



Archaetnos Culture & Cultural  
Resource Consultants  
BK 98 09854/23

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**A REPORT ON A HERITAGE IMPACT ASSESSMENT (HIA) FOR  
A PROPOSED PHOTO-VOLTAIC SOLAR POWER GENERATION PLANT  
ON KLEIN ZWART BAST 188, KENHARDT DISTRICT, NORTHERN CAPE**

For:

***ESCIENCE ASSOCIATES (PTY) LTD  
P.O.BOX 2950  
SAXONWOLD  
2132***

**REPORT: AE01223P**

by:

***A.J. Pelsler  
Accredited member of ASAPA  
Member of SASCH***

***April 2012***

Archaetnos  
P.O. Box 55  
GROENKLOOF  
0027  
Tel: **083 459 3091**  
Fax: 086 520 0376  
E-mail: **antonp21@yahoo.com**

Members: AC van Vollenhoven BA, BA (Hons), DTO, NDM, MA (Archaeology) [UP], MA (Culture History) [US], DPhil (Archaeology) [UP], Man Dip [TUT], DPhil (History)[US]  
AJ Pelsler BA (UNISA), BA (Hons) (Archaeology), MA (Archaeology) [WITS]

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## SUMMARY

During 2011 Archaetnos cc, in conjunction with Robert de Jong & Associates, was appointed by EScience & Associates, on behalf of Aurora Power Solutions, to conduct an Archaeological Impact Assessment as part of the Basic Heritage Impact Assessment (HIA) for a proposed Solar Energy Plant on the farm Klein Zwart Bast 188 in the Kenhardt District of the Northern Cape Province. A number of archaeological sites, features and objects of significance were identified during the assessment. Most of the sites and finds date to the Stone Age, although there were some historical finds as well.

Mitigation measures to minimize the impact of the development on the sites that were located during the assessment were put forward at the end of the 2011 report. During February 2012 2<sup>nd</sup> Phase archaeological work was conducted on these sites as part of these measures.

The HIA conducted during March 2012 on another portion of the farm is a continuation of the development on Klein Zwart Bast 188. Similar sites are present here than those found during 2011 and those mitigated. Further mitigation work on the expanded section identified for the solar plant development will therefore not be required. The report will discuss the findings made during the site assessment and will provide information on the methodology followed, as well as give recommendations regarding the way forward.

**Based on previous work in the area (AIA and Mitigation undertaken) there is therefore no objection from a Cultural Heritage (archaeological & historical) perspective to the continuation of the proposed development.**

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## 1. INTRODUCTION

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Mitigation measures to minimize the impact of the development on the sites that were located during the assessment were put forward at the end of the 2011 report. During February 2012 2<sup>nd</sup> Phase archaeological work was conducted on these sites as part of these measures.

The HIA conducted during March 2012 on another portion of the farm is a continuation of the development on Klein Zwart Bast 188. Similar sites are present here than those found during 2011 and those mitigated.

The client the boundaries of the section to be surveyed and the work were to be 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 and history 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.

