

# **Heritage Impact Assessment**

Heritage Impact Assessment for the Proposed Vaalwater  
Solar Park south-east of Vaalwater, Limpopo Province.

## **Compiled for:**

Africa Geo-Environmental Services (AGES)

## **Survey conducted & Report compiled by:**

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## Executive Summary

**Site name and location:** Proposed development of the Vaalwater Solar Park on Portion 17 of the farm Wolvenfontein 149 KR, approximately 5km south-east of Vaalwater in the Limpopo Province.

**Local Authority:** Waterberg District Municipality.

**Developer:** Jacaranda Energy (Pty) Ltd.

**Date of field work:** 23 June 2011.

**Date of report:** July 2011.

**Findings:** No site-specific actions or any further heritage mitigation measures are recommended as no heritage resource sites or finds of any value or significance were identified in the indicated study area. The proposed development of the Vaalwater Solar Park at the indicated area can continue from a heritage point of view.

**Disclaimer:** *Although all possible care is taken to identify all sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites and/or graves could be overlooked during the study. Hutten Heritage Consultants and its personnel will not be held liable for such oversights or for costs incurred as a result of such oversights.*

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### **ADDENDUM A   Photographs**

Photo 1: View of the Vaalwater Substation.

Photo 2: View of the small stream at the northern side of the farm.

Photo 3: View of the previously ploughed and planted fields.

Photo 4: View of the farm house.

### **ADDENDUM B   Location Maps**

## **1. Introduction**

Hutten Heritage Consultants was contracted by Africa Geo-Environmental Services (AGES) to conduct a Heritage Impact Assessment (HIA) on the proposed development of the Vaalwater Solar Park on Portion 17 of the farm Wolvenfontein 149 KR, approximately 5km south-east of Vaalwater, in the Limpopo Province.

The aim of the study was to identify all heritage sites, to document and to assess their significance within Local, Provincial and National context. The report outlines the approach and methodology implemented before and during the survey, which includes in Phase 1: Information collection from various sources and social consultations; Phase 2: Physical surveying of the area on foot and by vehicle; and Phase 3: Reporting the outcome of the study.

This HIA forms part of the Environmental Impact Assessment (EIA) as required by various Acts and Laws as described under the next heading and is intended for submission to the provincial South African Heritage Resources Agency (SAHRA) for peer review.

Minimum standards for reports, site documentation and descriptions are set by the Association of Southern African Professional Archaeologists (ASAPA) in collaboration with SAHRA. ASAPA is a legal body representing professional archaeology in the Southern African Development Community (SADC) region. As a member of ASAPA, these standards are tried to be adhered to.

The extent of the proposed development sites were determined as well as the extent of the areas to be affected by secondary activities (access routes, construction camps, etc.) during the development.

## **2. Legislative Requirements**

The identification, evaluation and assessment of any cultural heritage site, artefact or find in the South African context is required and governed by the following legislation:

National Environmental Management Act (NEMA) Act 107 of 1998

National Heritage Resources Act (NHRA) Act 25 of 1999

Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002

Development Facilitation Act (DFA) Act 67 of 1995

The following sections in each Act refer directly to the identification, evaluation and assessment of cultural heritage resources.

National Environmental Management Act (NEMA) Act 107 of 1998

Basic Environmental Assessment (BEA) – Section (23)(2)(d)

Environmental Scoping Report (ESR) – Section (29)(1)(d)

Environmental Impacts Assessment (EIA) – Section (32)(2)(d)

Environmental Management Plan (EMP) – Section (34)(b)

National Heritage Resources Act (NHRA) Act 25 of 1999

Protection of Heritage resources – Sections 34 to 36; and

Heritage Resources Management – Section 38

Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002  
Section 39(3)  
Development Facilitation Act (DFA) Act 67 of 1995  
The GNR.1 of 7 January 2000: Regulations and rules in terms of the Development  
Facilitation Act, 1995. Section 31

### **3. Proposed Project**

Jacaranda Energy (Pty) Ltd has proposed the development of the Vaalwater Solar Park on Portion 17 of the farm Wolvenfontein 149 KR, approximately 5km south-east of Vaalwater, in the Limpopo Province. This development will mainly be the establishment of a renewable energy generation facility (Photovoltaic Solar Facility). The generated energy (electricity) will be supplied to the existing Eskom grid.

