

**PHASE I CULTURAL HERITAGE IMPACT ASSESSMENT OF THE
PROPOSED BOSCHKOP FARM SOLAR ENERGY PLANT, NEAR
JACOBSDAL, FREE STATE PROVINCE**

Prepared by



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Prepared for

Transalloys (Pty) Ltd

Renova Group

November 2011

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ACRONYMS AND ABBREVIATIONS

BA	Basic Assessment
EIA	Environmental Impact Assessment
EIAge	Early Iron Age
ESA	Early Stone Age
HIA	Heritage Impact Assessment
LIA	Late Iron Age
LSA	Later Stone Age
MIA	Middle Iron Age
MSA	Middle Stone Age
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
SAHRA	South African Heritage Resources Agency
SEF	Strategic Environmental Focus (Pty) Ltd
S&EIR	Scoping and Environmental Impact Reporting

EXECUTIVE SUMMARY

The aim of the cultural heritage survey was to locate, identify, document and assess sites of cultural heritage and archaeological significance that may occur within the proposed study area for the establishment of the Transalloy's Energy Project 8, solar farm on the Remainder of the Farm Boschkop No. 202. An assessment of the impact of the establishment of the solar plant on such resources will be provided. Where the impact is negative, alternatives and/or mitigation will be considered.

In accordance with the National Heritage Resources Act, 1999 (Act No. 25 of 1999), the Phase I Heritage Survey investigated the proposed site within the bigger Boschkop Farm for cultural heritage resources. The study revealed only a few stone tool scatters within the specific area proposed for the solar farm. The stone tools however, were not found in their original context, which would make dating difficult. Thus, the significance of the stone tools is low. No other types of cultural heritage resources were identified within the proposed study area. It is recommended, from a heritage point of view, that the establishment of the proposed solar farm within the proposed area on Boschkop Farm, proceed.

1 INTRODUCTION

The proposed project involves a new photovoltaic paneled solar farm (approximately 19.9ha in size) to be located strategically on the surveyed forty hectare (40ha) portion of the remainder of the Farm Boschkop No. 202, near Jacobsdal in the Free State Province. The larger area was surveyed in order to place the solar farm on a portion of the study area where the impacts associated with potential heritage resources would be minimal or non-existent.

Strategic Environmental Focus (Pty) Ltd (SEF) was commissioned by Transalloys (Pty) Ltd to undertake a Heritage Impact Assessment (HIA) of the 40ha study area. This HIA was carried out in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended (NEMA) and is based on the requirements of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA). This HIA is a specialist study that forms part of the Basic Assessment (BA) process for the proposed solar farm and investigates the possible impact of the proposed development on heritage resources within the proposed study area.

According to Section 3 (2) of the NHRA, the heritage resources of South Africa include:

- 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 natural features of cultural significance;*
- e. geological sites of scientific or cultural importance;*
- f. archaeological and palaeontological sites;*
- g. graves and burial grounds, including-*
 - i. ancestral graves;*
 - ii. royal graves and graves of traditional leaders;*
 - iii. graves of victims of conflict;*
 - iv. graves of individuals designated by the Minister by notice in the Gazette;*
 - v. historical graves and cemeteries; and*

- vi. other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);*
- h. sites of significance relating to the history of slavery in South Africa;*
- i. movable objects, including-*
 - i. objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;*
 - ii. objects to which oral traditions are attached or which are associated with living heritage;*
 - iii. ethnographic art and objects;*
 - iv. military objects;*
 - v. objects of decorative or fine art;*
 - vi. objects of scientific or technological interest; and*
 - vii. 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)."*

In terms of 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:

- "a. its importance in the community, or pattern of South Africa's history;*
- b. its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;*
- c. its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;*
- d. its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;*
- e. its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;*
- f. its importance in demonstrating a high degree of creative or technical achievement at a particular period;*
- g. its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;*

- h. 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*
- i. sites of significance relating to the history of slavery in South Africa.”*

The aim of the investigation was to identify, verify and analyze heritage issues and to recommend how to manage them within the context of the proposed construction of the solar energy plant.

