

**Heritage impact assessment for the
PROPOSED DEVELOPMENT OF A PHOTO VOLTAIC PLANT
ON THE FARM SPRUITFONTEIN 341JQ, RUSTENBURG
MAGISTERIAL DISTRICT, NORTH WEST PROVINCE**

HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF A PHOTO VOLTAIC PLANT ON THE FARM SPRUITFONTEIN 341JQ, RUSTENBURG MAGISTERIAL DISTRICT, NORTH WEST PROVINCE

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Declaration:

I, J.A. van Schalkwyk, declare that I do not have any financial or personal interest in the proposed development, nor its developers or any of their subsidiaries, apart from the provision of heritage assessment and management services.



J A van Schalkwyk (D Litt et Phil)
Heritage Consultant
June 2011

EXECUTIVE SUMMARY

HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF A PHOTO VOLTAIC PLANT ON THE FARM SPRUITFONTEIN 341JQ, RUSTENBURG MAGISTERIAL DISTRICT, NORTH WEST PROVINCE

Momentous Energy (Pty) Ltd proposes to establish a photovoltaic plant on Portion 24 of the farm Spruitfontein 341JQ in the Rustenburg magisterial district of North West Province. The electricity produced here will be evacuated into the national electricity grid.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by **Savannah Environmental (Pty) Ltd** to conduct a Heritage Impact Assessment (HIA) to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where it is planned to develop the photovoltaic plant.

- An abandoned farming related structure occurs on the site. It is in a bad state of repair as all the fitting and the roofs have been removed and some of the cement bricks have already been removed for recycling. From the material used and the current state of the structures, it is judged not to be very old and is therefore viewed to have a low significance.

As this find is judged to have a low significance, there would be no impact from the proposed development.

Therefore, from a heritage point of view it is recommended that the proposed development be allowed to continue. However, it is recommended that should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.



J A van Schalkwyk
Heritage Consultant
June 2011

TECHNICAL SUMMARY

Property details						
Province	North West					
Magisterial district	Rustenburg					
Local municipality	Rustenburg					
Topo-cadastral map	2527CB, 2527CD					
Closest town	Rustenburg					
Farm name	Spruitfontein 341JQ					
Coordinates	Polygon					
	No	Latitude	Longitude	No	Latitude	Longitude
	1	-25.73479	27.41459	2	-25.73443	27.41532
	3	-25.74703	27.42354	4	-25.74685	27.42206

Development criteria in terms of Section 38(1) of the NHR Act	Yes/No
Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length	No
Construction of bridge or similar structure exceeding 50m in length	No
Development exceeding 5000 sq m	Yes
Development involving three or more existing erven or subdivisions	No
Development involving three or more erven or divisions that have been consolidated within past five years	No
Rezoning of site exceeding 10 000 sq m	Yes
Any other development category, public open space, squares, parks, recreation grounds	No

Development	
Description	Development of a photovoltaic plant to generate electricity
Project name	RUSTMO2 PV Plant

Environmental Specialist	
Company	Savannah Environmental (Pty) Ltd
Representative	Mr Bongani Khupe
Address	P O Box 148, Sunninghill, 2151
Telephone no.	011 234 6621
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Land use	
Previous land use	Farming
Current land use	Vacant

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GLOSSARY OF TERMS AND ABBREVIATIONS

TERMS

Study area: Refers to the entire study area as indicated by the client in the accompanying Fig. 1 - 2.

Stone Age: The first and longest part of human history is the Stone Age, which began with the appearance of early humans between 3-2 million years ago. Stone Age people were hunters, gatherers and scavengers who did not live in permanently settled communities. Their stone tools preserve well and are found in most places in South Africa and elsewhere.

Early Stone Age	2 000 000 - 150 000 Before Present (BP)
Middle Stone Age	150 000 - 30 000 BP
Later Stone Age	30 000 - until c. AD 200

Iron Age: Period covering the last 1800 years, when new people brought a new way of life to Southern Africa. They established settled villages, cultivated domestic crops such as sorghum, millet and beans, and they herded cattle as well as sheep and goats. These people, according to archaeological evidence, spoke early variations of the Bantu Language. Because they produced their own iron tools, archaeologists call this the Iron Age.

