



Archaetnos Culture & Cultural  
Resource Consultants  
BK 98 09854/23

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**A REPORT ON A HERITAGE IMPACT ASSESSMENT (HIA) FOR  
THE PROPOSED PHOTO-VOLTAIC SOLAR POWER GENERATION PLANT  
ON KONKOONSIES 91, POFADDER DISTRICT, NORTHERN CAPE**

For:

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**REPORT: AE01222P**

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***April 2012***

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## SUMMARY

Archaetnos cc was appointed by EScience & Associates, on behalf of Biotherm Energy and Aurora Power Solutions (APS), to conduct a Heritage Impact Assessment for the proposed Photo-Voltaic Solar Power Generation Plant on the farm Konkoonsies 91, in the Pofadder District of the Northern Cape Province. A similar study was done on the farm for Biotherm and APS during January 2011, during which a number of archaeological sites were recorded. Based on the results of the earlier work Aurora has positioned their plant in order not to impact negatively on these sites. The 2012 assessment was necessitated by the fact that a second area on Konkoonsies, for the expansion of the Solar Plant, has been selected for development.

A number of archaeological sites, features and objects of some significance were identified during the assessment, some falling outside the study area. All the sites and finds date to the Stone Age. The report gives a discussion of the finds and observations made during the fieldwork and also gives an indication of the methodology followed. It also indicates how to deal with any archaeological material that may be unearthed or disturbed during the development activities.

**Mitigation measures to minimize the impact of the development on the sites that were located during the assessment are put forward at the end of this report. Once these have been implemented the development, from a Cultural Heritage perspective, can continue.**

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## 1. INTRODUCTION

Archaetnos cc was appointed by EScience & Associates, on behalf of Biotherm Energy and Aurora Power Solutions, to conduct a Heritage Impact Assessment for the proposed Photo-Voltaic Solar Power Generation Plant on the farm Konkoonsies 91, in the Pofadder District of the Northern Cape Province. A similar study was done on the farm for Biotherm and APS during January 2011, during which a number of archaeological sites were recorded. Based on the results of the earlier work Aurora has positioned their plant in order not to impact negatively on these sites. The 2012 assessment was necessitated by the fact that a second area on Konkoonsies, for the expansion of the Solar Plant, has been selected for development.

A number of archaeological sites, features and objects of some significance were identified during the assessment, some falling just outside the study area. All the sites and finds date to the Stone Age.

The client indicated the boundaries of the portion to be surveyed and the work was confined to this area.

## 2. TERMS OF REFERENCE

The Terms of Reference for the survey were to:

1. Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located in the area of the proposed development (**see Appendix A**).
2. Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value (**see Appendix B**).
3. Describe the possible impact of the proposed development on these cultural remains, according to a standard set of conventions.
4. Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources, should this be applicable.
5. Review applicable legislative requirements.

## 3. CONDITIONS & ASSUMPTIONS

The following conditions and assumptions have a direct bearing on the survey and the resulting report:

1. Cultural Resources are all non-physical and physical man-made occurrences, as well as natural occurrences associated with human activity. These include all sites, structure and artifacts of importance, either individually or in groups, in the history, architecture and archaeology of human (cultural) development. Graves and cemeteries are included in this.

2. The significance of the sites, structures and artifacts is determined by means of their historical, social, aesthetic, technological and scientific value in relation to their uniqueness, condition of preservation and research potential. The various aspects are not mutually exclusive, and the evaluation of any site is done with reference to any number of these aspects.
3. Cultural significance is site-specific and relates to the content and context of the site. Sites regarded as having low cultural significance have already been recorded in full and require no further mitigation. Sites with medium cultural significance may or may not require mitigation depending on other factors such as the significance of impact on the site. Sites with a high cultural significance require further mitigation (see Appendix C).
4. The latitude and longitude of any archaeological or historical site or feature, is to be treated as sensitive information by the developer and should not be disclosed to members of the public.
5. All recommendations are made with full cognizance of the relevant legislation.
6. It has to be mentioned that it is almost impossible to locate all the cultural resources in a given area, as it will be very time consuming. Developers should however note that the report should make it clear how to handle any other finds that might be found.

#### **4. LEGISLATIVE REQUIREMENTS**

Aspects concerning the conservation of cultural resources are dealt with mainly in two acts. These are the National Heritage Resources Act (Act 25 of 1999) and the National Environmental Management Act (Act 107 of 1998).

##### **4.1 The National Heritage Resources Act**

According to the above-mentioned act the following is protected as cultural heritage resources:

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

The national estate (**see Appendix C**) includes the following:

- a. Places, buildings, structures and equipment of cultural significance
- b. Places to which oral traditions are attached or which are associated with living heritage

- c. Historical settlements and townscapes
- d. Landscapes and features of cultural significance
- e. Geological sites of scientific or cultural importance
- f. Sites of Archaeological and palaeontological importance**
- g. Graves and burial grounds
- h. Sites of significance relating to the history of slavery
- i. Movable objects (e.g. archaeological, palaeontological, meteorites, geological specimens, military, ethnographic, books etc.)

A Heritage Impact Assessment (HIA) is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon. An Archaeological Impact Assessment (AIA) only looks at archaeological resources. An HIA must be done under the following circumstances:

- a. The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length
- b. The construction of a bridge or similar structure exceeding 50m in length
- c. Any development or other activity that will change the character of a site and exceed 5 000m<sup>2</sup> or involve three or more existing erven or subdivisions thereof**
- d. Re-zoning of a site exceeding 10 000 m<sup>2</sup>
- e. Any other category provided for in the regulations of SAHRA or a provincial heritage authority

### **Structures**

Section 34 (1) of the mentioned act states that no person may demolish any structure or part thereof which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

A structure means any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith.