The objectives of the investigation were:

- Identifying and analysing heritage places, objects, buildings, structures, graves etc.;
- Assessing broad cultural significance of identified sites, places, buildings, structures, graves and objects within the site;
- Surveying and mapping of significance/ sensitivity issues and opportunity/ constraint issues;
- Reviewing of the general compatibility of the proposed construction of the solar energy plant with heritage policy planning frameworks;
- Undertaking a preliminary assessment of the acceptability of the proposed establishment of the solar energy plant from a heritage perspective;
- Identifying the need for alternatives, if necessary; and
- Recommending appropriate initial management measures to conserve significant heritage elements and reduce the impact on heritage resources.

2 BACKGROUND INFORMATION TO THE PROJECT

Table 1: Background Information

Consultant:	Mamoluoane Seliane
Type of development:	Construction of a 19.9ha solar energy plant (generation capacity of approximately 7MW)
Rezoning or subdivision:	Rezoning (i.e. change in land use)
Terms of reference	To carry out a Phase 1 HIA
Legislative requirements:	The HIA was carried out in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended (NEMA), following the requirements of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA).

2.1 Details of the study area

The proposed solar power plant will be located on the eastern boundary of the Remainder of the Farm Boschkop No. 202 (Figure 1). It is proposed that the solar farm will connect to the existing power line on the eastern boundary of the study area.

Current land-use: The proposed study area falls within rural Free State, which is characterized with large stock farms, predominantly for sheep, goat and/or cattle grazing.

2.2 Locational Data

- Province: Free State.
- District Municipality: Xhariep.
- Local Municipality: Letsemeng.
- Ward no: 3.
- General Coordinates: 29°04'00.49"S; 24°48'04.97"E