Early Iron Age	AD 200 - AD 900
Middle Iron Age	AD 900 - AD 1300
Late Iron Age	AD 1300 - AD 1830

Historical Period: Since the arrival of the white settlers - c. AD 1840 - in this part of the country

ABBREVIATIONS

ADRC	Archaeological Data Recording Centre
ASAPA	Association of Southern African Professional Archaeologists
CS-G	Chief Surveyor-General
EIA	Early Iron Age
ESA	Early Stone Age
LIA	Late Iron Age
LSA	Later Stone Age
HIA	Heritage Impact Assessment
MSA	Middle Stone Age
NASA	National Archives of South Africa
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Agency
SAHRA	South African Heritage Resources Agency

HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF A PHOTO VOLTAIC PLANT ON THE FARM SPRUITFONTEIN 341JQ, RUSTENBURG MAGISTERIAL DISTRICT, NORTH WEST PROVINCE

1. INTRODUCTION

Momentous Energy (Pty) Ltd proposes to establish a photovoltaic plant on Portion 24 of the farm Spruitfontein 341JQ in the Rustenburg magisterial district of North West Province. The electricity produced here will be evacuated into the national electricity grid.

South Africa's heritage resources, also described as the 'national estate', comprise a wide range of sites, features, objects and beliefs. According to Section 27(18) of the National Heritage Resources Act (NHRA), Act 25 of 1999, no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by **Savannah Environmental (Pty) Ltd** to conduct a Heritage Impact Assessment (HIA) to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where it is planned to develop the photovoltaic plant.

This HIA report forms part of the Environmental Impact Assessment (EIA) as required by the EIA Regulations in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and is intended for submission to the South African Heritage Resources Agency (SAHRA).

2. TERMS OF REFERENCE

The scope of work for this study consisted of:

- Conducting of a desk-top investigation of the area, in which all available literature, reports, databases and maps were studied;
- A visit to the proposed development area.

The objectives were to

- Identify possible archaeological, cultural and historic sites within the proposed development area;
- Evaluate the potential impacts of construction, operation and maintenance of the proposed development on archaeological, cultural and historical resources;
- Recommend mitigation measures to ameliorate any negative impacts on areas of archaeological, cultural or historical importance.

Table 1: Applicable category of heritage impact assessment study and report.

Type of study	Aim	SAHRA involved	SAHRA response
Screening	<p>The aim of the screening investigation is to provide an overview of possible heritage-related issues regarding the proposed development by an appropriate heritage specialist. It is based on the review and use of existing heritage data pertaining to the site.</p> <p>The result of this investigation is a brief statement indicating potential heritage impacts/issues and can assist the developer in preliminary planning.</p> <p>This report does grant the developer permission to proceed with the proposed development.</p>	Not necessary	
Scoping	<p>The aim of the scoping investigation is to provide an informed heritage-related opinion about the proposed development by an appropriate heritage specialist. The objectives are to assess heritage sites and their significance (involving site inspections, existing heritage data); to review the general compatibility of the development proposals with heritage policy and possible heritage features on the site.</p> <p>The result of this investigation is a heritage scoping report indicating the presence/absence of heritage resources and what would be required to manage them in the context of the proposed development.</p> <p>This report does not grant the developer permission to proceed with the proposed development.</p>	Not compulsory	
Heritage Impact Assessment	<p>The aim of a full HIA investigation is to provide an informed heritage-related opinion about the proposed development by an appropriate heritage specialist. The objectives are to identify heritage resources (involving site inspections, existing heritage data and additional heritage specialists if necessary); assess their significances; assess alternatives in order to promote heritage conservation issues; and to assess the acceptability of the proposed development from a heritage perspective.</p> <p>The result of this investigation is a heritage impact assessment report indicating the presence/ absence of heritage resources and how to manage them in the context of the proposed development.</p> <p>Depending on SAHRA's acceptance of this report, the developer will receive permission to proceed with the proposed development, on condition of successful implementation of proposed mitigation measures.</p>	Provincial Heritage Resources Authority	Comments on built environment and decision to approve or not
		SAHRA Archaeology, Palaeontology and Meteorites Unit	Comments and decision to approve or not

3. HERITAGE RESOURCES

3.1 The National Estate

The NHRA (No. 25 of 1999) defines the heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations that must be considered part of the national estate to include:

- places, buildings, structures and equipment of cultural significance;
- places to 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 palaeontological sites;
- graves and burial grounds, including-
 - ancestral graves;
 - royal graves and graves of traditional leaders;
 - graves of victims of conflict;
 - graves of individuals designated by the Minister by notice in the Gazette;
 - historical graves and cemeteries; and
 - other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- sites of significance relating to the history of slavery 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;
 - ethnographic art and objects;
 - military objects;
 - objects of decorative or fine art;
 - objects of scientific or technological interest; and
 - 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).