After bush clearing, construction will concentrate on the erection of Photovoltaic panels which will be mounted on constructed foundations. The proposed facility shall make use of this photovoltaic technology with a total generating capacity of up to 30 MWp. The generated energy will be connected to the Eskom grid through the adjacent Vaalwater Substation. Associated engineering infrastructure such as service roads, water and sewerage lines for administrative and accommodation areas and electrical lines will also be installed. The facility will be located on Portion 17 of the farm Wolvenfontein 149 KR which measured approximately 88,5ha in size. The total development area for the Solar Park will cover approximately 55ha. The purpose of the study was to determine if the proposed area was suitable for the development of the Solar Park from a heritage point of view.

The project was tabled during May 2011 and the developer intends to commence as soon as possible after receipt of the ROD from the Department of Environmental Affairs.

### **4. Project Area Description**

The proposed development of the Vaalwater Solar Park will be situated on Portion 17 of the farm Wolvenfontein 149 KR, approximately 5km south-east of Vaalwater in the Limpopo Province. The proposed property was approximately 88,5ha in size of which the development area for the Solar Park will cover approximately 55ha.

The property was situated adjacent and on the north-eastern side of the R33 tar road (Modimolle – Vaalwater). The Vaalwater Substation (photo 1) was also situated on the south-eastern corner of the proposed properties. The study area was further bordered by the Kamonande Nature Reserve on the eastern side and other agricultural farms on the northern and western sides.

A small stream, the Groot-Wolwefontein, crossed the northern extent of the property (photo 2). Some parts of the property were previously exposed to intensive agricultural activities and areas were bush cleared in order to be ploughed and planted (photo 3). Presently no agricultural activities are being employed on these cleared areas. Most of the property was relatively flat and consisted of red sandy soils.

A farm house (photo 4), sheds, roads, irrigation systems and fences formed part of the infrastructures of the property. Several power lines also crossed the property and linked up to the Vaalwater Substation at the south-eastern end.

The proposed development will be situated on the Vaalwater 2428AC 1:50 000 topographical map (See Appendix B: Location Maps).

## 5. Archaeological History of the Area

As heritage surveys deal with the locating of heritage resources in a prescribed cartographic landscape, the study of archival and historical data and cartographic information can represent a very valuable supporting tool in finding and identifying such heritage resources.

After researching the National Archive records as well as the SAHRA records it was determined that previous archaeological or historical studies have been performed in the demarcated study area or nearby areas.

A report by R&R Cultural Resource Consultants:

- Roodt, F. 2001. **Phase 1 Archaeological Impact Assessment. Proposed Share Title Development on the Farm Weltevreden 135 KR.** (Unpublished report)

and a report by Dr. J.C.C. Pistorius

- Pistorius, J.C.C. 2005. **A Phase 1 Heritage Impact Assessment (HIA) study for Eskom's Proposed New Development Project Involving: Extending the Vaalwater Substation and Building a New Proposed 132kV Power Line.** (Unpublished report)

were consulted during this study. These reports commented on cultural heritage finds and sites identified during the Heritage Impact Assessments performed for the nearby and relative developments. These sites, however, will not be affected by the proposed development of the Solar Park. No other sites or finds of heritage value or significance were mentioned in these reports regarding the study area.

The historical background and timeframe of the study area and other areas in Southern Africa can be divided into the Stone Age, Iron Age and Historical period. These can be divided as follows:

### **Stone Age**

The Stone Age is divided into the Early; Middle and Late Stone Age and refers to the earliest people of Southern Africa who mainly relied on stone for their tools.

*Early Stone Age:* The period from  $\pm 2.5$  million years to  $\pm 250\ 000$  years ago. This period is associated with Australopithecines and other early *Homo* species. (e.g. Oldowan and Acheullian stone tool industries).

*Middle Stone Age:* Various lithic industries in SA dating from  $\pm$  250 000 yrs – 25 000 yrs before present. This period is first associated with archaic *Homo sapiens* and later *Homo sapiens sapiens*. (e.g. Howiesons Poort stone tool industry)

*Late Stone Age:* The period from  $\pm$  25 000-yrs before present to the period of contact with either Iron Age farmers or European colonists. This period is associated with *Homo sapiens sapiens*. (e.g. Smithfield, Wilton, Robberg stone tool industries)