Alter means any action affecting the structure, appearance or physical properties of a place or object, whether by way of structural or other works, by painting, plastering or the decoration or any other means.

### **Archaeology, palaeontology and meteorites**

Section 35(4) of this act deals with archaeology, palaeontology and meteorites. The act states that no person may, without a permit issued by the responsible heritage resources authority (national or provincial):

- 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 that assists in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.
- e. alter or demolish any structure or part of a structure which is older than 60 years as protected.

**The above mentioned may only be disturbed or moved by an archaeologist, after receiving a permit from the South African Heritage Resources Agency (SAHRA). In order to demolish such a site or structure, a destruction permit from SAHRA will also be needed.**

### **Human remains**

Graves and burial grounds are divided into the following:

- a. ancestral graves
- b. royal graves and graves of traditional leaders
- c. graves of victims of conflict
- d. graves designated by the Minister
- e. historical graves and cemeteries
- f. human remains

In terms of Section 36(3) of the National Heritage Resources Act, no person may, without a permit issued by the relevant heritage resources authority:

- a. destroy, damage, alter, exhume or remove from its original position of 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 or 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, or any equipment which assists in the detection or recovery of metals.

Human remains that are less than 60 years old are subject to provisions of the Human Tissue Act (Act 65 of 1983) and to local regulations. Exhumation of graves must conform to the standards set out in the **Ordinance on Excavations (Ordinance no. 12 of 1980)** (replacing the old Transvaal Ordinance no. 7 of 1925).

Permission must also be gained from the descendants (where known), the National Department of Health, Provincial Department of Health, Premier of the Province and local police. Furthermore, permission must also be gained from the various landowners (i.e. where the graves are located and where they are to be relocated) before exhumation can take place.

Human remains can only be handled by a registered undertaker or an institution declared under the **Human Tissues Act (Act 65 of 1983 as amended)**.

Unidentified/unknown graves are also handled as older than 60 until proven otherwise.

#### **4.2 The National Environmental Management Act**

This act states that a survey and evaluation of cultural resources must be done in areas where development projects, that will change the face of 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 should also take the cultural and social needs of people into account. 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.

### **5. METHODOLOGY**

#### **5.1 Survey of literature**

A survey of literature was undertaken in order to obtain background information regarding the archaeology of the area. Sources consulted in this regard are indicated in the bibliography.

#### **5.2 Field survey**

The survey was conducted according to generally accepted HIA/AIA practices and was aimed at locating all possible objects, sites and features of cultural (archaeological and historical) significance in the area of proposed development. If required, the location/position of any site is determined by means of a Global Positioning System (GPS), while photographs are also taken where needed.

The survey was undertaken mainly on foot

#### **5.3 Oral histories**

People from local communities are sometimes interviewed in order to obtain information relating to the surveyed area. It needs to be stated that this is not applicable under all circumstances. When applicable, the information is included in the text and referred to in the bibliography.

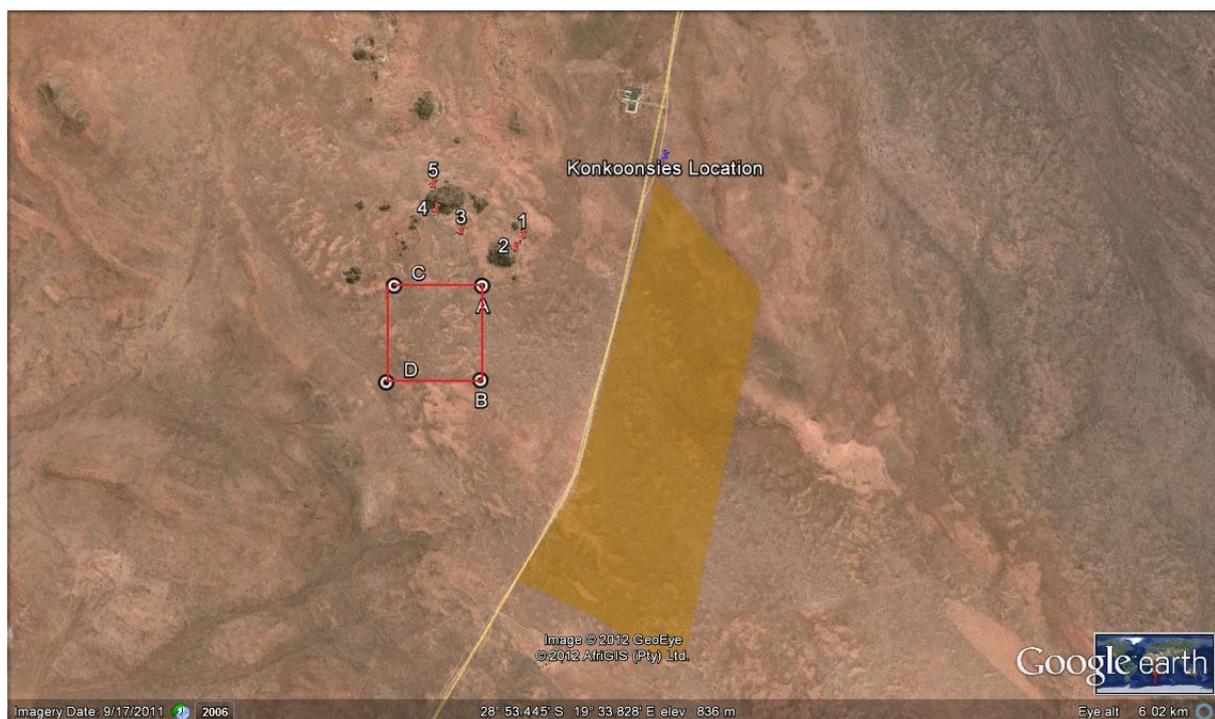
#### **5.4 Documentation**

All sites, objects, features and structures identified are documented according to the general minimum standards accepted by the archaeological profession. Co-ordinates of individual localities are determined by means of the Global Positioning System (GPS). The information is added to the description in order to facilitate the identification of each locality.