3.2 Cultural significance

In the NHRA, Section 2 (vi), it is stated that “cultural significance” means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This is determined in relation to a site or feature’s uniqueness, condition of preservation and research potential.

According to 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

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

4. STUDY APPROACH AND METHODOLOGY

4.1 Extent of the Study

This survey and impact assessment covers the area as presented in Section 5 and as illustrated in Figures 1 - 2.

4.2 Methodology

4.2.1 Preliminary investigation

4.2.1.1 Survey of the literature

A survey of the relevant literature was conducted with the aim of reviewing the previous research done and determining the potential of the area. In this regard, various anthropological, archaeological, historical sources and heritage impact assessment reports were consulted (Bergh 1999; Pelsner 1999; Van den Bergh 1996; Van Schalkwyk 2011).

- Information on the location of heritage sites known to exist in the larger region was obtained.

4.2.1.2 Data bases

The *Heritage Atlas Database*, the *Environmental Potential Atlas*, the *Chief Surveyor General (CS-G)* and the *National Archives of South Africa (NASA)* were consulted.

- Database surveys produced a number of sites located in the larger region of the proposed development.

4.2.1.3 Other sources

Aerial photographs and topocadastral and other maps were also studied - see the list of references below.

- Information of a very general nature was obtained from these sources.

4.2.2 Field survey

The area that had to be investigated was identified by **Savannah Environmental (Pty) Ltd** by means of maps. The site was surveyed by walking a number of parallel transects over it.

4.3 Limitations

In some areas the vegetation cover was quit dense, seriously limiting archaeological visibility.

5. DESCRIPTION OF THE AFFECTED ENVIRONMENT

5.1 Site location and description

The proposed development is to take place on Portion 24 of the farm Spruitfontein 341JQ in the Rustenburg magisterial district of North West Province. It is located north of the N4 and west of the Marikana Mine (Fig. 1 & 2). For more information, please see the Technical Summary Presented above.

The study area for the HIA involves a vacant section of land, most of which have been cultivated in the past. The result is that any heritage feature that might have occurred here in the past was in all probability destroyed.

The geology is made up of clinopyroxinite, changing to norite in the northern section of the study area. The original vegetation is classified as Clay Thorn Bushveld, but has been replaced by grassland due to agricultural activities. The area is very flat and no features, e.g. hills, outcrops or streams that drew people to settle in its vicinity occur in the study area.

