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Phakanani Environmental

AMENDMENT OF AN ARCHAEOLOGICAL IMPACT ASSESSMENT STUDY REPORT FOR THE PROPOSED CONSTRUCTION OF DE WILDT 50 MW SOLAR POWER STATION AND 88 KV TRANSMISSION LINE ON PORTION (S) 15, 27 AND 28 OF THE FARM SCHIETFONTEIN WHICH IS WITHIN MADIBENG LOCAL MUNICIPALITY OF BOJANALA PLATINUM DISTRICT MUNICIPALITY, NORTH WEST PROVINCE.

May, 2016

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DECLARATION

ABILITY TO CONDUCT THE PROJECT

Munyadziwa Magoma is a professional archaeologist, having obtained his BA degree in Archaeology and Anthropology at University of South Africa (UNISA), an Honours degree at the University of Venda (UNIVEN), and a Masters degree at the University of Pretoria (UP). He is an accredited Cultural Resource Management (CRM) member of the Association for southern African Professional Archaeologists (ASAPA) and Amafa aKwaZulu-Natali. Munyadziwa is further affiliated to the South African Archaeological Society (SAAS), the Society of Africanist Archaeologists (SAfA), and the International Council of Archaeozoology (ICAZ). He has more than seven years' experience in heritage management, having worked for different CRM organisations and government heritage authorities. As a CRM specialist, Munyadziwa has completed well over hundred Archaeological Impact Assessments (AIA) for developmental projects situated in several provinces of the Republic of South Africa. The AIAs projects he has been involved with are diverse, and include the establishment of major substation, upgrade and establishment of roads, establishment and extension of mines. In addition, he has also conducted Heritage Impact Assessments (HIAs) for the alteration to heritage buildings and the relocation of graves. His detailed CV is available on request.

I, Mr. Munyadziwa Magoma, declare that this report has been prepared independently of any influence as may be specified by all relevant department, institution and organization.

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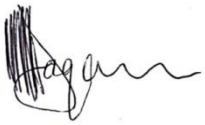

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EXECUTIVE SUMMARY

Introduction

Vhubvo Archaeo-Heritage Consultant Cc was appointed by Phakanani Environmental to conduct an Archaeological Impact Assessment (AIA) for the proposed establishment of De Wildt 50 MW Solar Power Station on Portion (s) 15, 27 and 28 of the Farm Schietfontein which is within Madibeng Local Municipality of Bojanala Platinum District Municipality in the North West Province. The aim of the study was to investigate the site for archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the proposed development, these will in turn assist the developer in ensuring proper conservation measure in line with the National Heritage Resource Act, 1999 (Act 25 of 1999). The findings of this study have been informed by desktop study. The desktop study was undertaken through SAHRIS for previous Cultural Heritage Impact Assessments conducted in the region of the proposed development, and also for researches that have been carried out in the wider area over the past years. In addition, historical background research was also done with National Archive and Surveyor General.

Need of the project

In view of the growing electricity demand and in an effort to use renewable energy resources, Zolograph Investment RF (Pty) Ltd is assessing the feasibility of a renewable energy generation facility (Photovoltaic Solar Facility) consisting of the construction, operation and maintenance of a Photovoltaic (PV) Power Plant with a maximum generating capacity up to 50 MW. The facility will comprise several arrays (strings) of PV modules mounted on frames. This initiation will significantly aid in the challenges of electricity in the area and beyond.

Visibility, survey success and impact statement

The field survey lasted one day of the 31st of March 2016. The survey was aimed at portion(s) 15, 27 and 28 of the Farm Schietfontein. The proposed area can only be accessed by an appointment, and is currently used for activities related to animal husbandry. Two archaeologists from Vhubvo conducted the survey. The visibility was very poor, an attempt was however made to cover the wider area of the proposed development. However, this proved impracticable to some extent since certain areas barely provide a visible pathway. The level of bush encroachment was very high (see Figure 3 and 4), it appears vegetation had significantly regenerated after a spate of good rains in the area. Nonetheless, some disturbances were noted, these disturbances are related to establishment of a borrow pit, power line and a culvert. The topography is varied and thus fairly undulating on other section, not withstanding other areas which are fairly flat. The probability of locating any important archaeological remains dating to the

Stone or Iron Age during construction of the project is rated as low. Comprehensible pictures taken in 2008 on part of the area by Roodt (2008), give an indication of the area that had been disturbed as a result of farming activities (see Figure 10). This assumption was also confirmed by Mr. Tsotetsi who claimed to have worked in the area since the 1980, and was born locally. According to him, previous farmer had farmed in the area. However, historical maps of the area dating to 1959 (see Figure 11) and 1979 (see Figure 12) are in contrary of any form of cultivation on the affected portions. It is thus assumed that if cultivation occurred, such was in small scale.

Brief background study

The Stone Age is the period in human history when stone materials were used to produce tools. In South Africa the Stone Age can be divided into three periods, Early (More than 2 million years ago - 250 000 years Ago), Middle (250 000 years ago – 25 000 years ago) and Late (25 000 years ago - AD 200). Up to this date, there are no known Stone Age sites in the area of the proposed development. However, some rock art (engravings) sites have been noted west of Zeerust and near Groot Marico to the east of Zeerust (Bergh 1999). The Iron Age is the name given to the period of human history when metal was mainly used to produce artifacts. In South Africa it can be divided in two separate phases. Early (AD 400 - AD 1025) and Late (AD 1025 - AD 1830). Although there are no known Early Iron Age sites in the area, there are several Late Iron Age sites in the wider area (Bergh 1999; Huffman 2007). The Late Iron Age farmers were followed by Europeans in the second half of the 19th century. As such, several people of European descent visited the area and these include Cambell I in 1820, Robert Schoon and William McLuckie in 1829, David Hume in 1830, Dr. Andrew Smith in 1835 and Cornwallis Harris in 1836 (Bergh 1999). These were followed by Voortrekkers until the land was expropriated in order to be incorporated in the Bophuthatswana homeland.

Past survey

Several studies have been conducted in the area by archaeologists such as Huffman 2011; Magoma 2013; Pistorius 1992, 1994, 1995, 1996, 1997, 1999, 2007; Udo 2001; Vollenhoven and Pelser 2008. Intensive archaeological research in the area had also been done by Revil Mason (Mason 1962), other archaeologists who had also researched the area includes Maggs 1976 and Evens 1984, anthropologists such as Eldredge 1992, Hammond-Tooke 1993 and Schapera 1943 had also done research in the wider area. Notwithstanding that, the closest archaeological study to the proposed area was done by Roodt (2008), this was done on the same Farm (Schietfontein), and for the same development (de wildt 50mw solar power), but it focused on Portion 15 of the said Farm. His study revealed no archaeological material on the said portion. Nonetheless, from the other studies mentioned above, and conducted on a wider area, several sites dating to the Late Iron Age had been noted. These includes Buispoort,

Braklaagte, Dwarsberg copper mines, Kaditshwene, Marico, Mmakgame, Tswenyane, Marothodi on Vlakfontein 207 JP, Mmakgame near the Maineelo and Molokwane on Selonskraal 317 JQ. None of these are close to the proposed area, it should be borne in mind that archaeological sites in the area are usually located in close proximity to the hill, often not far from watercourse. No sites had been found on river banks. As such, considering the topography of the proposed area, chances of encountering Iron Age settlements is low, though not impossible.

