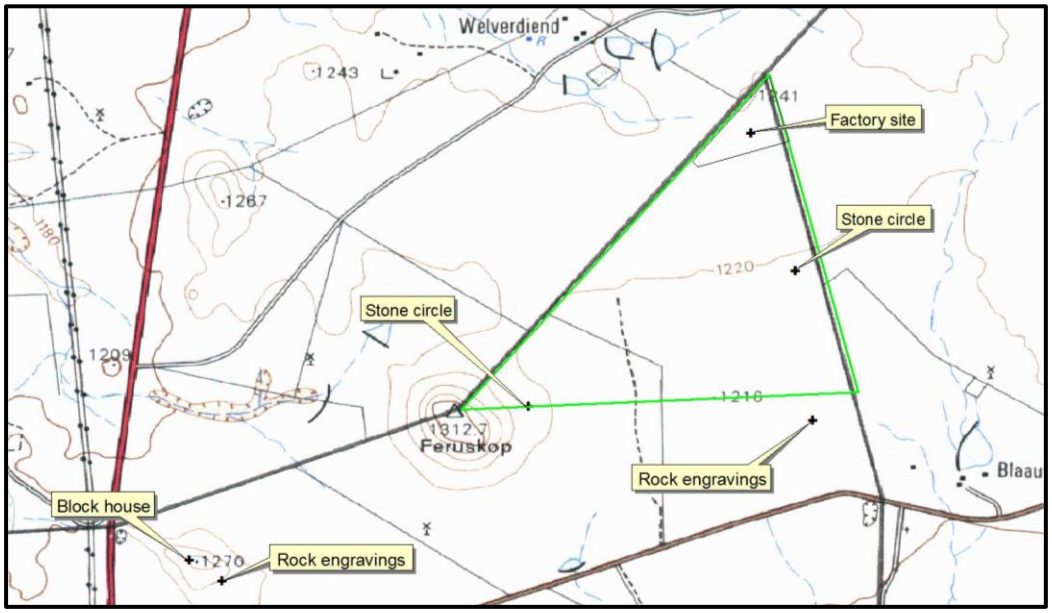

Fig. 45. Layout of the study area.
(Map 2925AC: Chief Surveyor-General)

5.7.3.1 *Stone Age*

NHRA Category	Archaeological and palaeontological sites
Protection status	
General Protection - Section 35: Archaeology, palaeontology and meteorites	

Location	1	S 29.36884	E 25.05586
Description			
A number of stone tools, all dating to the Middle Stone Age were identified in the vicinity of a rocky ridge in the northern section of the development site. The material is mostly hardened shale. Cores, flakes and unspecific tools (probably all scrapers) were identified. The high ratio of cores and flakes to tools seems to indicate that this was a factory site where material, obtained from local outcrops, was worked into tools (one such area is identified by the coordinates presented above). The density of material varies somewhat over the area, but is places it approximately 5 objects per 1 m^2.			
Significance	Medium on a regional level – Grade III		
Mitigation			
It is recommended that this ridge, at least for the section indicated in green on the map below (Fig. 39 – see coordinates below) is avoided. If this is not possible, a systematic surface collection should be done to recover some of the artefacts.			

1	S 29.36596	E 25.05651
2	S 29.36848	E 25.05720
3	S 29.37002	E 25.05283

Fig. 46. The stone tools and possible quarry site that were identified.

Fig. 47. The stone tools and possible quarry site that were identified.

5.7.3.2 *Iron Age*

- No sites, features or objects dating to the Iron Age were identified in the study area.

5.7.3.3 *Historic period*

NHRA Category	Archaeological and palaeontological sites
Protection status	
General Protection - Section 35: Archaeology, palaeontology and meteorites	

Location	1 2	S 29.37631 S 29.38362	E 25.05829 E 25.04383
Description			
1. A small stone walled enclosure was identified on a low outcrop on the eastern side of			

the study area. It is approximately 5 metres in diameter, with some sections of the wall being approximately 1,5 metres high. According to local tradition this was feature was built by early sheep herders to take shelter in during the night. 2. A second small stone walled enclosure was identified on the eastern edge of the development area. It is approximately three metres in diameter. According to local tradition this was feature was built by early sheep herders to take shelter in during the night.	
Significance	Low on a regional level – Grade III
Mitigation	
1. It is anticipated that no development would take place on this outcrop. However, it is recommended the site is marked off with danger tape during construction, leaving a buffer area of at least 5 metres from the outer edge of the stone walling. 2. This site is located right on the edge of the development site. It would there be easy to avoid it and it recommended that it is marked off with danger tape during construction, leaving a buffer area of at least 5 metres from the outer edge of the stone walling.	