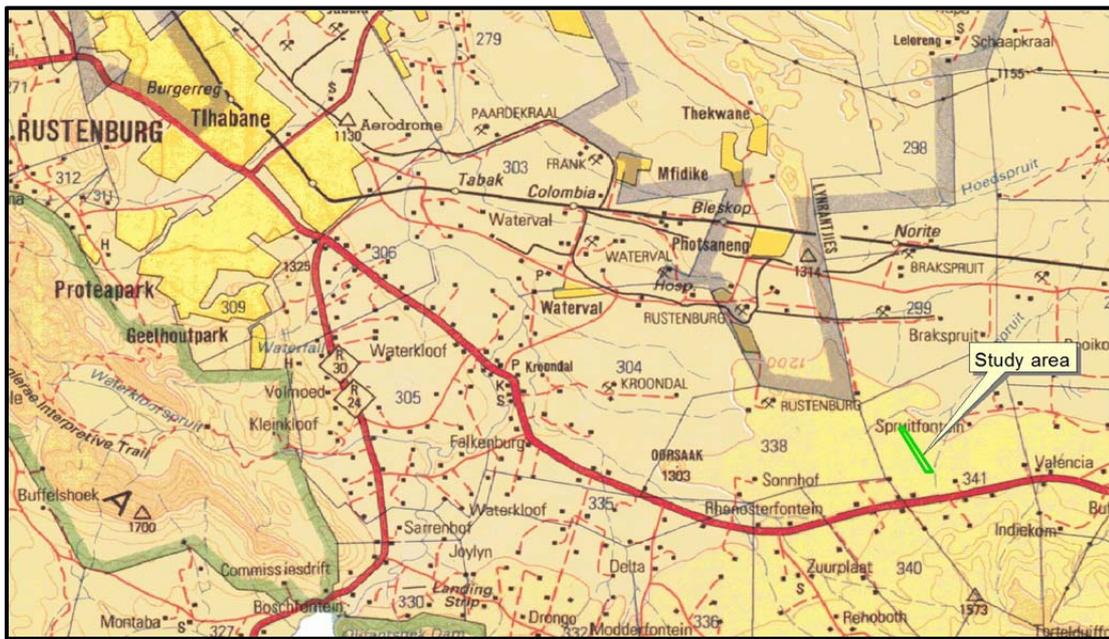


Fig. 1. Location of the study areas in regional context. (Map 2526: Chief Surveyor-General)(The available maps do not reflect recent developments in the region).



Fig. 2. View over the study area, looking west.

5.2 Regional overview

The cultural landscape qualities of the region essentially consist of a single component. This is a rural area in which the human occupation is made up of two pre-colonial elements (Stone Age and Iron Age) as well as a much later colonial (farmer) component.

5.2.1 Rural landscape

The rural landscape has always been sparsely populated and it was only in a few areas such as in the vicinity of sustainable water sources or through the application of specific economic strategies such as the development of irrigation

systems, that people succeeded to occupy a section of the region for any length of time.

Habitation of the larger geographical area took place since Early Stone Age times. This is confirmed by the occurrence of stone tools dating to the Early, Middle and Late Stone Age found in a number of places. However, these are mostly located in the vicinity of rivers and as surface material does not have much significance. In contrast in the Magaliesberg located to the south of the site, small rock shelters were occupied especially during the Later Stone Age.

Sites dating to the Early Iron Age are known to occur to the south at Broederstroom and Late Iron Age occurs in the region, especially to the north. These are typical stone walled sites that are linked with Tswana-speakers and date to the period after 1600.

The historic period started with the arrival, in the late 18th century by Korana raiders in the area. They were soon followed, in the early 19th century, by traders, explorers and missionaries. By the middle of the 19th century, farms were taken up and later towns were developed – Rustenburg founded in 1850. Most farmsteads were burned down during the Anglo-Boer War, with the result that very little of the built environment dates to the 19th century. A significant number of battles and skirmishes took place in the region, mostly to the north and west of the study area. The remains of blockhouses can be found on many ridges and at river crossings. Infra-structural development, such as the development of roads, bridges and railway lines also took place.

- Archaeological sites

NHRA Category	Archaeological and palaeontological sites
Protection status	
General Protection - Section 35: Archaeology, palaeontology and meteorites	
	

Fig. 3. Stone walled site dating to the Late Iron Age and stone tools.

- Farmsteads

NHRA Category	Buildings, structures, places and equipment of cultural significance
Protection status	
General Protection - Section 34: Structures older than 60 years	

Not many farmsteads occur in the region as most of the original farms were very large, requiring few of these to be developed.

Farmsteads are complex features in the landscape, being made up of different yet interconnected elements. Typically these consist of a main house, gardens, outbuildings, sheds and barns, with some distance from that labourer housing and various cemeteries. In addition roads and tracks, stock pens and wind mills complete the setup. An impact on one element therefore impacts on the whole.



Fig. 4. Old farmstead in the larger region.

- Cemeteries

Apart from the formal cemeteries that occur in municipal areas (towns or villages), some quite informal, i.e. without fencing, can be expected to occur anywhere.

Most of these cemeteries, irrespective of the fact that they are for land owner or farm labourers (with a few exceptions where they were integrated), are family orientated. They therefore serve as important 'documents' linking people directly by name to the land.

NHRA Category	Graves, cemeteries and burial grounds
Protection status	
General Protection - Section 36: Graves or burial grounds	



Fig. 5. Typical informal cemetery.