Restrictions and Assumptions

Phakanani Environmental submitted maps, and all relevant materials related to the locality and extent of the area proposed for development, and this was assumed to be relevant. Affected properties were marked in the map provided by Phakanani. As with any survey, archaeological materials may be under the surface and therefore unidentifiable to the surveyor until they are exposed once construction resume. As a result, should any archaeological/ or grave site be observed during construction, a heritage specialist must immediately be notified. Although other section of the proposed site where not able to be assessed, the physical survey was deemed sufficient since the desktop phase of the project yielded enough information about the study area. Thus, the study assumes that the findings of the study area represent the total amount of resources that may be found in the proposed area.

Discussion of survey findings

The phase 1 Cultural Heritage Impact Assessment for the proposed de wildt 50 mw solar power station revealed no archaeological (Stone and Iron Ages) resources or historical sites. However, cairns of stones which could have been a collapsed stone walling were noted. In addition, an ensign was noted. It is assumed that these materials are of recent period, probably dating to the last 30 years or so. It should be noted that poor visibility could have hampered chances of noting any grave site or archaeological materials in the area. However, considering the topography of the proposed area, no archaeological resource of significant is expected, similarly no grave site had been reported by farm owner. The recommendation below should be considered with responsiveness.

Recommendations

The fact that this study was not able to identify any material of significance in the proposed area could have been two folds, firstly and most likely it could have been that there are no archaeological sites in the proposed area, secondly, it could have been as a result of bush encroachment, wherein materials could have been hidden.

As discussed in this report, the wider area is sensitive on archaeological sites, especially dating to the Iron Age Sotho-Tswana and mainly in the form of stone-walling. Furthermore, the presence of a

tributary nearby which according to Sentker (1968) and Huffman (2000) was of significant in determining Iron Age settlements should not be ruled out. These coupled by poor visibility pave way to the following main recommendation:

- An archaeologist must be assigned during bush clearing to further assess the area. This will ensure that no chance archaeological/ and or graves are compromised/ disturbed by the proposal. However, as aforesaid, chances of encountering archaeological sites in these portions are considered low.

Although no archaeological objects were observed during the survey, the client is reminded that these often happen underground, as such should any archaeological material be unearthed accidentally during the course of construction, SAHRA should be alerted immediately and construction activities be stopped within a radius of at least 10m of such indicator. The area should then be demarcated by a danger tape. Accordingly, a professional archaeologist or SAHRA officer should be contacted immediately. In the mean time, it is the responsibility of the Environmental officer and the contractor to protect the site from publicity (i.e., media) until a mutual agreement is reached. It is mandatory to report any incident of human remains encountered to the South African Police Services, SAHRA staff member and professional archaeologist. Any measure to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law under Section 35(4) and 36(3) of the National Heritage Resources Act (Act 25 of 1999). The developer should induct field worker about archaeology, and steps that should be taken in the case of exposing archaeological materials.

Conclusions

The proposed development and planning of the project can proceed on condition that an archaeological walk down will be conducted before any construction is assigned. Accordingly, I, as an independent researcher recommend that the developer be allowed to proceed with the planning of the project, subject to adopting the recommendation mention above.

From a cultural heritage resources perspective, it is recommended that South African Heritage Resources Agency (SAHRA) approve the project to proceed on condition that the suggested recommendation measures are successfully adhered to. This report is void with approval from SAHRA or relevant provincial authority.

Acknowledgements

The author and the team of Vhubvo would like to acknowledge Phakanani Environmental and the community of Tshwara for their assistance in relation to the completion of this project, also Google earth and Wikipedia. In particular, the staffs of NASA and Surveyor General are also thanked greatly.

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ACRONYMS AND ABBREVIATIONS

AIA	Archaeological Impact Assessment
EMP	Environmental Management Plan
HIA	Heritage Impact Assessment
LIA	Late Iron Age
MIA	Middle Iron Age
EIA	Early Iron Age
HMP	Heritage Management Plan
LSA	Late Stone Age
MSA	Middle Stone Age
ESA	Early Stone Age
NASA	National Archives of South Africa
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Authority
SAHRA	South African Heritage Resources Agency

GLOSSARY OF TERMS

The following terms used in this Archaeology are defined in the National Heritage Resources Act [NHRA], Act Nr. 25 of 1999, South African Heritage Resources Agency [SAHRA] Policies as well as the Australia ICOMOS Charter *(Burra Charter)*:

Archaeological Material: remains resulting from human activities, which are in a state of disuse and are in, or on, land and which are older than 100 years, including artifacts, human and hominid remains, and artificial features and structures.

Artefact: Any movable object that has been used, modified or manufactured by humans.

Conservation: All the processes of looking after a site/heritage place or landscape including maintenance, preservation, restoration, reconstruction and adaptation.

Cultural Heritage Resources: refers to physical cultural properties such as archaeological sites, palaeolontological sites, historic and prehistorical places, buildings, structures and material remains, cultural sites such as places of rituals, burial sites or graves and their associated materials, geological or natural features of cultural importance or scientific significance. This include intangible resources such religion practices, ritual ceremonies, oral histories, memories indigenous knowledge.

Cultural landscape: "the combined works of nature and man" and demonstrate "the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both internal and external".

Cultural Resources Management (CRM): the conservation of cultural heritage resources, management, and sustainable utilization and present for present and for the future generations

Cultural Significance: is the aesthetic, historical, scientific and social value for past, present and future generations.

Chance Finds: means Archaeological artefacts, features, structures or historical cultural remains such as human burials that are found accidentally in context previously not identified during cultural heritage scoping, screening and assessment studies. Such finds are usually found during earth moving activities such as water pipeline trench excavations.

Compatible use: means a use, which respects the cultural significance of a place. Such a use involves no, or minimal, impact on cultural significance.

Conservation means all the processes of looking after a place so as to retain its cultural significance.

Expansion: means the modification, extension, alteration or upgrading of a facility, structure or infrastructure at which an activity takes place in such a manner that the capacity of the facility or the footprint of the activity is increased.

Grave: A place of interment (variably referred to as burial), including the contents, headstone or other marker of such a place, and any other structure on or associated with such place.

Heritage impact assessment (HIA): Refers to the process of identifying, predicting and assessing the potential positive and negative cultural, social, economic and biophysical impacts of any proposed project, plan, programme or policy which requires authorisation of permission by law and which may significantly affect the cultural and natural heritage resources. The HIA includes recommendations for appropriate mitigation measures for minimising or avoiding negative impacts, measures enhancing the positive aspects of the proposal and heritage management and monitoring measures.

Historic Material: remains resulting from human activities, which are younger than 100 years, but no longer in use, including artifacts, human remains and artificial features and structures.

Impact: the positive or negative effects on human well-being and / or on the environment.

***In situ* material:** means material culture and surrounding deposits in their original location and context, for instance archaeological remains that have not been disturbed.

Interested and affected parties Individuals: communities or groups, other than the proponent or the authorities, whose interests may be positively or negatively affected by the proposal or activity and/ or who are concerned with a proposal or activity and its consequences.

Interpretation: means all the ways of presenting the cultural significance of a place.

Late Iron Age: this period is associated with the development of complex societies and state systems in southern Africa.

