

**CULTURAL HERITAGE ASSESSMENT OF THE
PROPOSED ESTABLISHMENT OF PHOTO VOLTAIC (SOLAR POWER) PANELS ON
WOODLAND HILLS ESTATE, BLOEMFONTEIN**

(Forming part of an environmental authorisation process for the project)

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Prepared for:

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Sustainable Development Projects

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1 Introduction and Background Information

The specialist and writer of this report was appointed by Scatec Solar SA (Pty) Ltd (the Applicant) and Sustainable Development Projects, the environmental assessment practitioner (EAP) in July 2011 to undertake a cultural heritage assessment of the project area where it is proposed to construct photovoltaic panels for the production of solar power.

The project is situated in the Woodland Hills Estate on the farm HillandDale 249 within the municipal boundary of the city of Bloemfontein, the capital of the Free State Province.

2 Legislative Requirements

Heritage resources are protected in South Africa by the National Heritage Resources Act (NHRA), No. 25 of 1999. A heritage resource is defined in the Act as any place or object of cultural significance. Cultural significance is defined as a place or object as having aesthetic, architectural, historical, scientific, social, spiritual, linguistic and technological value.

The above mentioned Act states that heritage resources that are of cultural significance or other special value for the present community and for future generations must be considered part of the national estate and fall within the sphere of operations of the heritage resources authorities.

The term heritage resource is defined as places and objects of 'cultural significance' which is defined as "aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

The national estate may include-

- places, buildings, structures and equipment of cultural significance;
- places which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and paleontological sites;
- graves and burial grounds;
- sites of significance relating to the history in South Africa;
- movable objects, including-
 - objects recovered from the soil or waters of South Africa including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - objects to which oral traditions are attached or which are associated with living heritage; etc.

This assessment is performed in accordance with the requirements of the NHRA.

3 Details of Heritage Specialist

The CV of the specialist, Jean Beater, is included as Appendix 1 of this report. A brief overview is provided here below:

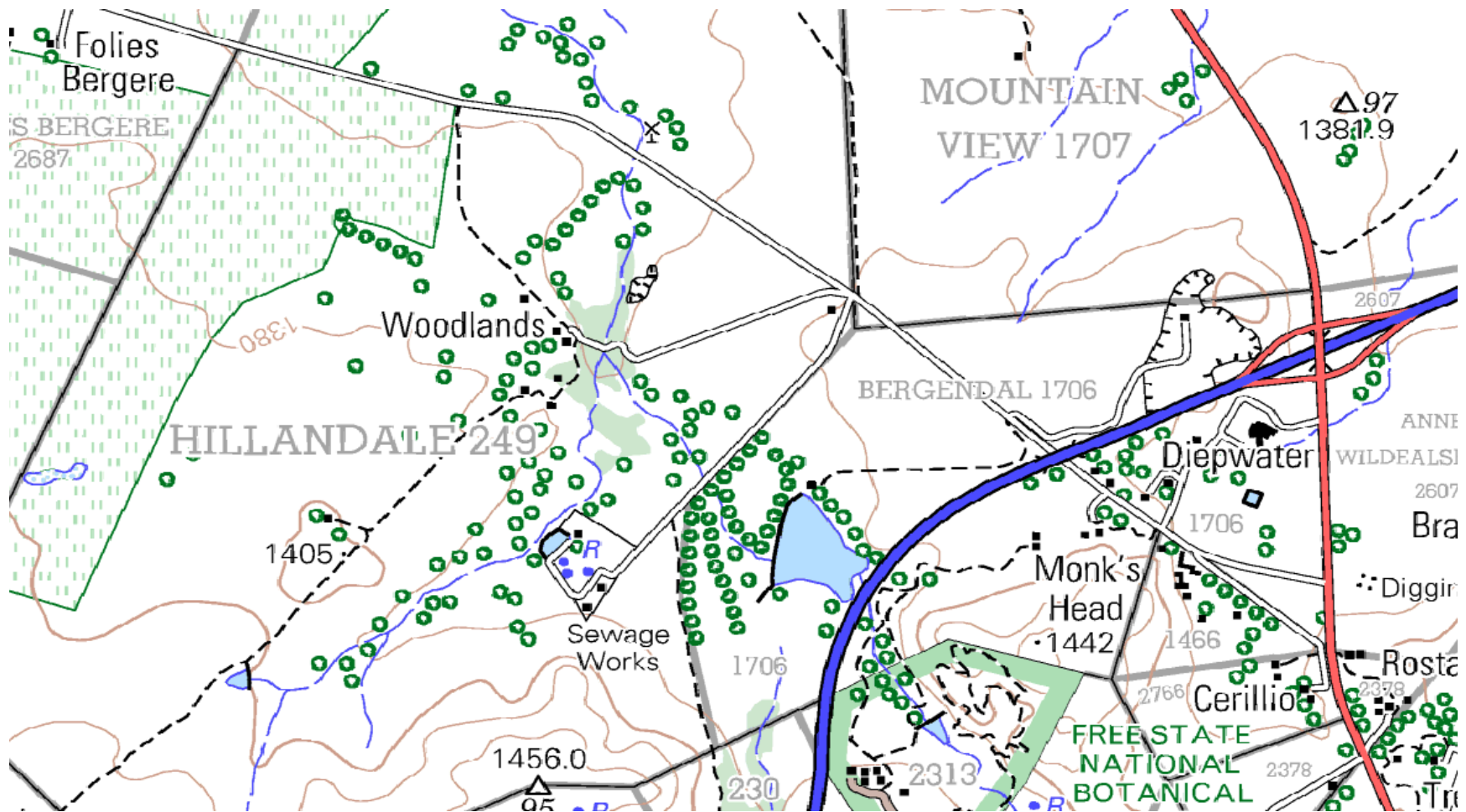
- She managed the Burial Sites Unit of the South African Heritage Resources Agency (SAHRA) for 11 years (1991 – 2002)
- She established her own heritage consulting company (2003) before joining the Gauteng Department of Agriculture, Environment and Conservation (GDACE) (late 2003 – June 2005) working for the Management Authority of the Cradle of Humankind World Heritage Site.
- In 2005, she joined PBA International, Consulting Engineers, where she project managed many Environmental Impact Assessments (EIAs) and Basic Assessments (BAs) including power line projects. She also undertook heritage impact assessments (HIAs) for other projects (see attached CV).
- She left PBAI at the end of February 2010 and undertakes heritage impact assessments (HIAs) and project manages environmental impact assessments (EIAs) as an independent consultant.
- She is an accredited heritage practitioner with Amafa aKwaZulu Natali and she is also an affiliate member of the Association of Southern African Professional Archaeologists (ASAPA).

4 Description of Project Site

The farm HillandDale 249, on which the project site is located, is situated west of the N1 highway that dissects the city of Bloemfontein from its western suburbs. The project site is situated within a large housing estate called Woodland Hills Estate. See maps below for the location of the farm and project site.

The housing development has a substation that provides power to the estate that may benefit directly from the power that will be eventually generated by the proposed project.

The 1:50 000 topographical map below indicates the position of the farm in the wider environment. The farm HillandDale 249 is clearly visible. The N1 highway is indicated in blue and the R700 road that crosses the N1 is indicated in red.



Map 1: Location of Farm HillandDale in larger environment



Map 2: Google Image of Project Site

5 Project Motivation and Description

5.1 Project Motivation¹

The provision of power or energy has become a significant limiting factor to both economic growth and competitiveness in South Africa. Additionally, there are both mandatory and voluntary directives for the establishment of sustainable energy projects, including wind and solar energy.

The Applicant has identified the need for the provision of solar power and through its international sister organisation is proposing the establishment of a number of solar farms that will supplement power to the power grid. Solar power is considered a desirable energy production mechanism as its

¹ First Draft: Environmental Scoping Report. Establishment of Photovoltaic (Solar Power) Farms in the Northern Cape, p 11-12

utilisation has no adverse bi-products; the method of harnessing solar energy is relatively innocuous in comparison to fossil fuel power production and most existing land use practices can continue with little interruption.

It is also stated by the Applicant that photo voltaic centres offer employment opportunities with approximately 80 people been required on a 10MW plant.