- Infrastructure and industrial heritage

In many cases this aspect of heritage is left out of surveys, largely due to the fact that it is taken for granted. However, the land and its resources could not be accessed and exploited without the development of features such as roads, bridges, railway lines, electricity lines and telephone lines. Exploiting of the mineral wealth of the region through mining result in the development of a new type of heritage resource.

NHRA Category	Buildings, structures, places and equipment of cultural significance
Protection status	
General Protection - Section 34: Structures older than 60 years	



Fig. 6. Old mining hoist in the region.

- Battlefields

Various battles took place in the region, with the one closest to the study area being the Battle of Buffelspoort that took place on 3 December 1900, during which the British forces were defeated by Gen. Smuts and Gen. De la Rey.

NHRA Category	Places to which oral traditions are attached or which are associated with living heritage
Protection status	
General Protection - Section 37: Public monuments or memorials	

5.3 Identified sites

One heritage element was identified in the study area and is discussed below.

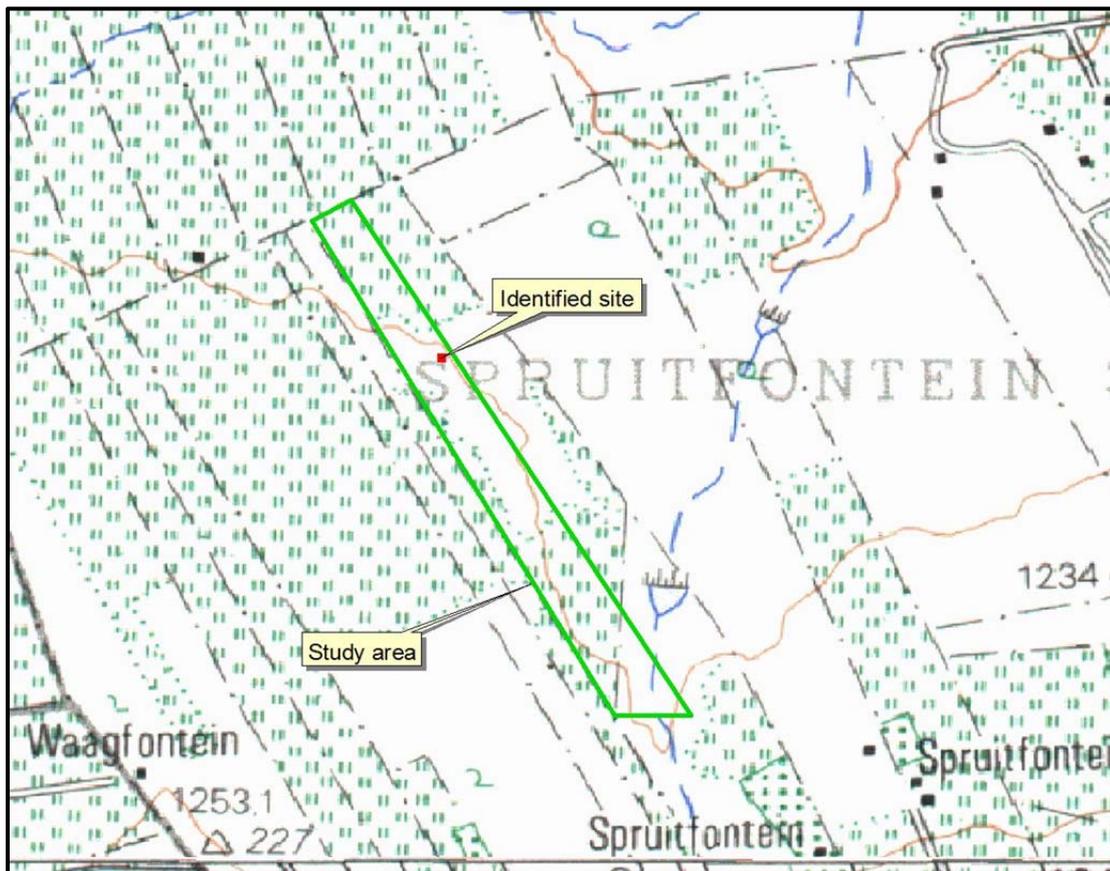


Fig. 7. Location of the study area and the identified site.
(Map 2527CB: Chief Surveyor-General)

- Farmsteads

NHRA Category	Buildings, structures, places and equipment of cultural significance
Protection status	
General Protection - Section 34: Structures older than 60 years	

Location	No. 1	S 25.73846	E 27.41702
Description			
An abandoned farming related structure, probably a house, occurson the site. It can possibly be linked to structures that occur to the south east and that were identified in a previous study on the adjacent property. It is in a bad state of repair and all the fitting and the roofs have been removed. From the material used and the current state of the structures, they are judged not to be very old and are therefore viewed to have a low significance.			
Significance	Low on a local level – Grade III		
Mitigation			
As these structures are viewed to have low significance, no mitigation measures are required.			