Material culture means buildings, structure, features, tools and other artefacts that constitute the remains from past societies.

Mitigate: The implementation of practical measures to reduce adverse impacts or enhance beneficial impacts of an action.

Place: means site, area, land, landscape, building or other work, group of buildings or other works, and may include components, contents, spaces and views.

Protected area: means those protected areas contemplated in section 9 of the NEMPAA and the core area of a biosphere reserve and shall include their buffers.

Public participation process: A process of involving the public in order to identify issues and concerns, and obtain feedback on options and impacts associated with a proposed project, programme or development. Public Participation Process in terms of NEMA refers to: a process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to specific matters.

Setting: means the area around a place, which may include the visual catchment.

Significance: can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgments and science-based criteria (i.e. biophysical, physical cultural, social and economic).

Site: a spatial cluster of artefacts, structures, organic and environmental remains, as residues of past human activity.

1. Introduction

At the request of Phakanani Environmental, Vhubvo Archaeo-Heritage Consultant Cc conducted the Archaeological Impact Assessment (AIA) for the proposed establishment of De Wildt 50 mw solar power station on portion (s) 15, 27 and 28 of the farm Schietfontein which is within Madibeng Local Municipality of Bojanala Platinum District Municipality in the North West Province. The survey was conducted in accordance with the SAHRA Minimum Standards for the Archaeology and Palaeontology. The minimum standards clearly specify the required contents of the report of this nature.

2. Sites location and description

The field survey lasted one day of the 31st of March 2016. The survey was aimed at portion(s) 15, 27 and 28 of the Farm Schietfontein. The proposed area can only be accessed by an appointment, and is currently used for activities related to animal husbandry. Two archaeologists from Vhubvo conducted the survey. The visibility was very poor, an attempt was however made to cover the wider area of the proposed development. However, this proved impracticable to some extent since certain areas barely provide a visible pathway. The level of bush encroachment was very high (see Figures 3 and 4), it appears vegetation had significantly regenerated after a spate of good rains in the area. Nonetheless, some disturbances were noted, these disturbances are related to establishment of a borrow pit, power line and a culvert. The topography is varied and thus fairly undulating on other section, not withstanding other areas which are fairly flat. The surveyed area forms part of the Bankeveld, which lies between Onderstepoort near Pretoria in the east and stretches to Rustenburg in the west, there is a watercourse which cut across the area. The probability of locating any important archaeological remains dating to the Stone or Iron Age during construction of the project is rated as low. Comprehensible pictures taken in 2008 on part of the area by Roodt (2008), give an indication of the area that had been disturbed as a result of farming activities (see Figures 10). This assumption was also confirmed by Mr. Tsotetsi who claimed to have worked in the area since the 1980, and was born locally. According to him, previous farmer had farmed in the area. However, historical maps of the area dating to 1959 (see Figure 11) and 1979 (see Figure 12) are in contrary of any form of cultivation on the affected portions. It is thus assumed that if cultivation occurred, such was in small scale.

Summary of Project Location Details

Province:	North West
Local Municipality:	Madibeng
District:	Bojanala Platinum
Farm Names:	Schietfontein
Proposed development:	Solar Power Station
Gps Co-Ordinates:	See map below
Extent:	±182ha

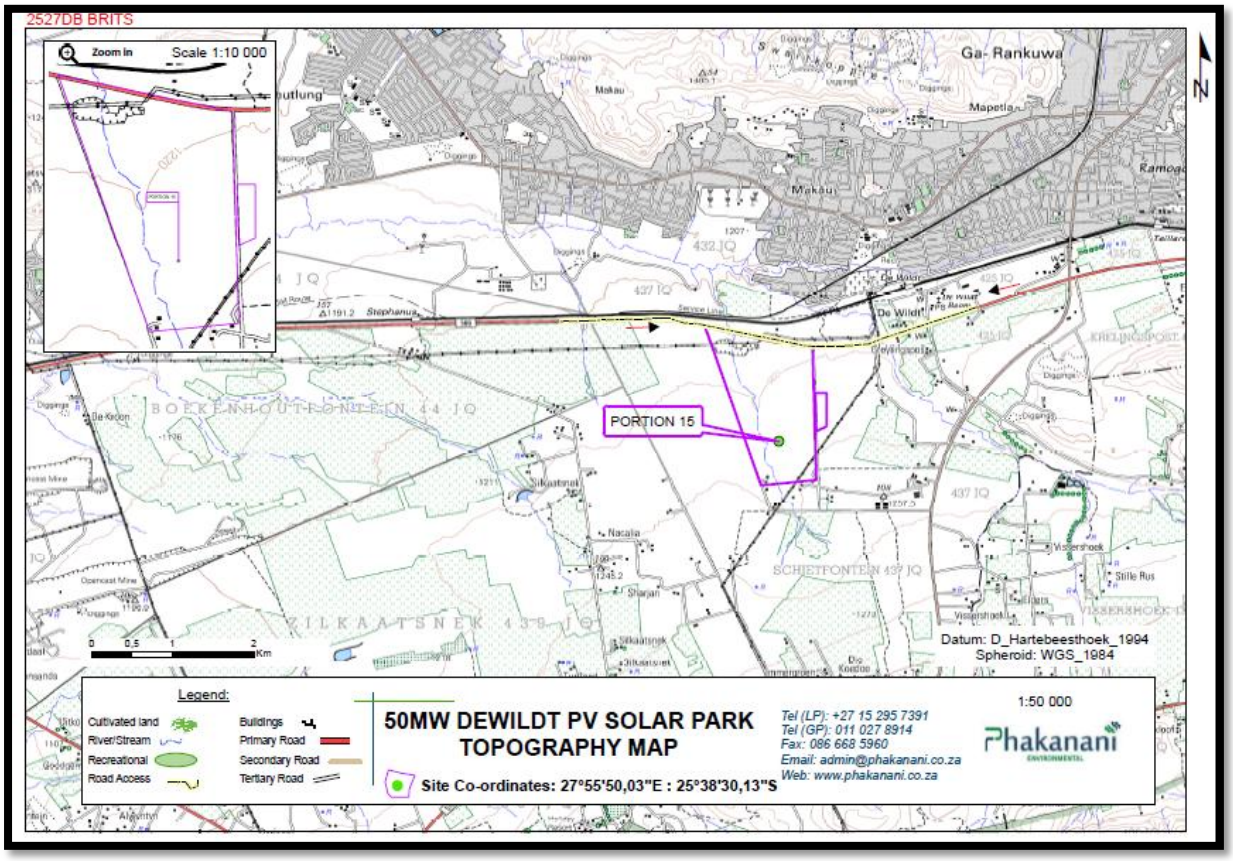

Figure 1: Topographical map of the proposed area for development (Courtesy Phakanani).

Figure 2: Google earth view of the proposed area (Courtesy Google Earth).

Figure 3: An overview of section of the proposed area, note Magaliesburg on the background of the right picture.

Figure 4: An overview of bush encroachment in the proposed area.

Figure 5: An overview of the borrow pit noted in the proposed area, as well as Eskom power line on the background.

Figure 6: An overview of the western section of the proposed area, towards the watercourse.