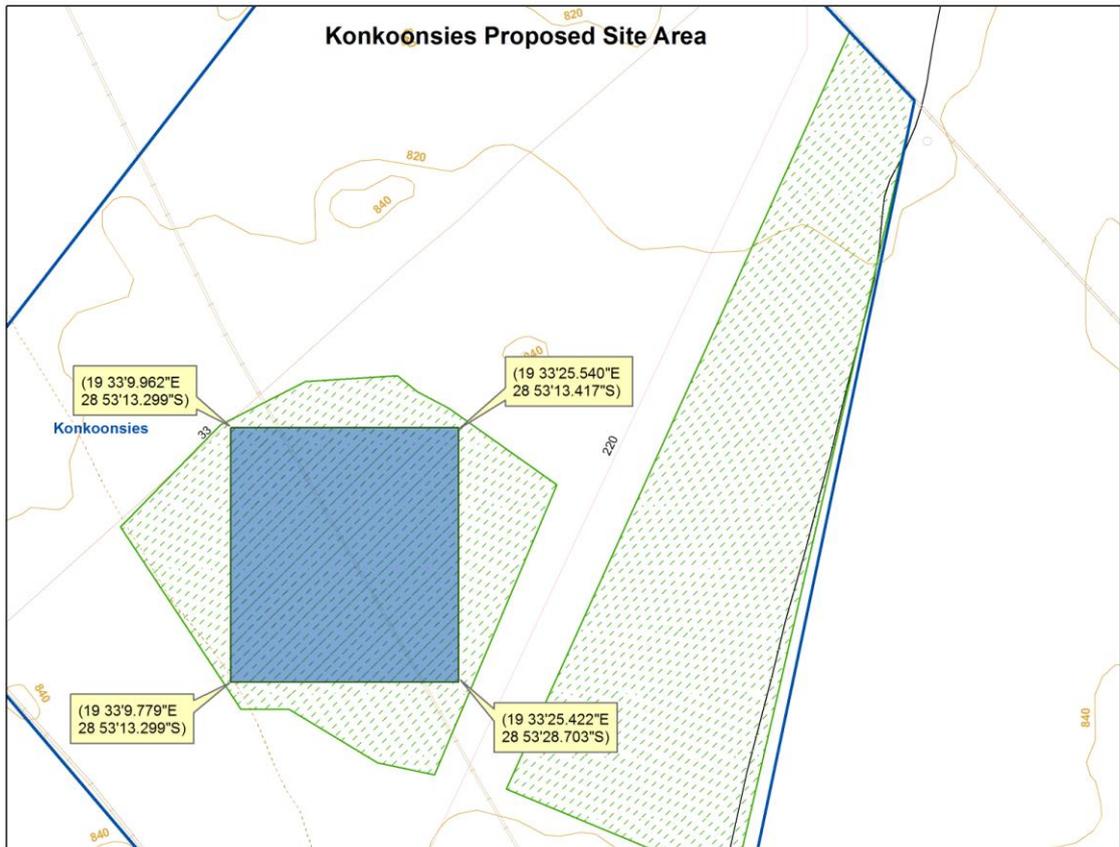
## 6. DESCRIPTION OF THE AREA

The project area is located on the farm Konkoonsies 91, in the Pofadder District of the Northern Cape Province. It is situated close to ESKOM's Paulputs Substation.

The area is fairly flat with open sandy areas, with patches of grass and shrubs. A number of low hills and rocky outcrops are located in area that was assessed in 2011. The area assessed in 2012 contains some low outcrops, as well as some red dunes (Aeolian sands) covering parts of these outcrops. The open nature of the landscape made archaeological visibility relatively easy. As a result of the 2011 survey, when many archaeological sites were recorded close to the hills and outcrops, the original location of the solar plant was moved away in order not to impact on any of these and to stay away from the hills and outcrops. The 2012 assessment was necessitated by the identification of an additional area by the developers for the establishment of their solar plant.



**Figure 1: Aerial location of development (courtesy Client and Google Earth 2011). The no's 1-5 indicate the sites located in 2011, while the red square is the footprint of the original solar plant. The yellow block is the area that had to be assessed in 2012.**



**Figure 2: Layout of solar plant (blue block) and new area that had to be assessed in 2012 (provided by Aurora Power Solutions).**



**Figure 3: Topographic location of development (Map Source 2010).**



**Figure 4: General view of the area. The hills in the distance is where the 2011 assessment was done.**



**Figure 4: View of ESKOM's Paulputs Substation from the assessment area.**



**Figure 5: Another view of the area, showing low outcrops on the edge of the assessment area.**



**Figure 6: A view of the area from one of the low ridges covered by red dune (aeolian) sand. The solar plant will be placed in the flat area between these ridges and the hills in the distance.**

## **7. DISCUSSION**

During the 2011 assessment a number of sites, features and objects of archaeological nature were located in the area, situated mainly close to and around the outcrops and hills that occur in the area. The 2012 assessment also identified some sites located in similar areas. Very little archaeological material is found in the flat areas away from the ridges and outcrops. In order to enable the reader to understand archaeological objects, features and sites that could possibly be unearthed and disturbed during development, it is necessary to give a background regarding the different phases of human history and the history and archaeology of the area in general.