Fig. 8. Farming related structure identified in the study area.

6. SITE SIGNIFICANCE AND ASSESSMENT

6.1 Heritage assessment criteria and grading

The NHRA stipulates the assessment criteria and grading of archaeological sites. The following categories are distinguished in Section 7 of the Act:

- **Grade I:** Heritage resources with qualities so exceptional that they are of special national significance;
- **Grade II:** Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region; and

- **Grade III:** Other heritage resources worthy of conservation on a local authority level.

The occurrence of sites with a Grade I significance will demand that the development activities be drastically altered in order to retain these sites in their original state. For Grade II and Grade III sites, the applicable of mitigation measures would allow the development activities to continue.

6.2 Statement of significance

A matrix was developed whereby the above criteria, as set out in Sections 3(3) and 7 of the NHRA, No. 25 of 1999, were applied for each identified site (see Appendix 1). This allowed some form of control over the application of similar values for similar sites. Three categories of significance are recognized: low, medium and high. In terms of Section 7 of the NHRA, all the sites currently known or which are expected to occur in the study area are evaluated to have a grading as identified in the table below.

Table 2. Summary of identified heritage resources in the study area.

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)	None
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

6.2.1 Historic period

- The identified structure is in a bad state of repair and all the fitting and the roof have been removed and some of the cement bricks have already been

removed for recycling. From the material used and the current state of the structures, they are viewed to have a low significance.

6.3 Impact assessment

Impact analysis of cultural heritage resources under threat of the proposed development, are based on the present understanding of the development.

Nature: Farming related structure		
	Without mitigation	With mitigation
Extent	Local (1)	Local (1)
Duration	Permanent (5)	Permanent (3)
Magnitude	Moderate (2)	Moderate (4)
Probability	Probable (3)	Probable (3)
Significance	24 (Low)	24 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation: As these structures are viewed to have low significance, no mitigation measures are required.		
Cumulative impacts: None		
Residual Impacts: None		

Table 3. Summary of impact assessments.

- As no sites, features or objects of cultural heritage significance were identified in the study area, there would be no impact from the proposed development.

OBJECTIVE: Protection of sites of heritage significance

Although limited sites were noted on the proposed development site, it is possible that sites will be uncovered during excavation activities associated with construction. If at any stage during the construction phase any archaeological artefact is observed, it would be vital to stop the work immediately and report this occurrence to the South African Heritage Resources Association and/or a professional archaeologist as soon as possible so that appropriate mitigation measures can be implemented.

Project Component/s	Excavation activities, construction of access roads and establishment of water supply pipeline and transmission pylons and staff accommodation.
Potential Impact	Wider areas or extended linear developments may result in further destruction, damage, excavation, alteration, removal or collection of heritage objects from their current context on the site.
Activity/Risk Source	Activities which could impact on achieving this objective include deviation from the planned lay-out of road/s and infrastructure without taking heritage impacts into consideration.
Mitigation: Target/Objective	A facility EMP that takes cognisance of heritage resources in the event of any future extensions of roads or other infrastructure.

Mitigation: Action/control	Responsibility	Timeframe
Provision for on-going heritage monitoring which provides guidelines on what to do in the event of any major heritage feature being encountered during any phase of development or operation.	ECO	Before commencement of development

Performance Indicator	Inclusion of further heritage impact consideration in any future extension of infrastructural elements. Immediate reporting to relevant heritage authorities of any heritage feature discovered during any phase of development or operation of the facility.
Monitoring	Officials from relevant heritage authorities (National and Provincial) to be permitted to inspect the operation on agreement with the contractor relating to the heritage component of the EMP.

7. CONCLUSIONS

The aim of this survey was to locate, identify, evaluate and document sites, objects and structures of cultural significance found within the area of the proposed development, to assess the significance thereof and to consider alternatives and plans for the mitigation of any adverse impacts.