3. Nature of the proposed project

In view of the growing electricity demand and in an effort to use renewable energy resources, Zolograph Investment RF (Pty) Ltd is assessing the feasibility of a renewable energy generation facility (Photovoltaic Solar Facility) consisting of the construction, operation and maintenance of a Photovoltaic (PV) Power Plant with a maximum generating capacity up to 50 MW. The facility will comprise several arrays (strings) of PV modules mounted on frames. The facility will comprise several arrays (strings) of PV modules mounted on frames; the associated infrastructure and structures will consist of:

- Internal and external access roads and a small parking area;
- Fencing of the plant and video security control systems;
- Foundations / mini piles for the mounted Photovoltaic arrays;
- Electricity access point for the construction phase, operation phase (if necessary) and UPS (Uninterruptible Power Supply) devices;
- Water access point and/or water extraction on-site from borehole(s), water supply pipelines, water treatment;
- Sewage system and storm water collection system (if necessary);
- Workshop and warehouse;

- A control building with offices;
- Cabling linking Photovoltaic strings and other internal cabling;
- Medium voltage stations designed to host DC/AC inverters and medium voltage power transformers;
- A high voltage substation with high-voltage power transformers, stepping up the voltage to the voltage of the Eskom's grid,
- 88kV transmission line to loop in and out the sub-station.

During the construction phase, the site may be provided with additional:

- Water access point and water extraction on-site borehole(s) point, water supply pipelines, water treatment facilities;
- Pre-fabricated buildings that will be removed at the end of the construction phase.

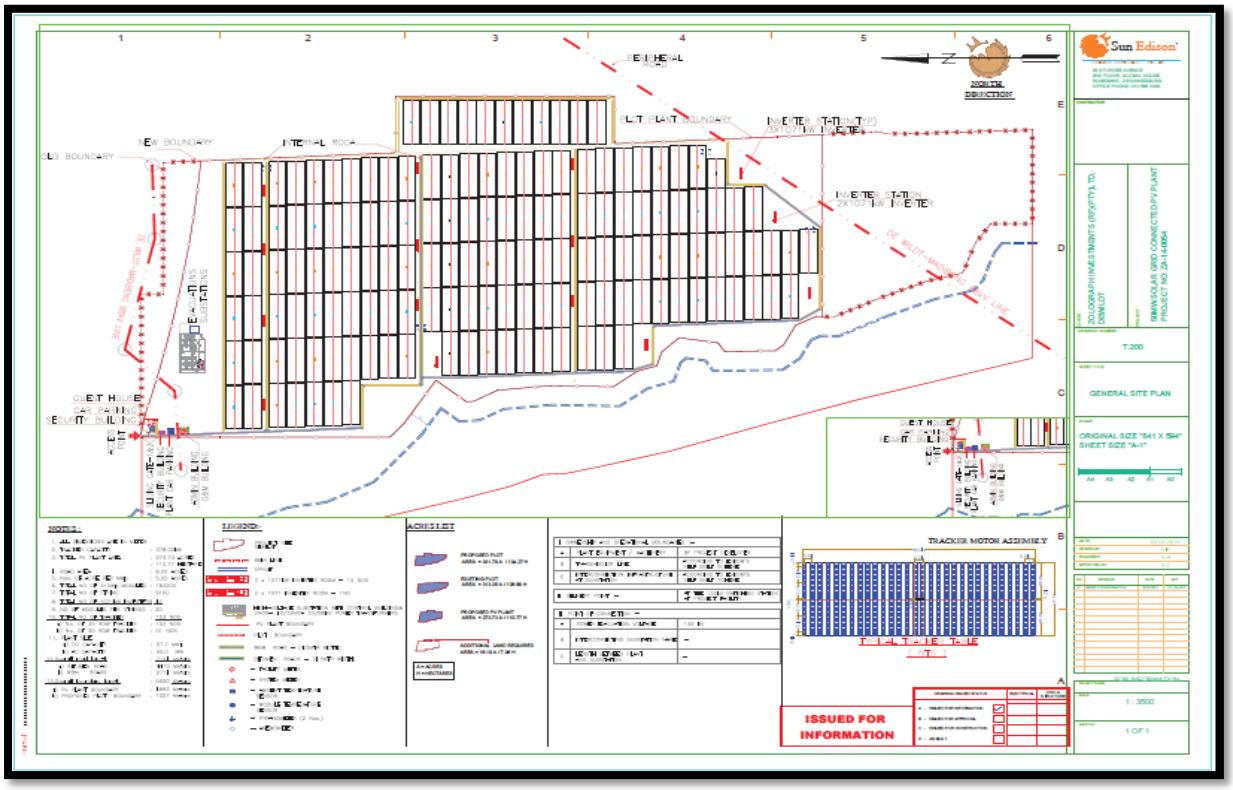

Figure 7: Layout map of the proposed development.

Figure 8: Example of illustration of solar plant that will be constructed.

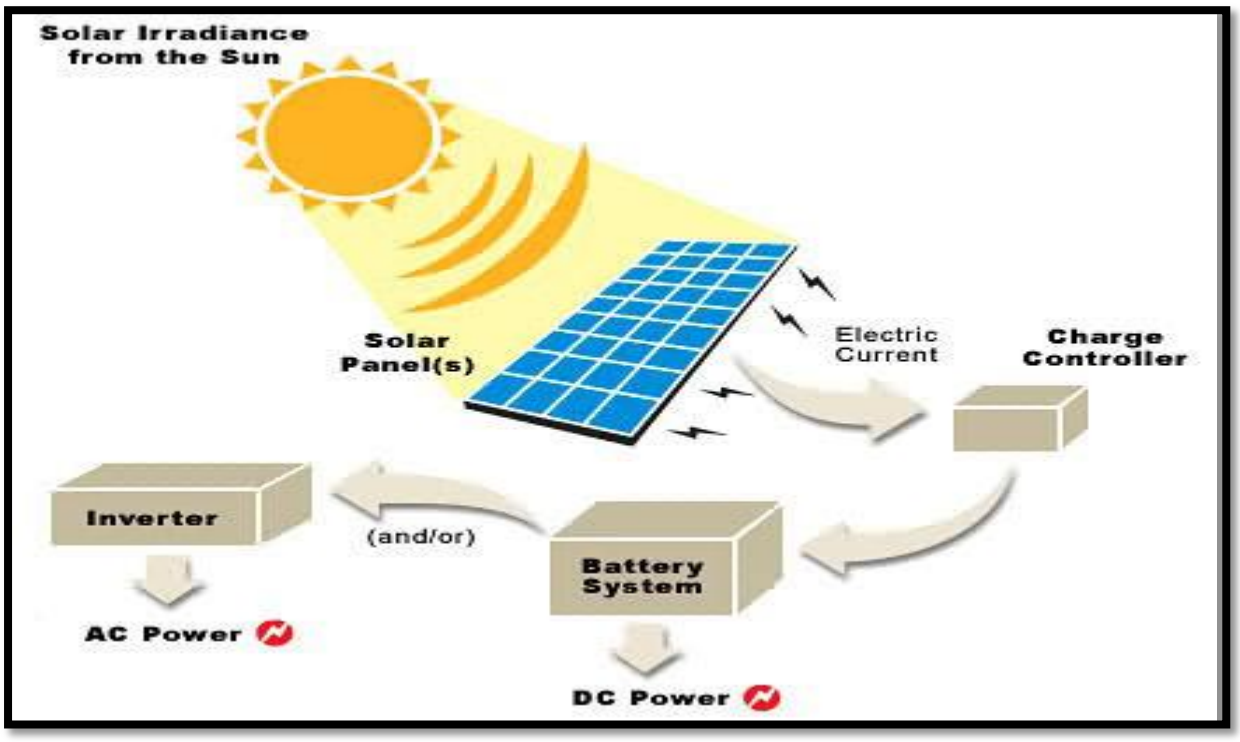

Figure 9: Example of illustration of how energy is generated through solar plant.

