

**CULTURAL HERITAGE ASSESSMENT OF THE
PROPOSED ESTABLISHMENT OF PHOTO VOLTAIC (SOLAR POWER) PANELS ON
THE FARM DREUNBERG, NO. 97**

BURGERSDORP DISTRICT, EASTERN CAPE PROVINCE

(Forming part of an Environmental Impact Assessment Report 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 heritage impact assessments on several sites in the Eastern Cape province for the construction of photovoltaic panels for the production of solar power.

This heritage assessment forms part of the environmental impact assessment (EIA) for the establishment of photovoltaic farm on portion 1 of the farm Noupoot No. 97 in the Burgersdorp district.

This report includes the input from an archaeological assessment that was undertaken on the same site on 28 November 2011. The archaeological report is attached as **Appendix 1** of this report.

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 sections 34 through to 37 of the NHRA that refers to the protection of structures older than 60 years; archaeological and palaeontological sites, burial grounds and graves, public monuments and memorials. Such heritage resources may not be disturbed, damaged, altered, exhumed or removed without a permit issued by the relevant provincial and/or national heritage resources authority.

3 Details of Heritage Specialist

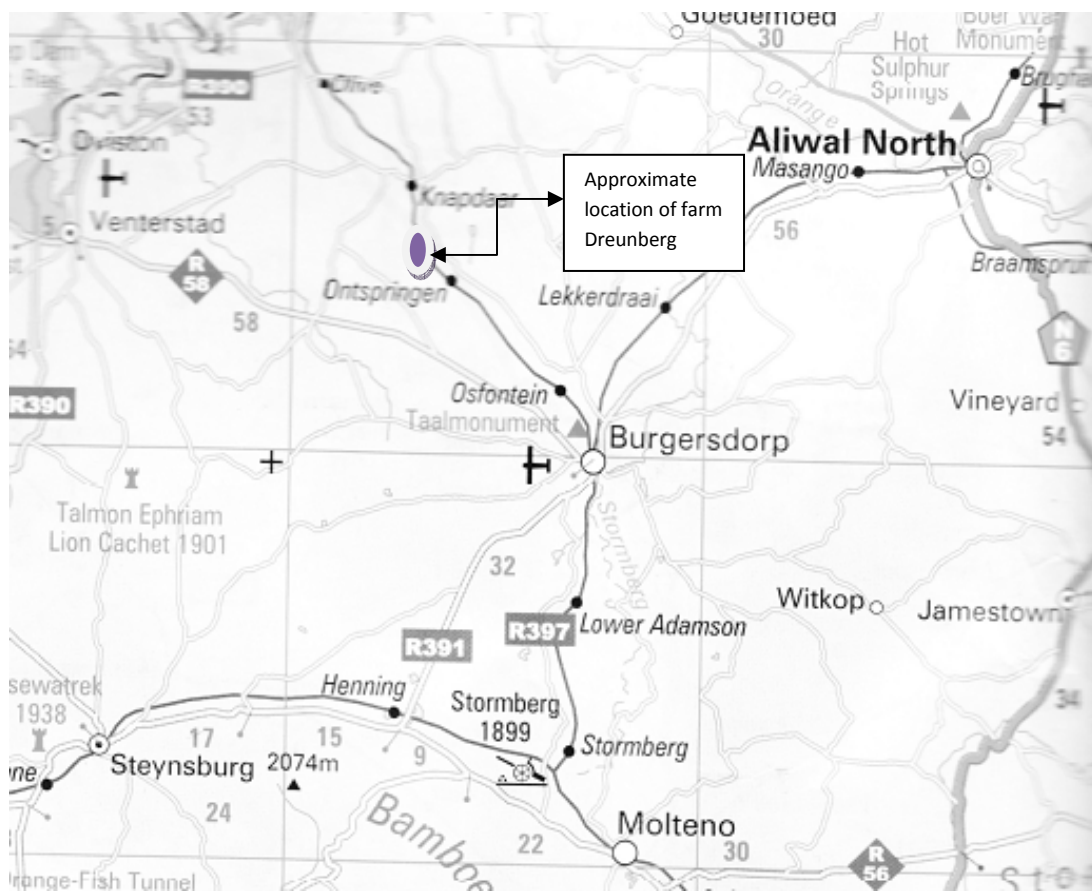
The CV of the specialist, Jean Beater, is included as **Appendix 2** of this report. A brief overview is provided here below:

- 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) as an independent consultant.
- She is an accredited heritage practitioner with Amafa aKwaZulu Natali and an affiliate member of the Association of Southern African Professional Archaeologists (ASAPA)

4 Description of Project Site

The farm is situated approximately 21km north west of the town of Burgersdorp in the Eastern Cape Province on a gravel road and close to a railway line. There is an existing Eskom substation on the farm (Dreunberg substation) and several power lines. The location of the substation is S30°49'809", E026°12'592". See maps below indicating the position of the farm and project site.

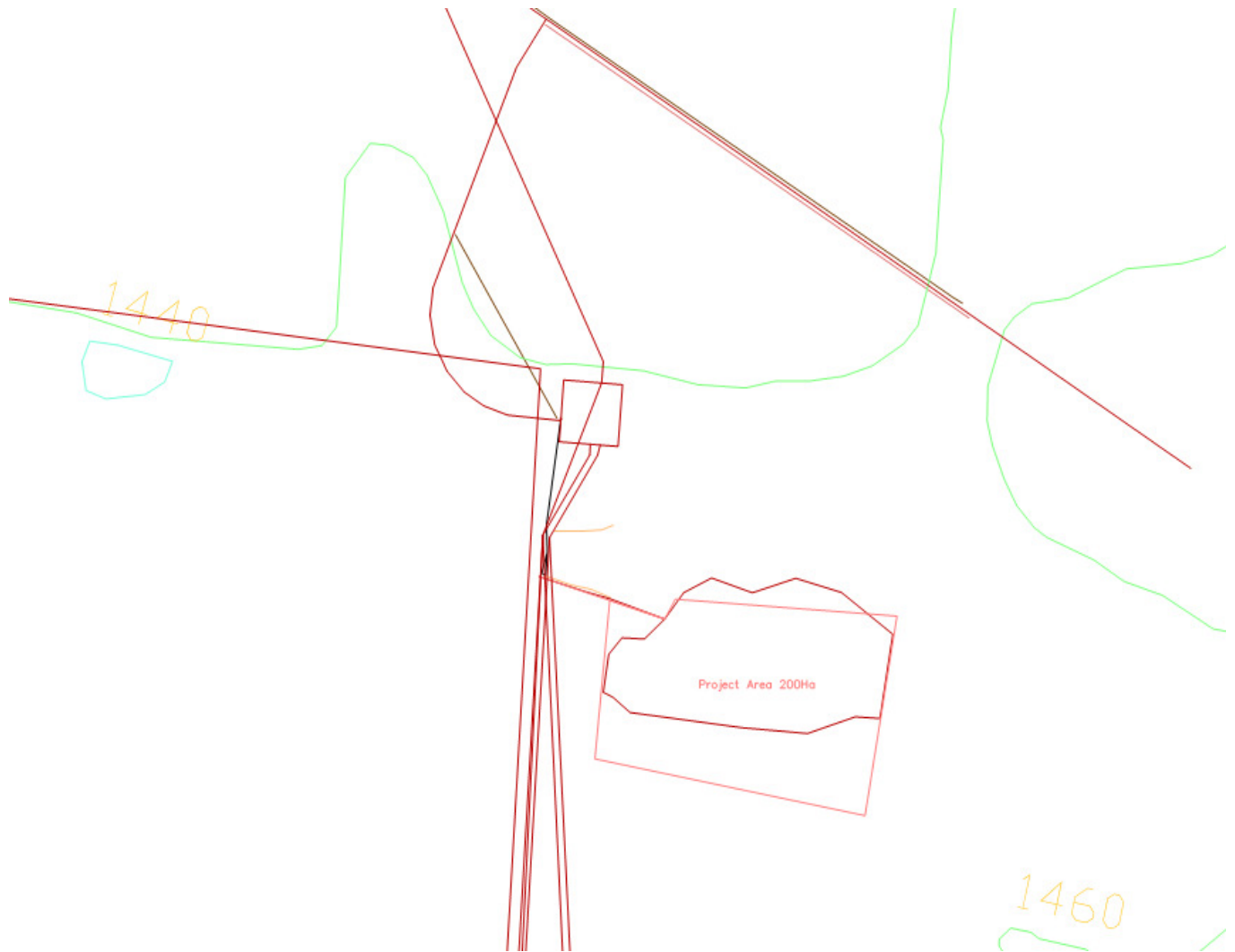
Map 1: Location of Farm within wider Geographic Area