### **7.1 Stone Age**

The Stone Age is the period in human history when lithic (stone) material was mainly used to produce tools (Coertze & Coertze 1996: 293). In South Africa the Stone Age can be divided in three periods. **It is however important to note that dates are relative and only provide a broad framework for interpretation.** The division for the Stone Age according to Korsman & Meyer (1999: 93-94) is as follows:

- Early Stone Age (ESA) 2 million – 150 000 years ago
- Middle Stone Age (MSA) 150 000 – 30 000 years ago
- Late Stone Age (LSA) 40 000 years ago – 1850 - A.D.

According to David Morris of the McGregor Museum in Kimberley the archaeology of the Northern Cape is rich and varied, covering long spans of human history. The Karoo is particularly bountiful. Some areas are richer than others, and not all sites are equally significant. The significance of sites encountered in the study area may be assessed against

previous research in the region and subcontinent. The region's remoteness from research institutions accounts for a relative lack of archaeological research in the area. The area has probably been relatively marginal to human settlement for most of its history, yet it is in fact exceptionally rich in terms of Stone Age sites and rock art, as a relatively few but important studies have shown (Morris 2006).

Some information on the Stone Age of the large geographical area could be found in a report on a HIA conducted by Morris for the Black Mountain Concentrated Solar Power Facility development at Aggeneys in the Northern Cape. No substantial MSA (or ESA) sites have been found previously in the survey area. Only very sparse localized scatters of stone tools have been seen in places, with limited traces in the hills (e.g. an MSA site at the top of Gamsberg) or at the bases of hills (Morris 2011: 10).

Late Holocene Later Stone Age (LSA) sites dominate the archaeological trace noted in past surveys in the Aggeneys-Pofadder region. Researchers such as Beaumont and Morris have shown that virtually all the Bushmanland sites so far located appear to be ephemeral occupations by small groups in the hinterland on both sides of the Orange River. The appearance of herders in the Orange River Basin, Beaumont et al. argue, led to competition over resources and ultimately to marginalization of hunter-gatherers, some of whom then occupied Bushmanland, probably mainly in the last millennium, and focused their hunting and gathering activities around the limited number of water sources in the region. Surveys have located signs of human occupation mainly in the shelter of granite inselbergs, on red dunes which provided clean sand for sleeping, or around the seasonal pans. Possibly following good rains, herders moved into the Orange River hinterland, as attested archaeologically at sites with ample pottery near Aggeneys and, east of Pofadder, at Schuitdrift South. However, Thompson (1824) refers to herder groups settled at the stronger springs such as Pella dispersing during periods of drought to smaller springs in the region, which could equally well account for the traces referred to here. At such times competition between groups over resources and stress within an already marginalized hunter-gatherer society, must have intensified (Morris 2011: 9-10).

All the sites, features or objects identified during the assessment date to the Stone Age and more than likely to the LSA. The finds will be discussed in more detail further on in the report.

## **7.2 Iron Age**

The Iron Age is the name given to the period of human history when metal was mainly used to produce artifacts (Coertze & Coertze 1996: 346). In South Africa it can be divided in two separate phases according to Van der Ryst & Meyer (1999: 96-98), namely:

Early Iron Age (EIA) 200 – 1000 A.D.

Late Iron Age (LIA) 1000 – 1850 A.D.

Huffman (2007: xiii) however indicates that a Middle Iron Age should be included. His dates, which now seem to be widely accepted in archaeological circles, are:

Early Iron Age (EIA) 250 – 900 A.D.

Middle Iron Age (MIA) 900 – 1300 A.D.

## Late Iron Age (LIA) 1300 – 1840 A.D.

The expansion of early farmers, who, among other things, cultivated crops, raised livestock, made ceramic containers (pots), mined ore and smelted metals, occurred in this area between AD 400 and AD 1100 and brought the Early Iron Age (EIA) to South Africa. They settled in semi-permanent villages (De Jong 2010: 35).

While there is some evidence that the EIA continued into the 15th century in the South African Lowveld, on the escarpment it had ended by AD1100. The Highveld became active again from the 15th century onwards due to a gradually warmer and wetter climate. From here communities spread to other parts of the interior. This later phase, termed the Late Iron Age (LIA), was accompanied by extensive stonewalled settlements, such as the Thlaping capital Dithakong, 40 km north of Kuruman (De Jong 2010: 35-36).

Sotho-Tswana and Nguni societies, the descendants of the LIA mixed farming communities, found the region already sparsely inhabited by the Late Stone Age (LSA) Khoisan groups, the so-called 'first people'. Most of them were eventually assimilated by LIA communities and only a few managed to survive, such as the Korana and Griqua. This period of contact is sometimes known as the Ceramic Late Stone Age and is represented by sites such as the Blinkklipkop specularite mine near Postmasburg and finds at the Kathu Pan (De Jong 2010: 36).

No known Iron Age archaeological sites are located in the area.