4. Purpose of the cultural heritage study

The purpose of this Archaeological Impact Assessment (AIA) study was to conduct a heritage survey, enabling us to have an understanding of the archaeological, cultural, and general heritage sensitivity of the area proposed for establishment of solar station. Impact assessments highlight many issues facing sites in terms of their management, conservation, monitoring and maintenance, and the environment in and around the site. Therefore, this AIA involves the following:

- Identification and recording of heritage resources that maybe affected by the proposed development,
- Providing recommendations on how best to appropriately safeguard identified heritage sites. Mitigation is an important aspect of any development on areas where heritage sites have been identified.

5. Methodology and Approach

The study method refers to the SAHRA Policy Guidelines for impact assessment, 2012. As part of this archaeological impact assessment, the following tasks were conducted: 1) site file search, 2) literature review, 3) consultations, 4) analysis of the acquired data, leading to the production of a report. To understand the archaeology of the developing area, a background study was undertaken and relevant institutions were consulted. These studies entails review of archaeological and heritage impact assessment studies that have been conducted around the proposed area thorough SAHRIS. In addition, E-journal platforms such as J-stor, Google scholars and History Resource Centre were searched. The University of Pretoria's Library collection was also pursued, as well as Surveyor General and NASA. These investigations were fundamental in shading light about the archaeology of the proposed area, as well as the compilation of this report.

Restrictions and Assumptions

Phakanani Environmental submitted maps, and all relevant materials related to the locality and extent of the area proposed for development, and this was assumed to be relevant. Affected properties were marked in the map provided by Phakanani. As with any survey, archaeological materials may be under the surface and therefore unidentifiable to the surveyor until they are exposed once construction resume. As a

result, should any archaeological/ or grave site be observed during construction, a heritage specialist must immediately be notified. Although other section of the proposed site where not able to be assessed, the physical survey was deemed sufficient since the desktop phase of the project yielded enough information about the study area. Thus, the study assumes that the findings of the study area represent the total amount of resources that may be found in the proposed area.

6. Applicable heritage legislation

Several legislations provide the legal basis for the protection and preservation of both cultural and natural resources. These include the National Environment Management Act (No. 107 of 1998); Mineral Amendment Act (No 103 of 1993); Tourism Act (No. 72 of 1993); Cultural Institution Act (No. 119 of 1998), and the National Heritage Resources Act (Act 25 of 1999). Section 38 (1) of the National Heritage Resources Act requires that where relevant, an Impact Assessment is undertaken in case where a listed activity is triggered. Such activities include:

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50 m in length; and
(c) any development or other activity which will change the character of an area of land, or water -
(i) exceeding 5 000 m² in extent;
(ii) involving three or more existing erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a Provincial Heritage Resources Authority;
(d) the re-zoning of a site exceeding 10 000 m2 in extent; or
(e) any other category of development provided for in regulations by SAHRA or a Provincial Heritage Resources Authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

Section 3 of the National Heritage Resources Act (25 of 1999) lists a wide range of national resources protected under the act as they are deemed to be national estate. When conducting a Heritage Impact Assessment (HIA) the following heritage resources have to be identified:

(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 paleontological 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 by 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) moveable objects, including -
(i) objects recovered from the soil or waters of South Africa, including archaeological and paleontological 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 of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

Other sections of the Act with a direct relevance to the AIA are the following:

Section 34(1) *No person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.*

Section 35(4) *No person may, without a permit issued by the responsible heritage resources authority:*

- *destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite*

Section 36 (3) *No person may, without a permit issued by SAHRA or a provincial heritage resources authority:*

- *destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside formal cemetery administered by a local authority; or*
- *bring onto or use at a burial ground or grave any excavation equipment, or any equipment which assists in detection or recovery of metals.*

7. Degree of significance

This category requires a broad, but detailed knowledge of the various disciplines that might be involved. Large sites, for example, may not be very important, but a small site, on the other hand, may have great significance as it is unique for the region.

Significance rating of sites

(i) High (ii) Medium (iii) Low

This category relates to the actual artefact or site in terms of its actual value as it is found today, and refers more specifically to the condition that the item is in. For example, an archaeological site may be the only one of its kind in the region, thus its regional significance is high, but there is heavy erosion of the greater part of the site, therefore its significance rating would be medium to low. Generally speaking, the following are guidelines for the nature of the mitigation that must take place as Phase 2 of the project.

High

- This is a 'do not touch' situation, alternative must be sought for the project, examples would be natural and cultural landscapes like the Mapungubwe Cultural Landscape World Heritage Site, or the house in which John Langalibalele resided.
- Certain sites, or features may be exceptionally important, but do not warrant leaving entirely alone. In such cases, detailed mapping of the site and all its features is imperative, as is the collection of diagnostic artefactual material on the surface of the site. Extensive excavations must be done to retrieve as much information as possible before destruction. Such excavations might cover more than half the site and would be mandatory; it would also be advisable to negotiate with the client to see what mutual agreement in writing could be reached, whereby part of the site is left for future research.

Medium

- Sites of medium significance require detailed mapping of all the features and the collection of diagnostic artefactual material from the surface of the site. A series of test trenches and test pits should be excavated to retrieve basic information before destruction.

Low

- These sites require minimum or no mitigation. Minimum mitigation recommended could be a collection of all surface materials and/ or detailed site mapping and documentation. No excavations would be considered to be necessary.

In all the above scenarios, permits will be required from the South African Heritage Resources Agency (SAHRA) or the appropriate PHRA as per the legislation (the National

Heritage Resources Act, no. 25 of 1999). Destruction of any heritage site may only take place when a permit has been issued by the appropriate heritage authority. The following table is used to grade heritage resources.

Table 1: Grading systems for identified heritage resources in terms of National Heritage Resources Act (Act 25 of 1999).

Level	Significance	Possible action
National (Grade I)	Site of National Value	Nominated to be declared by SAHRA
Provincial (Grade II)	Site of Provincial Value	Nominated to be declared by PHRA
Local Grade (IIIA)	Site of High Value Locally	Retained as heritage
Local Grade (IIIB)	Site of High Value Locally	Mitigated and part retained as heritage
General Protected Area A	Site of High to Medium	Mitigation necessary before destruction
General Protected Area B	Medium Value	Recording before destruction
General Protected Area C	Low Value	No action required before destruction

8. History of the Region

South Africa has one of the longest sequences of human development in the world. The prehistory and history of South Africa span the entire known life span of human on earth. It is thus difficult to determine exactly where to begin, a possible choice could be the development of genus *Homo* millions of years ago. South African scientists have been actively involved in the study of human origins since 1925 when Raymond Dart identified the Taung child as an infant halfway between apes and humans. Dart called the remains *Australopithecus africanus*, southern ape-man, and his work ultimately changed the focus of human evolution from Europe and Asia to Africa, and it is now widely accepted that humankind originated in Africa (Robbins *et al.* 1998). In many ways this discovery marked the birth of palaeoanthropology as a discipline. Nonetheless, the earliest form of culture known in South Africa is the Stone Age. These prehistoric period during which humans widely used stone for tool-making, stone tools were made from a variety of different sorts of stone. For example, flint and chert were shaped for use as cutting tools and weapons, while basalt and sandstone were used for ground stone. Stone Age can be divided into Early,

Middle and Late, it is argued that there are two transitional period. Noteworthy that the time frame used for Stone Age period is an approximate and differ from researcher to researcher (see Korsman and Meyer 1999, Mitchell 2002, Robbins *et al.* 1998).