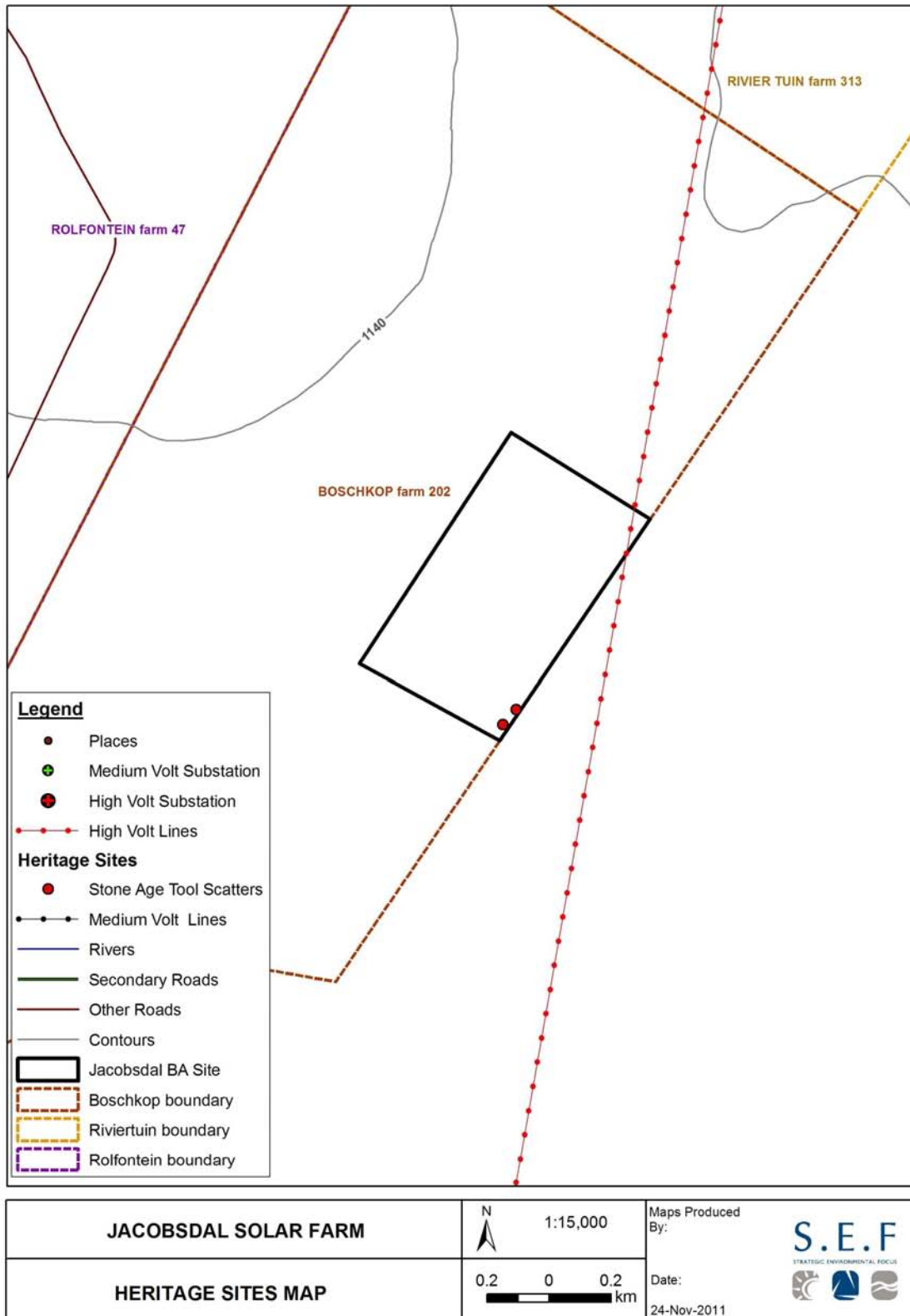


Figure 1: Study area showing identified heritage resources

3 BACKGROUND INFORMATION OF THE SURVEY

3.1 Methodology

3.1.1 Details of the site visit

The site visit for the proposed Jacobsdal Solar Farm was conducted on 15 November 2011. The survey was undertaken by means of walking throughout the site to:

- Search for, locate and identify objects and structures of heritage and/or archaeological significance in accordance with accepted archaeological practices; and
- Document all heritage/ archaeological sites, objects and structures according to minimum standards and procedures accepted by the archaeological profession.

3.1.2 Literature Review

A brief literature review pertaining to the prehistory and history of the Free State Province was undertaken.

3.2 Restrictions to the survey

3.2.1 Visibility

Visibility varied across the study site but was generally very poor for the most part due to vegetation growth (Figure 2).

3.2.2 Disturbance

There was no disturbance of any potential archaeological stratigraphy noted during the field investigation.

3.3 Details of the equipment used in the survey

- GPS: Garmin eTrek Camo (accuracy: margin of error of 4m); and
- Digital cameras: Canon Powershot A460.



Figure 2: Typical vegetation found on site – poor visibility for identification of heritage resources

4 BRIEF ARCHAEOLOGICAL HISTORY OF THE FREE STATE PROVINCE

Like some provinces in South Africa, the Free State is poorly researched, archaeologically. However, evidence from research that has been conducted on sites within the province shows that the province has a wide spectrum of sites belonging to different time periods and cultural traditions. The Free State is home to fossils that are particularly important in the body of scientific knowledge in the subject of humanity and human evolution specifically in the last 300 000 years. The discovery at Florisbad of the relatively complete hominid fossil skull and associated cultural material has made considerable contribution to the debates of origins and the late archaic phase of modern human development.

4.1 Stone Age

The Stone Age of southern Africa is comprised of three (3) industries namely, the Early Stone Age (ESA), Middle Stone Age (MSA) and the Later Stone Age (LSA). The ESA dates to between approximately the last 2.5 million years to about 250 000 years ago. This is a period during which human ancestors began the usage of stone tools. The ESA tools were simple tools, which were, among other things, used to chop and butcher meat, de-skin animals and probably to smash animal bones to obtain bone marrow (Deacon & Deacon, 1999).

The ESA tool technology consists of two industries, namely the Oldowan Industry and Acheulean Industry. The Oldowan Industry is named after Olduvai George in Tanzania where these tools were first discovered. This industry dates from approximately 2.5 million years ago to around 1.7 million years. The Oldowan Industry consists of very simple, crudely made core tools from which flakes are struck a couple of times. To date, there is no consensus amongst archaeologists as to which hominid species manufactured these artifacts (Deacon & Deacon, 1999).