1


1


2


2

Fig. 48. The stone walled structures that were identified.

5.7.4 ***Impact assessment***

(See Appendix 3 for the methodology applied)

Environmental Parameter	**Pre-colonial: Stone Age sites**
Issue/Impact/Environmental Effect/Nature	Many sites are still unknown. Their potential and significance therefore unknown. The impact will be the physical disturbance of the material and its context.
Extent	Local
Probability	Can occur
Reversibility	Irreversible

Magnitude	Moderate
Duration	Permanent
Significance Rating	Sites have a medium significance on a region level – viewed as NHRA Grade III sites. Distinguish from find spots, which have low significance. Rock art sites are viewed to have high significance on a regional level – viewed as NHRA Grade II sites.
Mitigation measures	All of these sites should be avoided as far as possible. Mitigation should take the form of isolating known sites and declare them as no-go zones with sufficient large buffer zones around them for protection. Sites that cannot be avoided should be excavated by an archaeologist qualified in Stone Age archaeology.

Significance of potential impact

Environmental Parameter	Magnitude	Reversibility	Extent	Duration	Probability	Ranking
Stone Age sites	3	3	1	5	4	**48 (High)**

Environmental Parameter	**Colonial Period – farming sites**
Issue/Impact/Environmental Effect/Nature	The various features are subject to damage. Easier to identify and therefore easier to avoid.
Extent	Local
Probability	Unusual but possible
Reversibility	Reversible with human intervention
Magnitude	Moderate
Duration	Medium term
Significance Rating	Sites have a low significance on a region level – viewed as NHRA Grade III sites.
Mitigation measures	All of these sites should be avoided as far as possible. Mitigation should take the form of isolating known sites and declare them as no-go zones with sufficient large buffer zones around them for protection. In exceptional cases mitigation can be implemented after required procedures have been followed.

Significance of potential impact

Environmental Parameter	Magnitude	Reversibility	Extent	Duration	Probability	Ranking
Stone Age sites	3	3	1	5	3	**36 (Moderate)**

6. SITE SIGNIFICANCE AND ASSESSMENT

6.1 **Heritage assessment criteria and grading**

The NHRA stipulates the assessment criteria and grading of archaeological sites. The following categories are distinguished in Section 7 of the Act:

- **Grade I**: Heritage resources with qualities so exceptional that they are of special national significance;
- **Grade II**: Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region; and
- **Grade III**: Other heritage resources worthy of conservation on a local authority level.

The occurrence of sites with a Grade I significance will demand that the development activities be drastically altered in order to retain these sites in their original state. For Grade II and Grade III sites, the applicable of mitigation measures would allow the development activities to continue.

6.2 **Statement of significance**

A matrix was developed whereby the above criteria, as set out in Sections 3(3) and 7 of the NHRA, No. 25 of 1999, were applied for each identified site (see Appendix 1). This allowed some form of control over the application of similar values for similar sites. Three categories of significance are recognized: low, medium and high. In terms of Section 7 of the NHRA, all the sites currently known or which are expected to occur in the study area are evaluated to have a grading as identified in the table below.

Based on current information regarding sites in the surrounding area, all sites that might have occurred in the study region would have been judged to have Grade III significance.

Table 1. Summary of identified heritage resources in the study areas.

Identified heritage resources	
Category, according to NHRA	*Identification/Description*
Formal protections (NHRA)	
National heritage site (Section 27)	None
Provincial heritage site (Section 27)	None
Provisional protection (Section 29)	None
Place listed in heritage register (Section 30)	None
General protections (NHRA)	
structures older than 60 years (Section 34)	Yes
archaeological site or material (Section 35)	Yes
palaeontological site or material (Section 35)	None
graves or burial grounds (Section 36)	None
public monuments or memorials (Section 37)	None
Other	
Any other heritage resources (describe)	None

6.3 **Impact assessment**

Impact analysis of cultural heritage resources under threat of the proposed development, are based on the present understanding of the development.

- **Objective: Protection of heritage resources**

Archaeological or other heritage materials occurring in the path of any surface or sub-surface disturbances associated with any aspect of the development are highly likely to be subject to destruction, damage, excavation, alteration, or removal. The objective should be to limit such impacts to the primary activities associated with the development and hence to limit secondary impacts during the medium and longer term working life of the facility.