Stone Age

Although a long history of research on the Early Stone Age (ESA) of southern Africa has been conducted (Mason 1962, Sampson 1974, Klein 2000, Chazan 2003), it still remains a period were little is known about. These may be due to many factors which includes, though not limited to retrieval techniques used, reliance on secondary, at times unknown sources, and the fact that few fauna from this period has been analysed (Chazan 2003). According to Robbins *et al.* (1998), the Stone Age is the period in human history when stone was mainly used to produce tools. This period began approximately 2.5 million years ago and ended around 200 000 years ago. During this period human beings became the creators of culture and was basically hunters and gatherers, this era is identified by large stone artefacts. Microlithic Later Stone Age (LSA) began around 35 000 and extend to the later 1800 AD. According to Deacon (1984), LSA is a period when human being refined small blade tools, conversely abandoning the prepared-core technique. Thus, refined artefacts such as convex-edge scrapers, borers and segments are associated with this period. Moreover, large quantity of art and ornaments were made during this period.

The wider region of the proposed site has yielded both Early and Late Stone Age sites, but recent surveys have documented Acheulian industries and continuity between ESA and Middle Stone Age (MSA) lithic technologies. Amidst the entire discoveries, the area is well known for the Taung Site, here the first *Australopithecus africanus* skull, the *Taung* Child (Dart 1925) was found. Also to note is that LSA sites are represented by the Thaba Sione site (and associated sites) wherein lithic tool industry and about 451 boulders engraving with imagery of animals, human figures, and geometric shapes where found. Another engraving site can be found at Bosworth, a Provincial Heritage Site, near Klerksdorp (SAHRA 2007). Rock art paintings have also been documented at Harts River valley. Other Stone Age sites have also been identified just south of the town of Brits. These sites are mainly concentrated around the Magalies Mountains and fall within the Magaliesberg Research Area (Berg 1999; Hutten 2012). These consists of nine sites (Rissik, Jubilee Shelter, Cave James, Elizabeth Shelter, Kloofdal Shelter, Hope Hill Shelter) including rock shelters in the Magaliesberg

Mountain. San rock engravings dating to the LSA (Van Riet Lowe 1945; Hutten 2012) have also been identified in the geographical areas situated between Rustenburg and Brits. One rock art-painting site was identified near the confluence of the Crocodile River and Elands River and dates back to the LSA (Bergh 1999).

No Stone Age sites were identified in the area proposed area for development. Although the area could have been ideal for good grazing from which Stone Age people would have hunted, no materials dating to this period were noted. This might have been as a result of few researches that have been done on the larger region. Thus, few published papers and studies are available about this area, even the AIA conducted appears to focus more on the Iron Age, rather than Stone period. The few Stone Age sites known in the area dates to the Late Stone Age and vary from cave sites to open sites characterized by scatters of tools. Thus, this study does not rule out the possibility of finding out of context Stone Age materials during construction.

Iron Age

The Iron Age is the name given to the period of human history when metal was mainly used to produce artefacts. Recently, they have been a debate about the use of the name. Other archaeologist have argued that the word “Iron Age” is problematic and does not precisely explain the event of what happen in southern Africa, as such, the word farming communities has been proposed (Segobye 1998). Nonetheless, in South Africa this period can be divided into two phases. Early (200 - 1000 A.D) and Late Iron Age (1000 - 1850 A.D). Huffman (2007) has indicated that a Middle Iron Age (900 - 1300 A.D) should be included. According to Huffman (2007:361), until the 1960s and 1970s most archaeologists had not yet recognised a Middle Iron Age (MIA).

Studies conducted in the area have shown that people associated with the Tswana linguistic group inhabited stonewalled settlements found in the wider area of the proposed site. The Iron Age of the region dates back to the 4th century AD when the Early Iron Age (EIA) proto-Bantu-speaking farming communities began arriving in the region, which was then occupied by hunter-gatherers mentioned above. Iron Age communities introduced use of iron, crop production and settled life (Huffman 2007). The EIA in the wider area of North West Province is represented by sites such as Kruger Cave near Rustenburg and Broedstroom near the Hartbeespoort Dam (Boeyens 2003). Various Early Iron Age sites have been identified in

the area surrounding Brits, these sites represent two pottery traditions. The Bambata facies (AD 150 – AD 650) associated with the Kulundu tradition represents the oldest tradition, and the second EIA tradition represented by the Mzonjani facies of the Urewe tradition (Huffman 2007; Hutten 2011). Sites like Jubilee Shelter presented with Bambata pottery have been noted, as well as Broederstroom, situated to the south-west of Brits next to the Crocodile River presented with Mzonjani style pottery (Berg 1999; Huffman 2007).

The region also shed some information about the MIA outside of Shashe-Limpopo Confluence. Thus, pottery tradition which could be associated with the MIA had been noted (van Vollenhoven 2013; Huffman 2007). The LIA sites in the wider area are represented by the Groot Marico area, which documented more than 100 sites adding to the well-known sites such as Buispoort, Braklaagte, the Mmakgame megasite, and Kaditshwene (Boeyens 2003). Many Late Iron Age sites have been identified in the area around the towns of Brits. These sites are represented by the Olifantspoort, Madikwe, Uitkomst, Rooiberg, and Buispoort facies of the Urewe tradition (Huffman 2007). Accordingly, various Sotho-Tswana speaking communities settled in and around the area of Brits from AD 1600 to AD 1800, these communities include the Kwena, Kgatla, Fokeng and Po (Berg 1999; Pistorius 2009; van Vollenhoven 2013). The Fokeng group was very active in this area during the early 19th century and also built their capital, Phokeng, just northwest of where Brits is situated today. During the Difaquane/Mfecane, various Ndebele communities fled further to the north and settled in the areas surrounding Brits (Berg 1999, Huffman 2007). Other well known sites associated with Sotho-Tswana including the Boitsemagano, Molokwane and Mabjanamatshwana sites (Plug & Baderhorst 2006). Rescue excavations in the vicinity of Brits have also yielded graves associated with Sotho-Tswana speaking communities. These include Hoekfontein and Malle (Nienaber & Steyn 2005; Pistorius *et. al.* 2002).

Historical Period

The historical age of South Africa is associated with the arrival of European people. These new settlers will influence the context and content of South African's culture forever, starting with developing Cape Town into an urban centre, however it took many years for it to equal the size of Mapungubwe which was attained five centuries earlier. These newcomers also introduce new style of houses consisting of flat roofs and ornate pediments, slaves were also imported from other parts of Africa, Madagascar, India and East Asia, these slave who were

used as laborers were skilled carpenters and bricklayers as such their skills played an invaluable role in speeding up the progress and development of the Cape. It is important to note that the intermingling between the slaves and the European population marked the beginning of the coloured community. One of the most significant historical occurrences in the early history of South Africa was the Mfecane/ Difaqane, the great Zulu and Sotho tribes fought each other for space and domination throughout southern Africa, killing and displacing hundreds of thousands of people across the sub-continent, a key figure in this all-out battle among the African tribes was the great Zulu King Shaka (Caruthers n.d.)