### **7.3 Historical Age**

Factors such as population expansion, increasing pressure on natural resources, the emergence of power blocs, attempts to control trade and penetration by Griquas, Korana and white communities from the south-west resulted in a period of instability in Southern Africa that began in the late 18<sup>th</sup> century and effectively ended with the settlement of white farmers in the interior. This period, known as the *difaqane* or *Mfecane*, also affected the Northern Cape Province, although at a relatively late stage compared to the rest of Southern Africa. Here, the period of instability, beginning in the mid-1820s, was triggered by the incursion of displaced refugees associated with the Tlokwa, Fokeng, Hlakwa and Phuting tribal groups.

The *difaqane* coincided with the penetration of the interior of South Africa by white traders, hunters, explorers and missionaries. The first was PJ Truter's and William Somerville's journey of 1801, which reached Dithakong at Kuruman. They were followed by Cowan, Donovan, Burchell and Campbell and resulted in the establishment of a London Mission Society station near Kuruman in 1817 by James Read.

The Great Trek of the Boers from the Cape in 1836 brought large numbers of Voortrekkers up to the borders of large regions known as Bechuanaland and Griqualand West, thereby coming into conflict with many Tswana groups and also the missionaries of the London Mission Society. The conflict between Boer and Tswana communities escalated in the 1860s and 1870s when the Korana and Griqua communities became involved and later also the British government. The conflict mainly centered on land claims by various communities. For decades the western border of the Transvaal Boer republic was not fixed. Only through arbitration (the Keate Arbitration), triggered by the discovery of gold at Tati (1866) and

diamonds at Hopetown (1867) was part of the western border finally determined in 1871. Ten years later, the Pretoria Convention fixed the entire western border, thereby finally excluding Bechuanaland and Griqualand West from Boer domination (De Jong 2010: 36).

The database of the Chief Surveyor General ([www.csg.dla.gov.za](http://www.csg.dla.gov.za)) indicates that the farm Konkoonsies was already in existence by at least 1893 and probably earlier. A map for Schuitklip 92 (a bordering farm) shows that it was surveyed in 1877 (CSG document 100W2001), while Oup Vlakte 90 was surveyed in 1893 (100WGP01). Portion 1 of Konkoonsies 91 was surveyed in 1943 (100WGZ01).

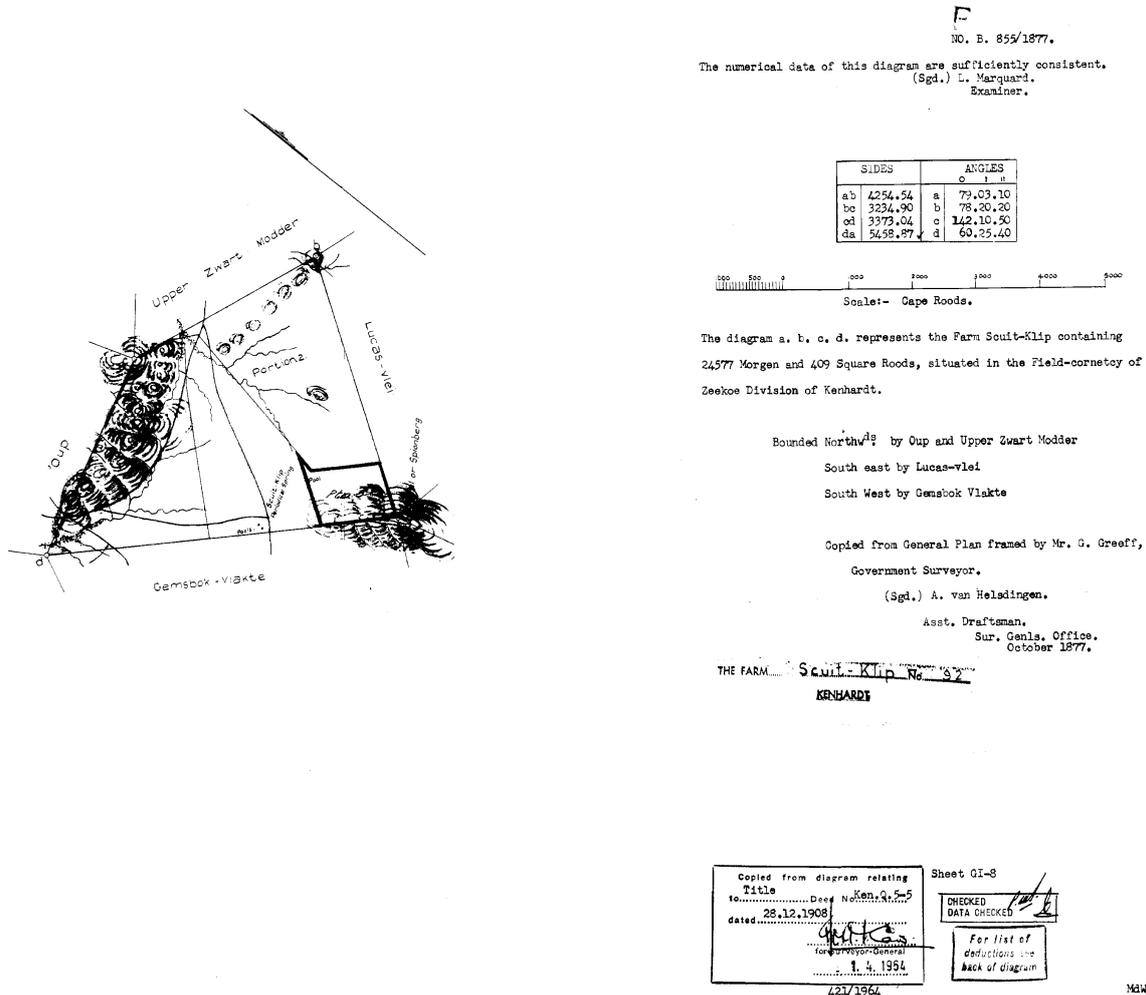
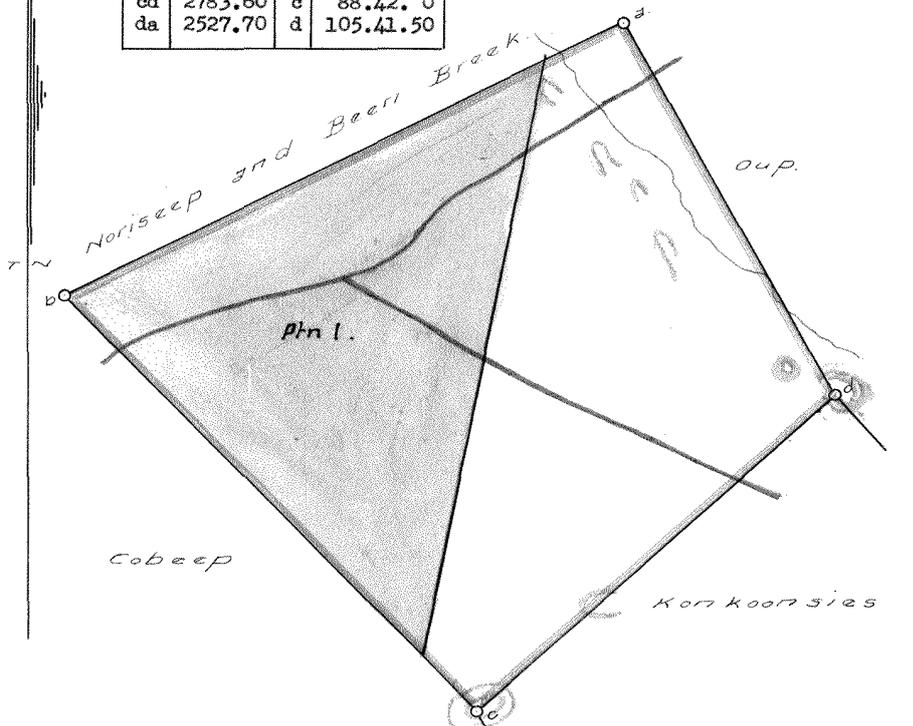