At around 1.7 million years ago, it is thought that another hominid appeared on the landscape and is believed to have been responsible for manufacturing Acheulean tools. The Acheulean Industry lasted until about 250 000 years ago. Acheulean tools were more specialized tools than those of the earlier industry. They were shaped intentionally to carry out specific tasks, such as hacking and bashing to remove limbs from animals and marrow from bone. These duties were performed using the large sharp pointed artifacts known as handaxes. Cleavers, with their sharp, flat cutting edges were used to carry out more heavy duty butchering activities (Deacon & Deacon, 1999).

The MSA dates back to about 250 000 years ending around 25 000 years ago. In general, the MSA stone tools are smaller than those of the ESA. A variety of MSA tools include blades, flakes, scrapers and pointed tools that may have been hafted onto shafts or handles and used as spearheads. Between 70 000 and 60 000 years ago, new tool types appeared in South Africa known as segments and trapezoids. These tool types are referred to as backed tools from the method of preparation. Residue analyses on

the backed tools from South African MSA sites indicate that these tools were certainly used as spear heads (Mitchell, 2002).

Stone tool technology in the LSA is observed to display rapid stylistic change compared to the slower pace of stylistic change in the MSA (Deacon & Deacon, 1999). The rapidity is more evident during the last 10 000 years. The LSA sequence includes informal small blade tradition from about 22 000 – 12 000 years ago, a scraper and adze-rich industry between 12 000 – 8 000 years ago, a backed tool and small scraper industry between 8 000 – 4 000 years and ending with a variable set of other industries thereafter

Along with the marked social transformation and technological innovation of the LSA people is the associated Rock Art panels that occur on cave walls or rock faces. Rock Art can be in the form of rock paintings or rock engravings, depending on the geology of a region. In the Free State Province, hunter gathering communities painted the walls of the sandstone rock shelters transforming them from 'spaces' into cultural places.

4.2 Iron Age


A farming way of life was introduced to southern Africa about 2 000 years ago by Bantu-speaking people from the north. They brought with them crops such as sorghum, millet, ground beans and cow peas to be cultivated for the first time in this part of the world. Domestic animals such as cattle, sheep and goats were also part of the newly introduced farming way of life. Unlike the hunter-gatherers and herders who lived in temporary camps and led a nomadic way of life, farming necessitated sedentary life styles. Some features of the permanent settlements of these early mixed farming communities are houses, raised grain bins, underground storage pits and stock enclosures. An important feature of this time period was that they also made their own iron implements, hence the name Iron Age. The Iron Age has been divided into three periods, namely the Early Iron Age (EIAge) (AD 200 – 900), the Middle Iron Age (MIA) (AD 900 – 1300) and the Late Iron Age (LIA) (AD 1300 – 1820) (Huffman, 2007).


5 DESCRIPTION OF THE STUDY AREA'S HERITAGE

5.1 Description of the materials observed

This section details the heritage resources that were identified on site and categorises them according to the NHRA (Table 2). Table 2 must be read in conjunction with Figure 1 in order to link the location of the different heritage resources in relation to the proposed study area.

Table 2: Table detailing identified heritage resources and their NHRA status

Identified heritage resources	
<i>Category, according to NHRA</i>	<i>Identification/Description</i>
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)	None
Archaeological site or material (Section 35)	<p>The following stone tool scatters were identified within the proposed study area (see photos below) at the stated locations.</p> <ul style="list-style-type: none"> LSA surface stone tool scatter site 1 located at 29°04'30.00"S; 24°48'5.11"E (see photo below). 

	<ul style="list-style-type: none"> MSA and LSA surface stone tool scatter site 2 located at 29°04'30.18"S; 24°48'03.72"E (see photo below). 
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

5.3 Summary of the findings

A total of two (2) surface scatters of MSA and LSA tools were identified within the proposed study area. No formally protected heritage resources of either provincial or national status were identified within the proposed study area.

6 STATEMENT OF SIGNIFICANCE

The significance of sites and heritage resources is determined using the following rating and grading (Table 3) as recommended by SAHRA, 2005.