Project Component/s	Construction and operation of photovoltaic solar energy facilities.
Potential Impact	Wider areas or extended linear developments may result in further destruction, damage, excavation, alteration, removal or collection of heritage objects from their current context on the site.
Activity/Risk Source	Activities which could impact on achieving this objective include deviation from the planned lay-out of the sites, road/s and infrastructure without taking heritage impacts into consideration.
Mitigation: Target/Objective	A facility EMP that takes cognisance of heritage resources in the event of any future extensions of roads or other infrastructure.

Mitigation: Action/control	**Responsibility**	**Timeframe**
Provision for on-going heritage monitoring which provides guidelines on what to do in the event of any major heritage feature being encountered during any phase of development or operation.	ECO	Before commencement of development

Performance Indicator	Inclusion of further heritage impact consideration in any future extension of infrastructural elements. Immediate reporting to relevant heritage authorities of any heritage feature discovered during any phase of development or operation of the facility.
Monitoring	Officials from relevant heritage authorities (National and Provincial) to be permitted to inspect the operation on agreement with the contractor relating to the heritage component of the EMP.

7. CONCLUSIONS

The aim of this survey was to locate, identify, evaluate and document sites, objects and structures of cultural significance found within the areas of the proposed developments, to assess the significance thereof and to consider alternatives and plans for the mitigation of any adverse impacts.

The cultural landscape qualities of the larger region essentially consist of two components. The first is a rural area in which the human occupation is made up of a pre-colonial element (Stone Age and Iron Age) as well as a much later colonial (farmer and industrial/mining) element. The second component is an urban landscape (small towns) dating to the colonial period and is linked to the rural colonial landscape.

Seven different sites were surveyed, of which only two yielded heritage resources:

- **Delta Solar Power Plant (Pty) Ltd, Bloemhof region, North West Province**

  - *As no sites, features or objects of cultural significance were found in the study area, there would be no impact as a result of the proposed development.*

- **Kappa Solar Power Plant (Pty) Ltd, Christiana region, North West Province**

- Historic period

  - An old farmstead consisting of a main house as well as some outbuildings (milk shed, store rooms, etc.) have been identified in the study area. A date of 1921 was added above the front door.

    According to current understanding of the proposed development, this site would be impacted on by the proposed development. It is recommended that if the farmstead cannot be avoided, it should be documented (mapped and photographed) in full before development takes place. If that is not possible, a buffer zone of at least 20 metres should be demarcated around the site. This can be determined from the last visible feature identified as forming part of the larger farmstead settlement unit.

- **Beta Solar Power Plant (Pty) Ltd, Hertzogville region, Free State Province**

  - *As no sites, features or objects of cultural significance were found in the study area, there would be no impact as a result of the proposed development.*

- **Sonvanger Solar Power Plant (Pty) Ltd, Theunissen region, Free State Province**

  - *As no sites, features or objects of cultural significance were found in the study area, there would be no impact as a result of the proposed development.*

- **Serurubele Solar Power Plant (Pty) Ltd, Bloemfontein region, Free State Province**

  - *As no sites, features or objects of cultural significance were found in the study area, there would be no impact as a result of the proposed development.*

- **Sonneblom Solar Power Plant (Pty) Ltd), Bloemfontein region, Free State Province**

  - *As no sites, features or objects of cultural significance were found in the study area, there would be no impact as a result of the proposed development.*

- **Oryx Solar Power Plant (Pty) Ltd, Koffiefontein region, Free State Province**

- Stone Age

  - A number of stone tools, all dating to the Middle Stone Age were identified in the vicinity of a rocky ridge in the northern section of the development site. The high ratio of cores and flakes to tools seems to indicate that this was a factory site where material, obtained from local outcrops, was worked into tools.

    It is recommended that this ridge, at least for the section indicated in green on the map (Fig. 39), is avoided. If this is not possible, a systematic surface collection should be done to recover some of the artefacts.

- Historic period
  - Two stone walled enclosures were identified on low outcrops. According to local tradition these features were built by early sheep herders to take shelter in during the night.

    It is anticipated that no development would take place on the outcrops. However, it is recommended the sites are marked off with danger tape during construction, leaving a buffer area of at least 5 metres from the outer edge of the stone walling.

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8.3 **Maps and aerial photographs**

1: 50 000 Topocadastral maps
Google Earth

8.4 **Interviews**

Mr A Bezuidenhout, farm Kareebooms Vallei, Theunissen region

Mr J Engelbrecht, farm Klipkoppies, Koffiefontein region

Mr H Labuschagne, farm Talana, Hertzogville region

Mr H van Aswegen, farm Honesty, Christiana region

Mr K van Zyl, farm Kareefontein, Bloemhof region

Mr H Wiese & Mr M van Rooyen, farm Blydschap, Bloemfontein region.