Figure 7: Map of Schuit-Klip 92 ([csg.dla.gov.za](http://csg.dla.gov.za)).

F  
S. G. Dgm. No. 938/1893

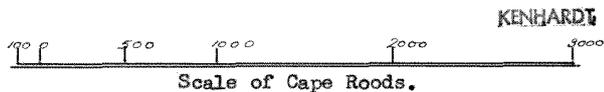
The numerical data of this diagram are sufficiently consistent.  
S.G. Dgm. No. 938/1893. (Sgd) J.J. Bosman.  
Examiner.

Sides		Angles	
ab	3529.40	a	90.27. 0
bc	3415.80	b	75. 9.10
cd	2783.60	c	88.42. 0
da	2527.70	d	105.41.50



N.B. The beacons were pointed out to J.W. Merridge F.C.

THE FARM Oupvlakte No. 90



The above Diagram, lettered a.b.c.d. represents 15355 Morgen 558 Square Roods of Crown Land, situated in the Division of Kenhart Fieldcornetcy of Zeekoe being the farm called OUPVLAKTE.

- Bounded NW by Noriseep and Been Breek
- SE " Konkoonsies
- NE " Oup
- SW " Cobeep.

Surveyed by me, 1893  
(Sgd) Garwood Alston.  
Government Surveyor.

Excerpt from the diagram relating to  
Quitrent... THE Dgm. No. Ken. Q. 6-5  
3rd February 1911. In favour of  
Arend Gerrit de Waal.  
*A. G. Cas.*  
18 OCT 1955  
1504/1955.

Sheet GI - 8  
Sheet GI - 7



C.F.L./I.G.

Figure 8: Oupvlakte 90 (csg.dla.gov.za).