6.1 Significance of the stone tools

MSA and LSA tools were found as surface scatters within the study area. These tools were found in very low numbers and were not in their original context and hence cannot be used to reconstruct any specific informative picture about the people who manufactured them or their particular way of life. According to SAHRA's 2005 field rating and recommended grading of sites (Table 3), the stone tool scatters are regarded

to be of **low significance** and hence no further recording is required before construction commences.

Table 3: Field rating and recommended grading of sites (SAHRA, 2005)

Level	Details	Action
National (Grade I)	The site is considered to be of National Significance	Nominated to be declared by SAHRA
Provincial (Grade II)	This site is considered to be of Provincial significance	Nominated to be declared by Provincial Heritage Authority
Local Grade IIIA	This site is considered to be of HIGH significance locally	The site should be retained as a heritage site
Local Grade IIIB	This site is considered to be of HIGH significance locally	The site should be mitigated, and part retained as a heritage site
Generally Protected A	High to medium significance	Mitigation necessary before destruction
Generally Protected B	Medium significance	The site needs to be recorded before destruction
Generally Protected C	Low significance	No further recording is required before destruction

7 RECOMMENDATIONS

It is recommended that the proposed installation of the Jacobsdal Solar Energy Plant proceed from a heritage point of view as no heritage resources of high significance were identified within the proposed development area, with acceptance of the following conditions:

- Construction activities should be limited to the proposed development boundary. If the size of the footprint is increased at a later stage, a heritage specialist should be involved in order to assess how the increase in the size of the footprint will affect heritage resources.

8 RISK PREVENTATIVE MEASURES ASSOCIATED WITH CONSTRUCTION

Archaeological material, by its very nature, occurs below ground. The developer should therefore keep in mind that archaeological sites might be exposed during the construction phase. If anything is noticed, work in that area should be stopped and the occurrence should immediately be reported to SAHRA or a museum, preferably one at

which an archaeologist is available. The find should then be investigated and evaluated by the archaeologist.

9 CONCLUSION

The heritage survey for the proposed Jacobsdal Solar Energy Plant revealed surface stone tool scatters within the study area. These artefacts were found to be out of context and thus would not be easy to date. As such, they are regarded as having a low significance and no further recording would be required prior to the commencement of construction. Therefore, from a heritage point of view, the proposed solar farm can proceed.

REFERENCES

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Mitchell, P. 2002. *The Archaeology of southern Africa*. Cambridge University Press, UK.

SAHRA, 2005. *Minimum Standards for the Archaeological and the Palaeontological Components of Impact Assessment Reports*, Draft version 1.4.

APPENDIX 1

SAHRA POLICY ON RELOCATION OF GRAVES

Burial grounds and graves are dealt with in Article 36 of the NHRA Act, 1999 (Act No. 25 of 1999). Below follows a broad summary of how to deal with grave in the event of proposed development.

If the graves are younger than 60 years, an undertaker can be contracted to deal with the exhumation and reburial. This will include public participation, organising cemeteries, coffins, etc. They need permits and have their own requirements that must be adhered to.

If the graves are older than 60 years old or of undetermined age, an archaeologist must be in attendance to assist with the exhumation and documentation of the graves. This is a requirement by law.

Once it has been decided to relocate particular graves, the following steps should be taken:

- Notices of the intention to relocate the graves need to be put up at the burial site for a period of 60 days. This should contain information where communities and family members can contact the developer/archaeologist/public-relations officer/undertaker. All information pertaining to the identification of the graves needs to be documented for the application of a SAHRA permit. The notices need to be in at least 3 languages, English, and two other languages. This is a requirement by law.
- Notices of the intention needs to be placed in at least two local newspapers and have the same information as the above point. This is a requirement by law.
- Local radio stations can also be used to try contact family members. This is not required by law, but is helpful in trying to contact family members.
- During this time (60 days) a suitable cemetery need to be identified close to the development area or otherwise one specified by the family of the deceased.
- An open day for family members should be arranged after the period of 60 days so that they can gather to discuss the way forward, and to sort out any problems. The developer needs to take the families requirements into account. This is a requirement by law.
- Once the 60 days has passed and all the information from the family members have been received, a permit can be requested from SAHRA. This is a requirement by law.
- Once the permit has been received, the graves may be exhumed and relocated.
- All headstones must be relocated with the graves as well as any items found in the grave.