The proposed area is located within the vicinity of the town of Brits, this town as we know it today was founded on farm Roodekoppen by Gert Birtz in 1923 (Berg 1999). In 1827 Mzilikazi, having broken away from the Zulus under the reign of Shaka, arrived in Brits and was a major influence from 1827 and 1832, he built himself strong military upholds there, and launched action against Tswana groups, killing several of them (Berg 1999). In 1832, the Zulus eventually raided the area and forced Mzilikazi to move further west. In 1837 after the move by Mzilikazi the Voortrekkers also began arriving in the area (Caruthers n.d; Berg 1999). A railway station called Brits was built in 1906 on the property of Johan Nicolas Brits who owned part of the farm Roodekopjes. The building of the railway station led to entrepreneurs setting up shops on the southern side of the station (Caruthers, n.d.). In 1912 at the De Wildt railway station, General Hertzog gave a speech, which later led to the formation of the National Party. The National Party played a major role in the history of South Africa. The first post office was built in 1915 (Caruthers n.d.).

Although the area at large experience several skirmishes during the 1800s (Berg 1999), and rescue excavations in the area revealed an early 20th century cemetery at Maroelabult (Steyn, *et. al.*, 2002), no historical sites or features were identified during the assessment. It should be noted that historical structures, such as farmhouses, and small skirmish battlefield and graves may therefore be found in the area. This could include low stone packed or unmarked graves. With the exception of very low hills, the surveyed area is very flat meaning that it would not have had any military advantage and therefore it may not have been utilized for this purpose during wars. By 1918 the first steam driven roller mill, was built on the west side of the station, and served the farming community for years to come (Caruthers, n.d.).

9. Past Survey Findings

Several studies have been conducted in the area by archaeologists such as Huffman 2011; Magoma 2013; Pistorius 1992, 1994, 1995, 1996, 1997, 1999, 2007; Udo 2001; Vollenhoven and Pelser 2008. Intensive archaeological research in the area had also been done by Revil Mason (Mason 1962), other archaeologists who had also researched the area includes Maggs 1976 and Evens 1984, anthropologists such as Eldredge 1992, Hammond-Tooke 1993 and Schapera 1943 had also done research in the wider area. Notwithstanding that, the closest archaeological study to the proposed area was done by Roodt (2008), this was done on the same Farm (Schietfontein), and for the same development (de wildt 50mw solar power), but it focused on Portion 15 of the said Farm. His study revealed no archaeological material on the said portion. Nonetheless, from the other studies mentioned above, and conducted on a wider area, several sites dating to the Late Iron Age had been noted. These includes Buispoort, Braklaagte, Dwarsberg copper mines, Kaditshwene, Marico, Mmakgame, Tswenyane, Marothodi on Vlakfontein 207 JP, Mmakgame near the Maineelo and Molokwane on Selonskraal 317 JQ. None of these are close to the proposed area, it should be borne in mind that archaeological sites in the area are usually located in close proximity to the hill, often not far from watercourse. No sites had been found on river banks. As such, considering the topography of the proposed area, chances of encountering Iron Age settlements is low, though not impossible.

Figure 10: View of section adjacent the proposed area (Adopted form Roodt 2003:3)

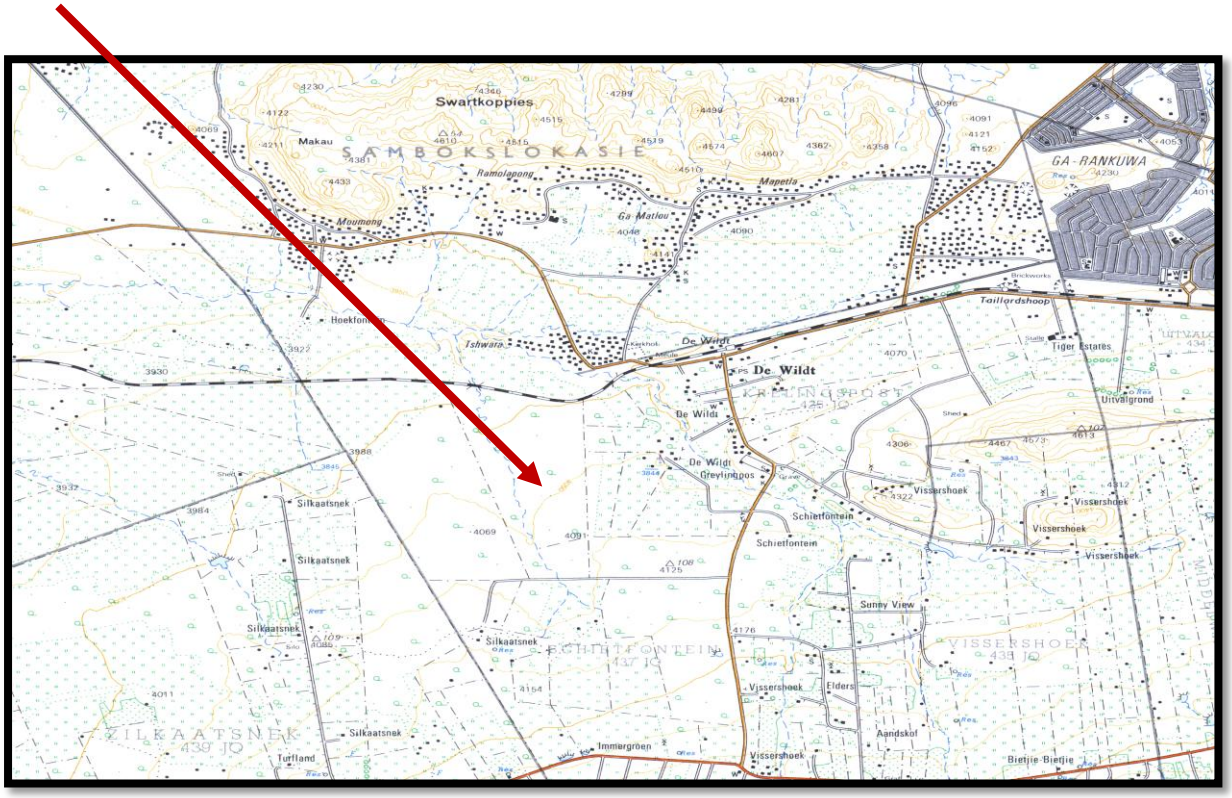

Figure 11: Historical topographical map of the proposed area as indicated by the arrow (S-General/1979).