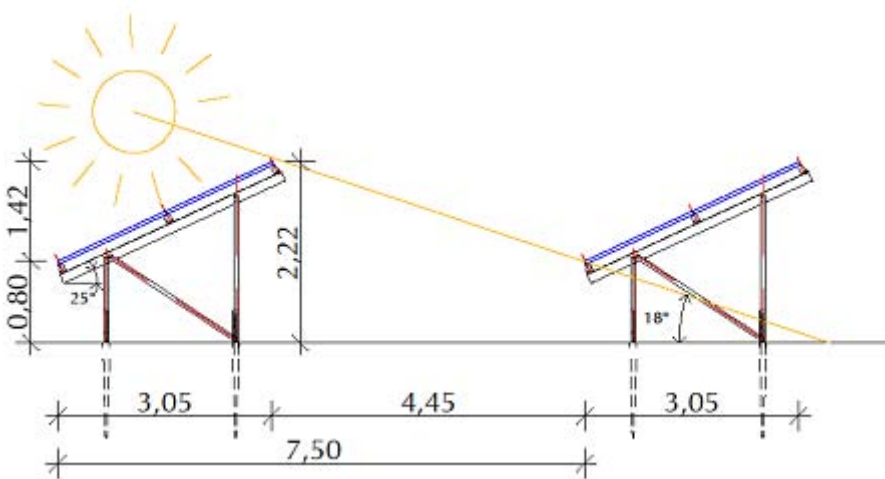
5.2 Project Description²

Identified or selected sites will have panels of photo voltaic (PV) cells mounted on wood or aluminium frames across level areas of the sites. Minor earthworks may have to be undertaken to accommodate such frames and such excavations will be surface related and is required to ensure that the orientation of the panels is congruous throughout the PV farm. Small removable plinths will be established to anchor the panels.

The panels will be approximately 2.2m in height above ground level with a width of approximately 3.0m. The panels are constructed of selenium based material encapsulated in a laminated plastic of high durability. Each panel is edged in plastic and feeds a small circuit board that delivers a direct current to the inverter that step up the current for delivery to the grid. The panels are non-reflective and are of a dark grey colour.

The schematic diagram below indicates the approximate size of the proposed solar panels.

Diagram 2: Schematic Diagram of Photo Voltaic Panels



² First Draft: Environmental Scoping Report. Establishment of Photovoltaic (Solar Power) Farms in the Northern Cape, p 12-13

6 Methodology

- The site of the proposed area of development was walked through by the author of this report on 25 August 2011.
- A desktop and internet search revealed general information regarding the larger area around the project site including the history of Bloemfontein. Other heritage/archaeological or environmental studies undertaken in the area were searched for with no specific studies found regarding the farm and project site having been found during this search. The EIA report for the proposed development could not be obtained.
- Google imagery of the proposed site for the development was also studied as well as the relevant 1:50000 (2926AA) and 1:250000 maps.

7 Historical Context

The prehistory of South Africa is conventionally divided into the Early (approx. 2 million to 200 000 years ago), Middle (250 000 to 20 000 years ago) and Late Stone Ages (20 000 years BP to historic times). The Early Stone Age people who roamed the Karoo were essentially hunters and gatherers and used their stone tools for butchering meat, making other stone tools and cutting and shaping plants and wood. During the Middle Stone Age they hunted more efficiently and seemed to prefer caves and shelters to live in.³

Fauresmith industries is the name given to a Middle Stone Age tool manufacturing technique thought to date circa 75 000 to 100 000 years BP. The Fauresmith site (named after the town Fauresmith in the Free State province) was first recognised as a distinct stone tool industry in 1923.⁴

Iron Age crop farmers probably entered southern Africa along the north eastern coastal margins in or before the 3rd Century AD and within a few years, descendants of these farmers moved westwards along river valleys.⁵ During the sixteenth and eighteenth centuries the Iron Age farmers began to move across the Vaal River and into the Free State. As they moved into the area, the first-farming communities came into contact with hunter-gatherers. Stone walled sites are found throughout the area indicating the presence of Iron Age settlements.⁶

The Free State did not escape the turmoil of the effects of the Difaqane that resulted when Mzilikazi fled Natal after flouting Shaka's command with the result that there was continuous disorder in the 1800s among the Sotho communities that were attacked by refugees fleeing Mzilikazi's army that was carving a path through the Highveld areas.⁷