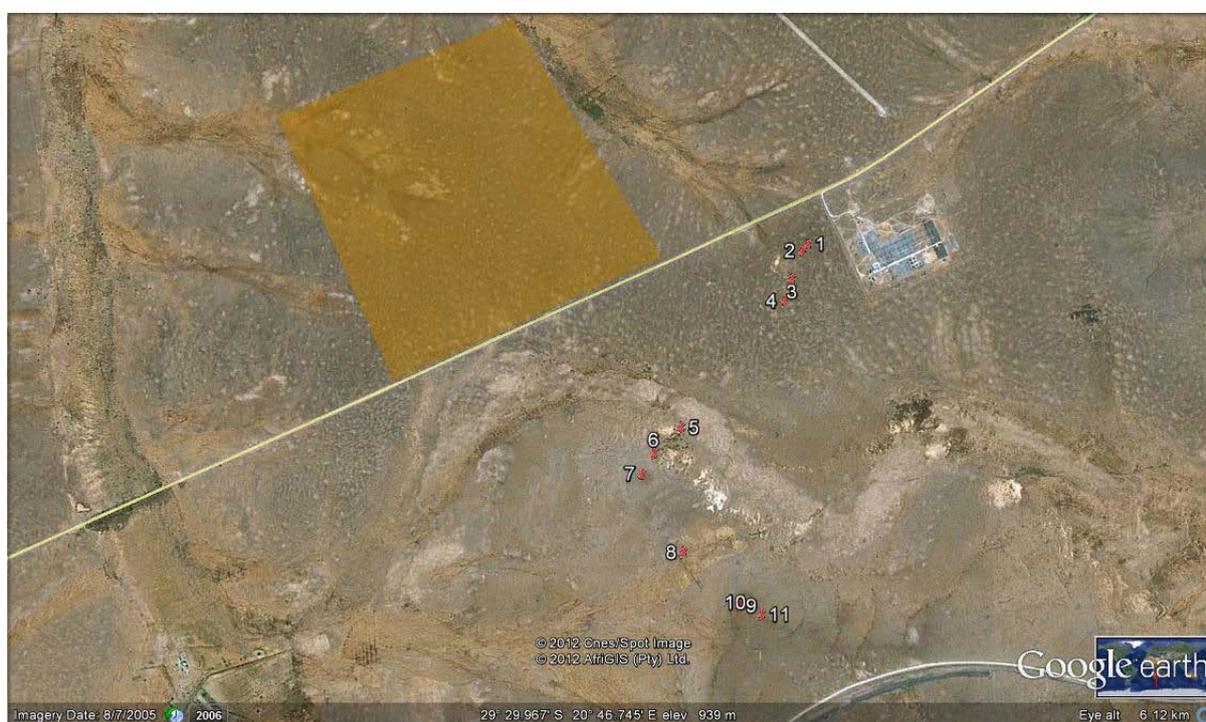
## 5.4 Documentation

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 Klein Zwart Bast 188 in the Kenhardt District of the Northern Cape Province. It is situated close to ESKOM's Aries Substation.

The area is fairly flat and open, with sections of grass, shrubs and small trees the main vegetation cover. Large portions of the area contains huge numbers of stone (river pebbles etc), and it is here where most of the Stone Age material identified in the area is located. There are a number of small outcrops in the area, while the Klein Zwart Bast spruit also runs through the area. As a result of the open nature of the landscape, archaeological visibility is fairly high. The archaeological material covers nearly the whole landscape, with scatters and concentrations of stone tools varying in density throughout the landscape.



**Figure 1: Aerial location of development (courtesy Client and Google Earth 2012).  
The sites (No.1-11) are those found during the 2011 assessment. No's 1-4  
was mitigated in February 2012.**



**Figure 2: Topographic Location of development area (© Map Source 2010).**



**Figure 3: General view of the area taken towards the Aries Substation. Note the large number of stones (dwyka tillite) covering most of the area. The stone tools are found scattered throughout.**

## 7. DISCUSSION

During the assessment a number of sites, features and objects of archaeological nature were located in the area. 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.

### 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.

In his 2006 report (Archaeological Specialist Input for the Aries-Garona Transmission Powerline) Morris indicates that in the vicinity of Olywen Kolk and **Klein Zwart Bast**, the farms at the southwestern most end of the proposed line, the terrain is characterized by Dwyka tillite, known to be a favoured source of raw materials in Earlier Stone Age times. He does indicate that in the vicinity of the sub station several artifacts were noted amidst the strewn stones that typify the surfaces here (Morris 2006: 6).

Most of the sites, features or objects identified during the 2011 assessment date to the Stone Age, although some Historical material and features were also located. The 2012 assessment in the expanded area earmarked for the solar plant development revealed more Stone Age artifacts, covering nearly the total area. As was found during the Phase 2 Mitigation of the Stone Age sites in the original solar plant area the Stone Age of the area is characterized by scatters of stone tools, varying in density between the various scatters or concentrations. The mitigation aimed at determining the possible density of material in the larger area, and it was concluded that it could run in the millions. It has to be mentioned however that this includes formal tools, cores and flakes and that it is only an estimation.

Analysis of the material recovered during the 2012 mitigation of the Stone Age sites on Klein Zwart Bast was conducted by Prof. Marlize Lombard, and is included in the Phase 2 Report that has been submitted recently to SAHRA. According to her the tools, collected from four units during mitigation of the open-air Stone Age site to be impacted on by the Aries Solar Energy Plant on Portion 1 of the farm Klein Zwart Bast 188 in the Kenhardt District, clearly indicates the presence of humans at the site and/or its directly associated areas for the last two million years. The area probably represented a rich source of rocks for knapping. Some pieces are considered representative of specific phases in our Stone Age history. The Northern Cape is one of the regions in South Africa (and probably world-wide) with the richest Stone Age scatters on the landscape, yet it remains poorly recorded and understood because so few deep-time stratified sequences have been excavated and/or dated. Arguably, the most significant phase in the sequence is the Earlier to Middle Stone Age transitional phase that may include the Fauresmith Industry (Lombard 2012: 4).