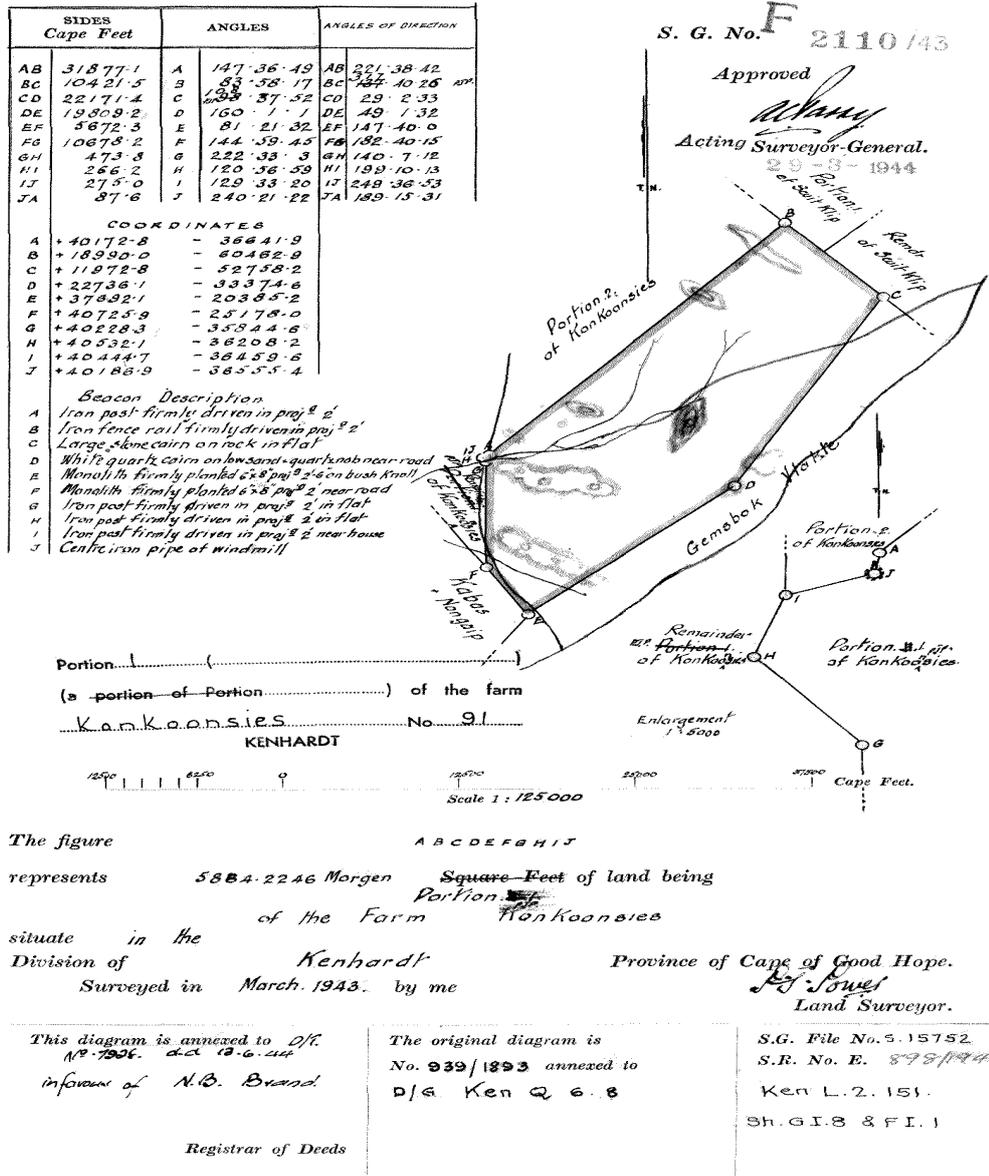


Figure 9: Map of Konkoonsies 91 (csg.dla.gov.za).

Discussion of sites, features or objects found during the assessment

Site 1

This site is represented by a scatter of ostrich eggshell fragments located down slope of a small outcrop. Similar scatters were found during the 2011 survey of the area, while Morris also indicated such finds in his 2011 assessment near Aggeneys. According to him these fragments are the remains of water flasks (Morris 2011: 16).

GPS Location: **S28.88439 E19.56608**

Significance of site: **Low.**

Mitigation: **None required**



**Figure 10: OES fragment on Site 1.**

*Site 2*

Site 2 contains a scatter of quartz, some of which seems to be flaked. One point was identified. Other scatters occur throughout the area and similar sites were identified during 2011. Morris also identified quartz flakes and tools near Aggeneys (Morris 2011: 16-17).

GPS Location: **S28.88491 E19.56639**

Significance of site: **Medium**

Mitigation: **Sampling if site is going to be impacted.**



**Figure 11: Quartz point and flake found on Site 2.**

### *Site 3*

This is another site containing a scatter of ostrich eggshell fragments which probably are the remnants of a water container. No stone tools were identified in the vicinity.

GPS Location: **S28.88260 E19.56710**

Significance of site: **Low**

Mitigation: **None required**



**Figure 12: Site 3.**

### *Site 4*

The age of this site is unknown, but could also date to the Later Stone Age. It consists of a very ephemeral, low, stone packed wall, just more than 1m in length. It is situated on top of ridge covered by red dune sand and could possibly be evidence of a wind break. No stone tools were found in close proximity, and if any were present they are covered by the red sands.

GPS Location: **S28.88489 E19.56974**

Significance of site: **Medium**

Mitigation: **None. Development will not impact on site as solar plant will avoid ridges/outcrops**



**Figure 13: Low stone wall on Site 4.**

*Site 5*

This is another scatter of ostrich eggshell fragments, located on top of a ridge covered by red dune sands. The sand is being eroded out by wind, exposing the rock base and cultural material covered by the sand. A few possible quartz flakes were also observed in the area on the dunes.

GPS Location: **S28.88168 E19.56881**

Significance of site: **Low**

Mitigation: **None required. The development will avoid ridges/outcrops.**



**Figure 14: OES fragments eroding out of the red dune sands Site 5.**

The sites recorded during the 2012 assessment of the area consists mainly of scatters of OES fragments (the possible remains of water flasks/containers used by San hunter-gatherers), scatters of quartz (some flaked and some formal tools) and a possible stone-packed windbreak. Most of the sites are located close to or on top of small outcrops/ridges covered by red dune sand and will therefore not be impacted on by the proposed development. The finds are isolated and not very dense in terms of number of artifact and therefore not highly significant. With most of the sites also falling just outside the study area, no mitigation measures will have to be implemented.