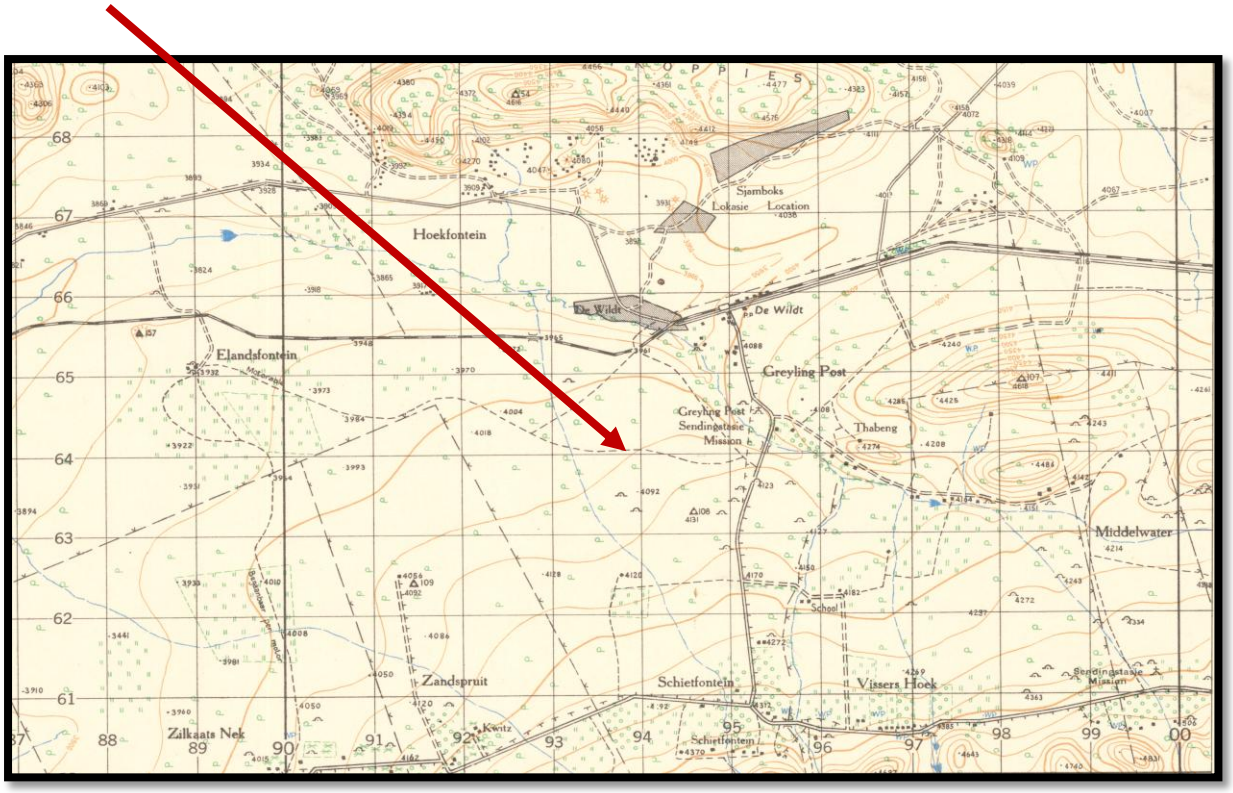

Figure 12: Historical topographical map of the proposed area (S-General/1959).

10. Survey Findings

The phase 1 Cultural Heritage Impact Assessment for the proposed de wildt 50 mw solar power station revealed no archaeological (Stone and Iron Ages) resources or historical sites. However, cairns of stones which could have been a collapsed stone walling were noted. In addition, an ensign was noted. It is assumed that these materials are of recent period, probably dating to the last 30 years or so. It should be noted that poor visibility could have hampered chances of noting any grave site or archaeological materials in the area. However, considering the topography of the proposed area, no archaeological resource of significant is expected, similarly no grave site had been reported by farm owner. The recommendation below should be considered with responsiveness.

Table 2: Overview of the findings and their significance.

No	Co-ordinates	Description	Significance	Mitigation
Dew1	25° 37' 59.7"S 27° 56' 04.7"E	Assemblage of stones was noted. This cairn is assembled in a triangle format and appears to have been part of a structure which collapsed. This assemblage doesn't appear to be too old, and probably dates to the last 30 years (see Fig. 13).	Medium to Low	This assemblage will need to be investigated further. Hence, archaeological monitoring during clearing is recommended.
Dew2	25° 37' 58.1"S 27° 56' 11.7"E	A flag was noted, this appears to have been installed recently. There are recent debris nearby which appears to belong to a demolished house (see Fig. 14).	Low	Farm owner must be consulted with regarding the purpose of this flag.

Figure 13: View of assemblages of stones noted in the proposed area.

Figure 14: View of the flag, noteworthy the debris in the surrounding area.

11. Recommendations

The fact that this study was not able to identify any material of significance in the proposed area could have been two folds, firstly and most likely it could have been that there are no archaeological sites in the proposed area, secondly, it could have been as a result of bush encroachment, wherein materials could have been hidden.

As discussed in this report, the wider area is sensitive on archaeological sites, especially dating to the Iron Age Sotho-Tswana and mainly in the form of stone-walling. Furthermore, the presence of a tributary nearby which according to Sentker (1968) and Huffman (2000) was of significant in determining Iron Age settlements should not be ruled out. These coupled by poor visibility pave way to the following main recommendation:

- An archaeologist must be assigned during bush clearing to further assess the area. This will ensure that no chance archaeological/ and or graves are compromised/ disturbed by the proposal. However, as aforesaid, chances of encountering archaeological sites in these portions are considered low.

Although no archaeological objects were observed during the survey, the client is reminded that these often happen underground, as such should any archaeological material be unearthed accidentally during the course of construction, SAHRA should be alerted immediately and construction activities be stopped within a radius of at least 10m of such indicator. The area should then be demarcated by a danger tape. Accordingly, a professional archaeologist or SAHRA officer should be contacted immediately. In the mean time, it is the responsibility of the Environmental officer and the contractor to protect the site from publicity (i.e., media) until a mutual agreement is reached. It is mandatory to report any incident of human remains encountered to the South African Police Services, SAHRA staff member and professional archaeologist. Any measure to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law under Section 35(4) and 36(3) of the National Heritage Resources Act (Act 25 of 1999). The developer should induct field worker about archaeology, and steps that should be taken in the case of exposing archaeological materials.

12. Conclusion

The proposed development and planning of the project can proceed on condition that an archaeological walk down will be conducted before any construction is assigned. Accordingly, I, as an independent researcher recommend that the developer be allowed to proceed with the planning of the project, subject to adopting the recommendation mention above.

From a cultural heritage resources perspective, it is recommended that South African Heritage Resources Agency (SAHRA) approve the project to proceed on condition that the suggested recommendation measures are successfully adhered to. This report is void with approval from SAHRA or relevant provincial authority.

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APPENDIX 1: SITE SIGNIFICANCE

The following guidelines for determining site *significance* were developed by SAHRA in 2003. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.

(a) Historic value

- Is it important in the community, or pattern of history?
- Does it have strong or special association with the life or work of a person, group or organization of importance in history?
- Does it have significance relating to the history of slavery?

(b) Aesthetic value

- Is it important in exhibiting particular aesthetic characteristics valued by a community or cultural group?

(c) Scientific value

- Does it have potential to yield information that will contribute to an understanding of natural or cultural heritage?
- Is it important in demonstrating a high degree of creative or technical achievement at a particular period?

(d) Social value

- Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons?

(e) Rarity

- Does it possess uncommon, rare or endangered aspects of natural or cultural heritage?

(f) Representivity

- Is it important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects?
- What is the importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class?
- Is it important in demonstrating the principal characteristics 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?