Map 2: Google Earth Image of Substation and Surrounding Area



Diagram 1: Proposed Project Site on Dreunberg



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.

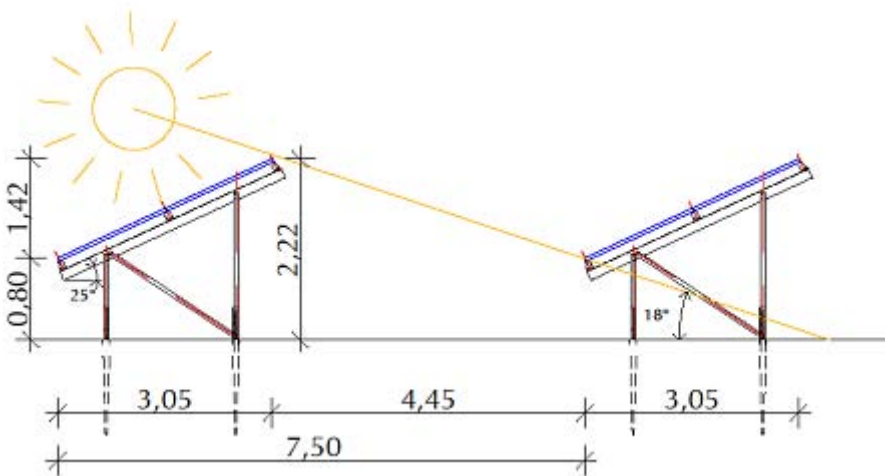
5.2 Project Description²

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, p 12-13

6 Methodology

- The site of the proposed area of development was walked through by the author of this report on 24 August 2011. The site was inspected by the archaeological specialist on 28 November 2011.
- A desktop and internet search revealed general information regarding the larger area around the project area including the history of the town of Burgersdorp and surrounding area. Other heritage/archaeological or environmental studies undertaken in the area were investigated with limited results that did not pertain to the project area.
- Google imagery of the project area was also scrutinized as well as the relevant 1:50 000 topographical maps.

7 Historical Context

The prehistory of the Eastern Cape 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 the Australopithecines. These Early Stone Age people were essentially hunters and gatherers and used their stone tools for butchering meat, making other stone tools and cutting and shaping plants and wood. As the intellectual capacity and skills of the early Karoo humans improved, they produced more effective and smaller tools from hardier materials. Thus, during the Middle Stone Age they hunted more efficiently and hunted smaller species and they seemed to prefer caves and shelters to live in.³

The Later Stone Age is characterised by the prehistory of the more recent and historically more familiar people of the Karoo, the gathering-hunting |Xam (San/Bushmen) and the herding Khoekhoen (Griqua, Korana/'Hottentots').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.

The historical period refers to the last 500 years when European settlers and colonialism entered Southern Africa. By the end of the 18th Century the trekboers who had been steadily moving northwards from the Dutch East India Company and its rules and had reached the Fish River and the boundary of the Cape Colony. By crossing the Fish River, the trekboers and Xhosa people who occupied the area north of the river came into conflict and there were numerous Frontier Wars that eventually led to the domination of the Xhosa by the British by the mid-1850s.⁵

³ www.karogariiep.co.za

⁴ ditto

⁵ Reader's Digest Illustrated History of South Africa - The Real Story. The Reader's Digest Association, Cape Town, 1992, p.68, 133

On 8 February 1846, the members of the Dutch Reformed Church bought the farm Klipfontein from Gert Buitendag which was situated in a valley below the Stormberg Mountains. The town remained church town until 1912 when it was bought by the Municipality.⁶