**Figure 15: The distribution of the sites discussed in the report. It is clear that the Stone Age occurrences are concentrated near and around the hills and outcrops**

## 8. CONCLUSIONS AND RECOMMENDATIONS

In conclusion it can be stated that the Impact Assessment for the area was conducted successfully. A number of archaeological sites, features and objects were identified and recorded in the area, **all dating to the Later Stone Age**. Most of the sites are situated near or on low ridges and outcrops covered by red dune sand, represented by scatters of Ostrich Eggshell fragments (OES) and some quartz-made stone tools and flakes. One possible stone wall (wind break) was also recorded. A survey done in 2011 for the original solar plant in the area recorded further sites dating to the Stone Age as well. Very little archaeological material is found in the flat “zones” where the solar panels will be erected.

With the decision to avoid any outcrops or ridges, and drainage systems, where the archaeological sites are more likely to occur, during the development of the plant, it is believed that no archaeological sites will be negatively impacted and therefore no mitigation measures need to be implemented. From a Heritage perspective the development can therefore continue taking cognizance of the following:

**1. It is impossible to locate all possible sites, features or objects of a cultural heritage (archaeological and historical) nature in any given area. Therefore some sites could have been overlooked as a result.**

**2. Also, the subterranean presence of archaeological and/or historical sites, features or artifacts are always a distinct possibility. Care should therefore be taken during any development activities that if any of these are accidentally discovered, a qualified archaeologist be called in to investigate. In this case unmarked LSA burials are a possibility as well. The red sands are covering possible archaeological traces as well and these might get exposed during construction activities in the area**

## **9. REFERENCES**

Aerial view of development location as well as Site Distribution: Courtesy Google Earth & EScience Associates (Pty) Ltd

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## APPENDIX A

### DEFINITIONS:

**Site:** Means a large place with extensive structures and related cultural objects. It can also be a large assemblage of cultural artifacts, found on a single location.

**Structure:** Means a permanent building found in isolation or which forms a site in conjunction with other structures.

**Feature:** Means a coincidental find of movable cultural objects.

**Object:** Means an Artifact (cultural object).

(Also see Knudson 1978: 20).

## APPENDIX B

### DEFINITIONS/STATEMENTS OF HERITAGE SIGNIFICANCE:

- Historic value:** Important in the community or pattern of history or has an association with the life or work of a person, group or organization of importance in history.
- Aesthetic value:** Important in exhibiting particular aesthetic characteristics valued by a community or cultural group.
- Scientific value:** Potential to yield information that will contribute to an understanding of natural or cultural history or is important in demonstrating a high degree of creative or technical achievement of a particular period
- Social value:** Have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.
- Rarity:** Does it possess uncommon, rare or endangered aspects of natural or cultural heritage.
- Representivity:** Important in demonstrating the principal characteristics of a particular class of natural or cultural places or object or a range of landscapes or environments characteristic of its class or 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.

## APPENDIX C

### SIGNIFICANCE AND FIELD RATING:

#### 1. Cultural significance:

- Low: A cultural object being found out of context, not being part of a site or without any related feature/structure in its surroundings.
- Medium: Any site, structure or feature being regarded less important due to a number of factors, such as date and frequency. Also any important object found out of context.
- High: Any site, structure or feature regarded as important because of its age or uniqueness. Graves are always categorized as of a high importance. Also any important object found within a specific context.

#### 2. Heritage significance:

- Grade I: Heritage resources with exceptional qualities to the extent that they are of national significance.
- Grade II: Heritage resources with qualities giving it provincial or regional importance although it may form part of the national estate.
- Grade III: Other heritage resources of local importance and therefore worthy of conservation.

#### 3. Field ratings:

- National Grade I significance: Should be managed as part of the national estate.
- Provincial Grade II significance: Should be managed as part of the provincial estate.
- Local Grade IIIA: Should be included in the heritage register and not be mitigated (high significance).
- Local Grade IIIB: Should be included in the heritage register and may be mitigated (high/ medium significance).
- General protection A (IV A): Site should be mitigated before destruction (high/ medium significance).
- General protection B (IV B): Site should be recorded before destruction (medium significance).
- General protection C (IV C): Phase 1 is seen as a sufficient recording of the existing structure and it may therefore be demolished of (low significance) .

## **APPENDIX D**

### **PROTECTION OF HERITAGE RESOURCES:**

#### **1. Formal protection:**

Formal protection is applicable to the following:

- National heritage sites and Provincial heritage sites – grades I and II
- Protected areas – which is described as an area surrounding a heritage site
- Provisional protection – described as protection for a maximum period of two years
- Heritage registers – listings of grades II and III
- Heritage areas – areas which include more than one heritage site
- Heritage objects – heritage objects include inter alia archaeological, paleontological, meteorites, geological specimens, visual art, military, numismatic and books.

#### **2. General protection:**

General protection is applicable to:

- Objects protected by the laws of foreign states
- Structures – older than 60 years
- Archaeology, paleontology and meteorites
- Burial grounds and graves
- Public monuments and memorials

## **APPENDIX E**

### **HERITAGE IMPACT ASSESSMENT PHASES**

- Phase 1: Pre-assessment or scoping phase – the establishment of the scope of the project and the terms of reference.
- Phase 2: Baseline assessment – the establishment of a broad framework of the potential heritage of an area.
- Phase 3: Assessment of potential impacts – the identification of sites, assessment of their significance, commenting on the potential impact of the proposed development and recommending mitigation measures or the conservation thereof.
- Phase 4: Letter of recommendation for exemption –submitted in the event that no likelihood exists that any sites will be impacted upon.
- Phase 5: Mitigation or rescue – planning the protection of significant sites or sampling through excavation or collection (after receiving a permit) of sites that may be lost.
- Phase 6: Compilation of and implementation of a management plan – in rare cases where sites are regarded as of high importance such that development cannot be permitted unconditionally.