## 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. 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 town of Kenhardt owes its existence to the conflict between San, Korana, Baastards and white settlers. A scouting party from the Cape Colony reported in 1834 that the area west of the confluence of the Vaal and Orange Rivers is dry, with no water – an inhospitable, sandy region. It was only 13 years later that the region up to the Orange River was incorporated into the Cape colony. As a result of the efforts of Louis Anthing, magistrate of Namaqualand, Mr M Jackson was sent to Bushmanland, as the region is known, as magistrate to keep law and order between the different race groups. He made his headquarters under a big camel thorn tree at what was even then known as Kenhardt. This tree – estimated to be between 500 and 600 years old – is still standing and was declared a national monument in 1978.

The day he put up camp – 27 December 1868, is regarded as the founding day of the town. Most interesting are the remnants of the “Flat Bushman” lifestyle on the farm Arbeidsvreugd some 60km outside Kenhardt. The history of this San colony was told by //Kabbo, also known as Oud Jantjie Tooren. //Kabbo was imprisoned at the Breakwater Prison in Cape Town in 1870 where his story was documented by Dr Wilhelm Bleek and his sister-in-law, Lucy Lloyd ([www.greenkalahari.co.za](http://www.greenkalahari.co.za)).

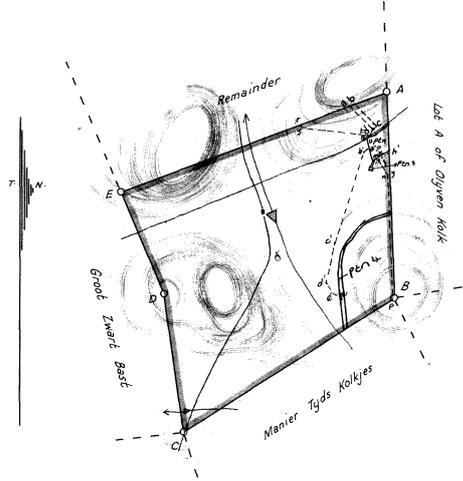
The oldest map that could be obtained from the Chief Surveyor General's database indicates that Portion 1 of the farm (called De Hoek) was surveyed in 1944, but that the original farm was already surveyed in 1883 (CSG document 100409180 - [www.csg.dla.gov.za](http://www.csg.dla.gov.za)).

SUB-DIVISIONAL DIAGRAM  
 (Section 14 of the Land Act, 1927)

F  
 S. G. No. 2727/44

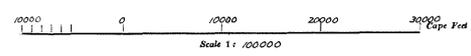
SIDES	Cape	Feet	ANGLES OF DIRECTION	SYSTEM L <sup>o</sup> CO-ORDINATES	x	y
AB	20830	3	358 11 10	A + 29823	0	+ 28423
BC	25076	6	57 17 22	B + 29161	8	+ 49303
CD	14149	5	172 8 30	C + 30261	5	+ 62855
DE	11150	0	157 25 30	D + 32196	1	+ 48838
EA	28509	8	249 12 37	E + 56476	5	+ 38542

Approved  
  
 Surveyor-General.  
 1944-7-13/44



Beacon Description  
 A E are cairns over iron pegs  
 B C are cairns.  
 D is a cairn around a wooden pole.

Portion 1 (Die Hoek)  
 (a portion of Portion ...) of the farm  
 Klein Zwart Bast No. 188  
 KENHARDT



The figure A B C D E  
 represents 6 483.5125 Morgen of land being

Portion 1 (called Die Hoek)

of the Farm KLEIN ZWART BAST

situate in the Division of Kenhardt Province of Cape of Good Hope.  
 Surveyed in March 1944 by me

Land Surveyor.

This diagram is annexed to D.T.  
 No. 244 316  
 Vol. 25-10-218.  
 Registrar of Deeds.

The original diagram is  
 No. 1271/1893 annexed to  
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S. G. File No.  
 S.R. No. E. 757/44  
 Ken. L. 28-154

FOR ENDORSEMENTS  
 SEE BACK OF DIAGRAM

188/1

Figure 4: 1944 map of Klein Zwart Bast 188 (CSG).

Discussion of sites, features or objects found during the assessment

During the 2011 assessment of the area a number of sites (11 in total) were recorded. Most of these date to the Stone Age, although some possible historical sites were also recorded. Only 4 of these were to be impacted on by the development and it was these that were mitigated in February 2012. It should be mentioned that it became clear during the initial assessment and during the mitigation that the whole area characterized by the dwyka tillite rocks can in fact be seen as a single Stone Age site or landscape. Therefore to mark individual sites would not be possible and this was therefore not done during the March 2012 assessment of the area.