³ www.karooqariep.co.za

⁴ <http://archaeology.about.com/od/fterms/g/fauresmith.htm>

⁵ www.karooqariep.co.za

⁶ www.srk.co.za/.../4%20-%20Archaeological%20Assessment.pdf, p 14-15

⁷ Reader's Digest. Illustrated History of South Africa. The Real Story, p 89-90

Bloemfontein is the capital city of the Free State Province and is also known as Manguang, the SeSotho name meaning 'the place of cheetahs'. About 1840, a Dutch farmer Rudolph Marthinus Brits settled on land near a strong running fountain known locally as Jan Bloem's Fontein, allegedly named after a local KorahKhoikhoi leader. In 1846, he sold his land to the acting British Resident Agent to the Dutch community living in the area who chose the site because of its proximity to the main road to Winburg.⁸

On 3 February 1848, the British Government annexed the territory naming it the Orange River Sovereignty and Bloemfontein became the seat of the new administration and Bloemfontein acquired municipal status in 1880.⁹

During the Anglo-Boer War, the city was occupied by the British in March 1900 and became the focus for British reinforcements and military organisation that led to the advance on Pretoria in May of the same year. A prisoner of war camp as well as concentration camp was established in the city during the war.¹⁰

In 1912, Black delegates from all part of South Africa came together in Bloemfontein to form the African National Congress in an attempt to resist the passage of the 1913 Native Land Act that saw the majority of land being taken away from Black people.¹¹

8 Site Investigation Report

The project site was extensively walked by the specialist on 25 of August 2011. The proposed project site is currently being used to grow maize and is highly disturbed and transformed. There are few areas that remain undisturbed and it is recommended that these areas are not used for the construction of the solar panels even though no visible heritage sites were discovered in these areas including archaeological material.

The project site is walled off from the housing development and apart from crop cultivation, game is allowed to graze on the site. Map 2 above clearly shows an existing road as well as the extent of cultivation that has taken place on the site. A partially undisturbed area is situated east of the gravel road between the road and the housing development where there are rocky outcrops that are outside the project site and must not be developed.

The photographs below indicate the receiving environment indicating the disturbed nature of the project site.

⁸ www.v1.sahistory.org.za/pages/places/villages/freeState/Bloemfontein.php, p 1

⁹ Ditto, p 1-2

¹⁰ Jones, Huw M. and Jones, Meurig G.M. A Gazetteer of the Second Anglo-Boer War 1899-1902, p 23

¹¹ www.v1.sahistory.org.za/pages/places/villages/freeState/Bloemfontein.php, p 1-2

Photograph 1: Receiving Environment showing cultivated land



Photograph 2: Cultivated land



Photograph 3: Less disturbed area situated adjacent to houses



9 Conclusions and Recommendations

It is the opinion of the heritage specialist that the proposed development of a solar farm on the Woodland Hills Estate can proceed due to the highly disturbed condition of the project site as long as the following recommendations are implemented:

- The undisturbed areas situated east of the existing gravel road and between the road and housing estate must be avoided and cordoned off from the construction site to avoid accidental impacts.
- The construction of the solar panels take place on existing cultivated areas where the area is transformed to such a degree that it is highly unlikely that intact heritage resources of significance will be found.
- All undisturbed areas are not be used for the proposed project. If development is to take place on undisturbed areas, it is recommended that the applicant appoint an archaeologist to assess the undisturbed area/s for archaeological remains prior to the start of construction.

- In the unlikely event that any heritage sites are discovered or unearthed during the construction process, work in the immediate vicinity of the find must be stopped, the Heritage Free State and the Cape Town office of the South African Heritage Resources Agency (SAHRA) must be informed and the services of an accredited heritage practitioner be used for an assessment of the heritage resources found.
- All measures recommended by the heritage professional in terms of any resources found during construction must be implemented and adhered to.
- Existing access roads should be used where possible to avoid the building of new access roads.

10 Sources Consulted

Internet Sites

<http://archaeology.about.com/od/fterms/g/fauresmith.htm>

www.karogariep.co.za

www.heritage.org.za/karoo/hope.htm

www.v1.sahistory.org.za/pages/places/villages/freeState/Bloemfontein.php

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