In 1860, the Gereformeerde Kerk (Reformed Church), a breakaway church from the Dutch Reformed Church was started in Burgersdorp and the town also became the centre of a strong movement to have Dutch recognized as an official language.⁷

During the Anglo-Boer War (1899-1902), the town was occupied by the burghers under Commandant FJ du Plooy in November 1899 and became the centre for rebel burghers and many were recruited for the Boer forces. The town was retaken by British troops in March 1900 and in December 1900 it became the headquarters of the British defence of the eastern section of the Cape colony.⁸

According to information found, Dreunberg (then known as Albert Junction) is a railway junction where the line from Queenstown runs north eastwards to Aliwal North and north westwards to join the main line to Bloemfontein at Springfontein. In November 1899, the railway line was cut by Boer irregulars as part of the Boer strategy to disrupt British transport and communication lines.⁹ It is unclear how close this action took place at the farm Dreunberg as there is no railway junction on the farm itself.

8 Site Investigation Report

The author of this report undertook a site visit on 24 August 2011 with the landowner and during the walk through of the project area, no visible heritage resources of significance were found. It should be noted that the farm is disturbed by existing farming activities including sheep and cattle farming, construction of a dam and existing access roads to the substation and power lines that cross the farm. There are also numerous ant-bear holes throughout the project area adding to its disturbed condition.

The farm is covered in thick grass and scrubby bush as can be seen in the photographs below. Limited amounts of stone tools were found especially on the exposed areas in the study area but these were highly dispersed with no context.

The archaeological assessment, undertaken in November 2011, confirmed the above findings. The archaeologist states in his report that archaeological material was found in the form of a small surface scatter of stone flakes near point A (30°49'52"S 026°12'40"E). The sample was very small but the artefacts resemble material from the Middle Stone Age (MSA). Some of the flakes at the site are triangular with convergent flaking on the dorsal side.¹⁰

⁶ www.burgersdorp-museum.za.net/burgersdorp-history.html

⁷ www.ecotourism.co.za/city/16/Burgersdorp

⁸ Jones, HM and Jones, MGM, 1999. A Gazetteer of the Second Anglo-Boer War 1899-1902, p 39

⁹ Ditto, p 4

¹⁰ Dreyer, J. First Phase Archaeological Investigation of the Proposed Solar Project at Dreunberg near Burgersdorp, Eastern Cape, p. 3

No other cultural material was found in association with the stone flakes. The small scatter of stone tools seems to be an isolated occurrence in the general area and the finds are inconclusive and of minor significance and mitigation, measures will be required only in case of the discovery of more archaeological material.¹¹

There is an existing farmhouse and outbuilding which are not occupied and are in a dilapidated condition. The landowner informed me that he had removed floorboards, etc., to prevent theft from taking place. The landowner pointed out two graves situated over 100m south-west of the farmhouse but he did not know whose graves they were.

It should be noted that the farm buildings and graves described above are situated well away from the project area (see Map 2 above) and these structures will not be impacted on by the construction of the solar panels.

Photograph 1



¹¹ Dreyer, J. First Phase Archaeological Investigation of the Proposed Solar Project at Dreunberg near Burgersdorp, Eastern Cape, p. 3

Photograph 2



9 Conclusions and Recommendations

It is the opinion of the heritage specialist, including the archaeologist, that the proposed construction of solar panels on the project site on the farm Dreunberg can proceed as long as the following recommendations are implemented:

- In the 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 Eastern Cape Provincial Heritage Agency and the Cape Town office of the South African Heritage Resources Agency (SAHRA) must be informed and the services of an accredited heritage professional obtained for an assessment of the heritage resources found.
- All measures recommended by the heritage professional in terms of heritage sites 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

Internet Sites

www.burgersdorp-museum.za.net/burgersdorp-history.html

www.ecotourism.co.za/city/16/Burgersdorp

www.karogariep.co.za

Publications:

First Draft: Environmental Scoping Report. Establishment of Photovoltaic (Solar Power) Farms in the Northern Cape. Sustainable Development Projects cc, Ballito, November 2010

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Jones, Huw M. and Jones, Meurig G.M. A Gazetteer of the Second Anglo-Boer War 1899-1902. The Military Press, 1999