The mitigation work conducted on the farm Klein Zwart Bast in February 2012 was successful in its aims and it is therefore not required that any further mitigation work is undertaken on the expanded section for the Solar Plant development. The topographical, geographical and archaeological environment here is largely homogenous and it is envisaged that similar Stone Age material than that found during the mitigation work will also be found here. The recommendations made in the Phase 2 Report can therefore be implemented here as well. Also, as part of the mitigation process accepted by the client an Information Plaque on the Stone Age Archaeology of the area will be erected at the Solar Plant as well.



**Figure 5: Some ESA to LSA tools from the area.**



**Figure 6: ESA tools found during the assessment.**



**Figure 7: An ESA handaxe from the area.  
All the tools are similar to those found during the mitigation work  
on the other section of Klein Zwart Bast.**

## **8. CONCLUSIONS AND RECOMMENDATIONS**

In conclusion it can be stated that the Impact Assessment of the area was conducted successfully. A number of archaeological sites, features and objects were also identified and recorded in the area, dating from the Early to Later Stone Ages, as well as the Historical period during the January 2011 assessment for the original Solar Plant development. Some of these sites (Stone Age) were mitigated during February 2012 and a final report has been submitted to SAHRA for comments and the issuing of a destruction permit. It was also recommended that an Information Plaque, containing information on the archaeology and history of the area, be erected at the Solar Panel Plant. This aspect is still being finalized.

The assessment of the new expanded area for the Photo-Voltaic Solar Power Generation Plant on Klein Zwart Bast revealed that the whole area covered by the dwyka tillite material can be viewed as one Stone Age landscape, and that the area is generally homogenous in this sense. Individual sites can not really be discerned, and it is clear that the area was utilized from the Early right through to Later Stone Age periods. This is a fact emphasized by the results of the expert analysis of material recovered during the February 2012 mitigation work in the area. Therefore, further mitigation work on this new expanded section would not be required and it is recommended that the development continue taking the following recommendation into consideration:

**Should any subterranean stratified archeological deposits, archaeological and/or historical sites, features or artifacts be accidentally exposed/discovered during site clearing, a qualified archeologist must be called in to investigate the find and report it to the relevant agency.**

## 9. REFERENCES

Aerial view of development location as well as Site Distribution: Courtesy Google Earth and Escience Associates

Topographic Location of development: Courtesy Map Source 2010

Coertze, P.J. & Coertze, R.D. 1996. **Verklarende vakwoordeboek vir Antropologie en Argeologie**. Pretoria: R.D. Coertze.

De Jong, R.C. 2010. **Heritage Impact Assessment report: Proposed Manganese and Iron Ore Mining Right Application in respect of the Remainder of the farm Paling 434, Hay Registration Division, Northern Cape Province**. Unpublished Report Cultmatrix Heritage Consultants Project 2010/23 May 2010 for Kai Batla.

Knudson, S.J. 1978. **Culture in retrospect**. Chicago: Rand McNally College Publishing Company.

Korsman, S.A. & Meyer, A. 1999. Die Steentydperk en rotskuns. Bergh, J.S. (red.). **Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies**. Pretoria: J.L. van Schaik.

Morris, David. 2006. **Archaeological Specialist Input to the EIA Phase for the proposed Aries-Garona ESKOM Transmission Power Line, Northern Cape and Comment on the Garona Substation Extension**. Unpublished Report September 2006 for Tswelopele Environmental.

Pelser, A.J. 2011. **A Report on an Archaeological Impact Assessment (AIA) for the proposed Solar Energy Plant on Klein Zwart Bast 188, Kenhardt District, Northern Cape**. Unpublished Report Archaeos cc. AE1104. For Robert de Jong & Associates. January 2011.

Prof. Lombard, M. & A.J.Pelser. **Final Report on the Archaeological Phase 2 Mitigation of an Open-Air Stone Age Site to be impacted on by the Aries Solar Energy Plant on Portion 1 of the farm Klein Zwart Bast 188 Kenhardt District, Northern Cape**. Unpublished Report Archaeos cc AE01216P. For Sevenstones 159(Pty)Ltd. March 2012.

Republic of South Africa. 1999. **National Heritage Resources Act** (No 25 of 1999). Pretoria: the Government Printer.

Republic of South Africa. 1998. **National Environmental Management Act** (no 107 of 1998). Pretoria: The Government Printer.

Van der Ryst, M.M. & Meyer, A. 1999. Die Ystertydperk. Bergh, J.S. (ed.). **Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies**. Pretoria: J.L. van Schaik.

[www.csg.dla.gov.za](http://www.csg.dla.gov.za)

[www.greenkalahari.co.za](http://www.greenkalahari.co.za)

## 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.