APPENDIX 1: CONVENTIONS USED TO ASSESS THE SIGNIFICANCE OF CULTURAL HERITAGE RESOURCES

Significance

According to the NHRA, Section 2(vi) the **significance** of heritage sites and artefacts is determined by it aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technical value in relation to the uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.

Matrix used for assessing the significance of each identified site/feature

1. Historic value			
Is it important in the community, or pattern of history			
Does it have strong or special association with the life or work of a person, group or organisation of importance in history			
Does it have significance relating to the history of slavery			
2. Aesthetic value			
It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group			
3. Scientific value			
Does it have potential to yield information that will contribute to an understanding of natural or cultural heritage			
Is it important in demonstrating a high degree of creative or technical achievement at a particular period			
4. Social value			
Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons			
5. Rarity			
Does it possess uncommon, rare or endangered aspects of natural or cultural heritage			
6. Representivity			
Is it important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects			
Importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class			
Importance in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province, region or locality.			
7. Sphere of Significance	High	Medium	Low
International			
National			
Provincial			
Regional			
Local			
Specific community			
8. Significance rating of feature			
1. Low			
2. Medium			
3. High			

APPENDIX 2: RELEVANT LEGISLATION

All archaeological and palaeontological sites, and meteorites are protected by the National Heritage Resources Act (Act no 25 of 1999) as stated in Section 35:

(1) Subject to the provisions of section 8, the protection of archaeological and palaeontological sites and material and meteorites is the responsibility of a provincial heritage resources authority: Provided that the protection of any wreck in the territorial waters and the maritime cultural zone shall be the responsibility of SAHRA.

(2) Subject to the provisions of subsection (8)(a), all archaeological objects, palaeontological material and meteorites are the property of the State. The responsible heritage authority must, on behalf of the State, at its discretion ensure that such objects are lodged with a museum or other public institution that has a collection policy acceptable to the heritage resources authority and may in so doing establish such terms and conditions as it sees fit for the conservation of such objects.

(3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.

(4) 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.

In terms of cemeteries and graves the following (Section 36):

(1) Where it is not the responsibility of any other authority, SAHRA must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit.

(2) SAHRA must identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with the grave referred to in subsection (1), and must maintain such memorials.

(3) No person may, without a permit issued by SAHRA or a provincial heritage resources authority-

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

(4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.

APPENDIX 3. METHODOLOGY FOR THE ASSESSMENT OF POTENTIAL IMPACTS

All impacts identified during the study will be classified in terms of their significance. The broad significance categories are as follows:

- The **Nature** of the impact: This will describe the cause and the effect, what will be affected and how it will be affected.

- **Mitigation level:** The degree at which the impact can be mitigated.

- The **Extent** of the impact: This will be categorised as local, regional or national.

- The **Magnitude** of the impact: This will be quantified as:
    - Low: Will cause a low impact on the environment;
    - Moderate: Will result in the process continuing but in a controllable manner;
    - High: Will alter processes to the extent that they temporarily cease; and
    - Very High: Will result in complete destruction and permanent cessation of processes.

- The **Probability:** which shall describe the likelihood of impact occurring and will be rated as follows:
    - Extremely remote: Which indicates that the impact will probably not happen;
    - Can Occur: there is a possibility of occurrence;
    - Unusual but Possible: Distinct possibility of occurrence;
    - Almost Certain: Most likely to occur; and
    - Certain/ Inevitable: Impact will occur despite any preventative measures put in place.

- **The duration (Exposure)**: wherein it will be indicated whether:
    - The impact will be of an immediate;
    - The impact will be of a short tem (between 0-5 years);
    - The impact will be of medium term (between 5-15 years);
    - The impact will be long term (15 and more years); and
    - The impact will be permanent.

- **Reversibility:** The degree at which the impact can be **reversible or the lost resource can be replaced.**

To determine the significance ranking, the following ranking will be applied to each impact identified. The Significance of the impact is calculated as follows:

Significance= **Consequence** (Magnitude+ Duration+ Extent + Reversibility) **X Probability**

RANKING	MAGNITUDE	REVERSIBILITY	EXTENT	DURATION	PROBABILITY
5	Very high/ don't know	Irreversible	International	Permanent	Certain/inevitable
4	High		National	Long term (impact ceases after operational life of asset)	Almost certain
3	Moderate	Reversibility with human intervention	Provincial	Medium term	Can occur
2	Low		Local	Short term	Unusual but

					possible
1	Minor	Completely reversible	Site bound	Immediate	Extremely remote
0	None		None		None

RANKING	100-65	64-36	35-16	15-5	4-1
SIGNIFICANCE	Very High	High	Moderate	Low	Minor