The first human ancestors probably inhabited the Waterberg region as early as 3 million years ago. Excavations at Makapans Caves approximately 20km to the north-east of Mokopane yielded evidence of hominid occupation (*Australopithecus africanus*) from approximately 3.3 million years ago. Evidence of continuous occupation were also found at the Cave of Hearths. In Africa, the ESA (Early Stone Age) spans the period of  $\pm$  2.5 million years to around 250,000 years ago, and the earliest bed at the Cave of Hearths preserved stone tools and associated debris from a date of around 400,000 years ago. The overlying beds preserved an intermittent but very long record of human occupation during the Middle Stone Age from  $\pm$  110,000 - 50,000 years ago, and again in the Late Stone Age from 10,000 – 5,000 years ago, and from Iron Age times almost up to the present. More evidence of these early inhabitants was found at Rooiberg, Tuinplaats and Olieboomspoor to the north-west where rock paintings were also found. The rock paintings at Haakdoorndraai and other sites in the Waterberg also proof the early occupation of the area (Mason, 1969).

### **Iron Age**

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the Pre-Historic and Historic Periods. Similar to the Stone Age it can be divided into three periods:

*The Early Iron Age:* Most of the first millennium AD. (e.g. Happy Rest, Silver Leaves)

*The Middle Iron Age:* 10th to 13th centuries AD. (e.g. K2, Mapungubwe, Thavhatsena)

*The Late Iron Age:* 14th century to colonial period. (e.g. Icon, Letaba, Mutamba)

Several Sotho-Tswana communities settled in the North-west Province, Gauteng, Limpopo Province and in Botswana during the 14<sup>th</sup> and 15<sup>th</sup> centuries. These communities spread over the region as several lineages developed under their separate leaders. One of these lineages was the Bahurutshe-Bakwena which divided into the Bakwena, Bahurutshe and Bakgatla chiefdoms. The Bakgatla settled at first in the Hammanskraal area during the 17<sup>th</sup> century. Over the years and after several succession disputes, the divided and separated Bakgatla tribes settled in a much wider region. This region extended to the north of Pretoria up to Nylstroom and further to the north-west to the Marico River (Pistorius, 1992; Bergh, 1999; Huffman, 2007).

These Bakgatla tribes were diminished and further displaced during the *difaqane* by Mzilikazi and his Matabele warriors. A Bakgatla chief, Chief Kgamanyane, gathered the



dispersed Bakgatla tribes after the *difaqane* and settled them at Saulspoort. These people refer to themselves as Bakgatla ba ga Kgafela and form part of the bigger Bakgatla line of the Sotho-Tswana people (Schapera, 1942). The local people from around the study area most probably also form part of this group.

Evidence of Late Iron Age metal production was also found at Thabazimbi and Rooiberg further to the west where these groups were involved in the production of iron and tin respectively (Huffman, 2007).

### **Historic Period**

The Historic Period intermingles with the later parts of the Stone and Iron Age, and can loosely be regarded as times when written and oral recounts of incidents became available.

17th Century to present AD (1600 – 2000)

Early European travellers, hunters and missionaries such as Andrew Smith, Cornwallis Harris and Robert Moffat visited this region in the 1830's. They were followed by the first colonists who settled in this region from the 1840's and onwards into the 20<sup>th</sup> century. These colonists established farms and small towns were formed as a result of the farming communities (Bergh, 1999).

The discovery of iron ore deposits at Thabazimbi to the west and the Merensky Reef with platinum and chrome deposits at Rustenburg in the south-west during the 1920's introduced the region to mining activities. These mining activities continued to grow and expand up to what we see today (Bergh, 1999).

## **6. Methodology**

### **Physical Survey**

The extent of the proposed development sites were determined as well as the extent of the areas to be affected by secondary activities (access route, construction camp, etc.) during the development.

The physical survey was conducted on foot over the entire area proposed for development. Priority was placed on the undisturbed areas. A systematic inspection of the area on foot along linear transects resulted in the maximum coverage of the proposed area. The survey was conducted on June 23, 2011 and was performed by M. Hutten and field worker T. Mulaudzi.

No sampling was done as no sites or finds of heritage significance were found.

### **Interviews**

The owner of the property, Ms. Petro Raubenheimer, was interviewed and questioned during the survey and she indicated that she was not aware of any sites or finds of heritage value or significance on the property.

### **Restrictions**

Vegetation proved the major restriction in accessibility to some of the areas and also contributed to poor surface visibility after the spate of recent good rains.