- As no sites, features or objects of cultural heritage significance were identified in the study area, there would be no impact from the proposed development.

Therefore, from a heritage point of view it is recommended that the proposed development be allowed to continue. However, it is recommended that should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

8. REFERENCES

8.1 Data bases

Chief Surveyor General
Environmental Potential Atlas, Department of Environmental Affairs and Tourism.
Heritage Atlas Database, Pretoria.
National Archives of South Africa
SAHRA Archaeology and Palaeontology Report Mapping Project (2009)

8.2 Literature

Acocks, J.P.H. 1975. *Veld Types of South Africa*. Memoirs of the Botanical Survey of South Africa, No. 40. Pretoria: Botanical Research Institute.

Cloete, P.G. 2000. *The Anglo-Boer War: a Chronology*. Pretoria: JP van der Walt

Pelser, A. 1999. *A survey of cultural resources on the farms Spruitfontein 341JQ and Kafferskraal 342JQ, Rustenburg district*. Unpublished report 1999KH18. Pretoria: National Cultural History Museum.

Praagh, L.V. (ed.) 1906. *The Transvaal and its mines*. London: Praagh & Lloyd.

Richardson, D. 2001. *Historic sites of South Africa*. Cape Town: Struik Publishers.

Van Schalkwyk, J.A. 2011. *Heritage impact assessment for the proposed development of a Photo Voltaic plant on the farm Spruitfontein 341JQ, Rustenburg magisterial district, North West Province*. Pretoria: Unpublished report.

8.3 Maps and aerial photographs

1: 50 000 Topocadastral maps: 2527CB, 2527CD
Google Earth

APPENDIX 1: CONVENTIONS USED TO ASSESS THE IMPACT OF PROJECTS ON HERITAGE RESOURCES

According to the NHRA, Section 2(vi) the **significance** of heritage sites and artefacts is determined by its aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technical value in relation to the uniqueness, condition of preservation and research potential. 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.

Assessment of Impacts

Direct, indirect and cumulative impacts of the issues identified through the study, as well as all other issues identified in the EIA phase must be assessed in terms of the following criteria:

- » The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- » The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- » The **duration**, wherein it will be indicated whether:
 - * the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
 - * the lifetime of the impact will be of a short duration (2–5 years) - assigned a score of 2;
 - * medium-term (5–15 years) – assigned a score of 3;
 - * long term (> 15 years) - assigned a score of 4; or
 - * permanent - assigned a score of 5;
- » The **magnitude**, quantified on a scale from 0–10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- » The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1–5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).

- » the **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- » the **status**, which will be described as either positive, negative or neutral.
- » the degree to which the impact can be reversed.
- » the degree to which the impact may cause irreplaceable loss of resources.
- » the *degree* to which the impact can be *mitigated*.

The **significance** is calculated by combining the criteria in the following formula:
 $S=(E+D+M)P$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- » < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- » 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- » > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

APPENDIX 2. RELEVANT LEGISLATION

All archaeological and palaeontological sites and meteorites are protected by the National Heritage Resources Act (Act no 25 of 1999) as stated in Section 35:

(1) Subject to the provisions of section 8, the protection of archaeological and palaeontological sites and material and meteorites is the responsibility of a provincial heritage resources authority: Provided that the protection of any wreck in the territorial waters and the maritime cultural zone shall be the responsibility of SAHRA.

(2) Subject to the provisions of subsection (8)(a), all archaeological objects, palaeontological material and meteorites are the property of the State. The responsible heritage authority must, on behalf of the State, at its discretion ensure that such objects are lodged with a museum or other public institution that has a collection policy acceptable to the heritage resources authority and may in so doing establish such terms and conditions as it sees fit for the conservation of such objects.

(3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.

(4) No person may, without a permit issued by the responsible heritage resources authority-

- (a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
- (b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
- (c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or
- (d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

In terms of cemeteries and graves the following (Section 36):

(1) Where it is not the responsibility of any other authority, SAHRA must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit.

(2) SAHRA must identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with the grave referred to in subsection (1), and must maintain such memorials.

(3) No person may, without a permit issued by SAHRA or a provincial heritage resources authority-

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

(4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.