## Documentation

All sites/findspots located during the foot surveys were briefly documented. The documentation included digital photographs and descriptions as to the nature and condition of the site and recovered materials. The sites/findspots were plotted using a Global Positioning System (GPS) (Garmin GPSmap 60CSx) and numbered accordingly.

## 7. Assessment Criteria

This chapter describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The significance of archaeological and heritage sites were based on the following criteria:

- The unique nature of a site
- The amount/depth of the archaeological deposit and the range of features (stone walls, activity areas etc.)
- The wider historic, archaeological and geographic context of the site
- The preservation condition and integrity of the site
- The potential to answer present research questions.

## Site Significance

Site significance classification standards prescribed by the South African Heritage Resources Agency (2006) and approved by the Association for Southern African Professional Archaeologists (ASAPA) for the Southern African Development Community (SADC) region, were used for the purpose of this report.

<i>FIELD RATING</i>	<i>GRADE</i>	<i>SIGNIFICANCE</i>	<i>RECOMMENDED MITIGATION</i>
National Significance (NS)	Grade 1	-	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination
Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised
Local	Grade	High	Mitigation (Part of

Significance (LS)	3B	Significance	site should be retained)
Generally Protected A (GP.A)	Grade 4A	High / Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)	Grade 4B	Medium Significance	Recording before destruction
Generally Protected C (GP.C)	Grade 4C	Low Significance	Destruction

**Impact Rating:**

**Low or No Significance:**

The constraint is absent, but in instances where present, poses a negligible significance on the proposed development in terms of heritage concerns.

**Moderate Significance:**

The constraint is present and poses a notable but not major significance on the proposed development in terms of heritage concerns. If the constraint can not be avoided, appropriate mitigation measures must be implemented to minimize the significance.

**High Significance:**

The constraint is present and poses a high significance on the proposed development in terms of heritage concerns. It is recommended that the constraint be avoided or appropriate mitigation measures must be implemented to minimize the significance.

**Certainty**

*DEFINITE:* More than 90% sure of a particular fact. Substantial supportive data exist to verify the assessment.

*PROBABLE:* Over 70% sure of a particular fact, or of the likelihood of an impact occurring.

*POSSIBLE:* Only over 40% sure of a particular fact, or of the likelihood of an impact occurring.

*UNSURE:* Less than 40% sure of a particular fact, or of the likelihood of an impact occurring.

**Duration**

*SHORT TERM:* 0 – 5 years

*MEDIUM:* 6 – 20 years

*LONG TERM:* more than 20 years  
*DEMOLISHED:* site will be demolished or is already demolished

### **Mitigation**

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be classified as follows:

- **A** – No further action necessary
- **B** – Mapping of the site and controlled sampling required
- **C** – Preserve site, or extensive data collection and mapping required; and
- **D** – Preserve site

## **8. Assessment of Sites and Finds**

This section will contain the results of the heritage site/find assessment.

### **Vaalwater Solar Park**

The proposed development of the Vaalwater Solar Park will be situated on Portion 17 of the farm Wolvenfontein 149 KR, approximately 5km south-east of Vaalwater in the Limpopo Province. The proposed property was approximately 88,5ha in size of which the development area for the Solar Park will cover approximately 55ha.

A small stream crossed the northern extent of the property. Large sections of the property were previously used for agriculture and these areas were disturbed due to ploughing and planting activities. In recent years the property was not ploughed and planted and only used as a game farm and this resulted in the re-growth of the ploughed areas. After intensive investigations, no sites or finds of any heritage value or potential were identified.

Field Rating:	None
Heritage Significance:	None
Impact:	None
Certainty:	None
Duration:	None
Mitigation:	A – No further action necessary

## 9. Recommendations

The following steps and measures are recommended regarding the investigated area:

### Vaalwater Solar Park

- The proposed area to be developed was mostly disturbed due to previous agricultural activities and pioneer plants such as several *Acacia* and *Dichrostachys* species (sickle bush and sweet thorn) started to occupy the previously planted fields.
- No further site-specific actions or any further heritage mitigation measures are recommended as no heritage resource sites or finds of any value or significance were identified in the indicated study area.
- The proposed development of the Vaalwater Solar Park in the indicated area can continue from a heritage point of view.

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# **APPENDIX A**

# **Photographs**



Photo 1: View of the Vaalwater Substation.



Photo 2: View of the small stream at the northern end of the farm.





Photo 3: View of the previously ploughed and planted fields.

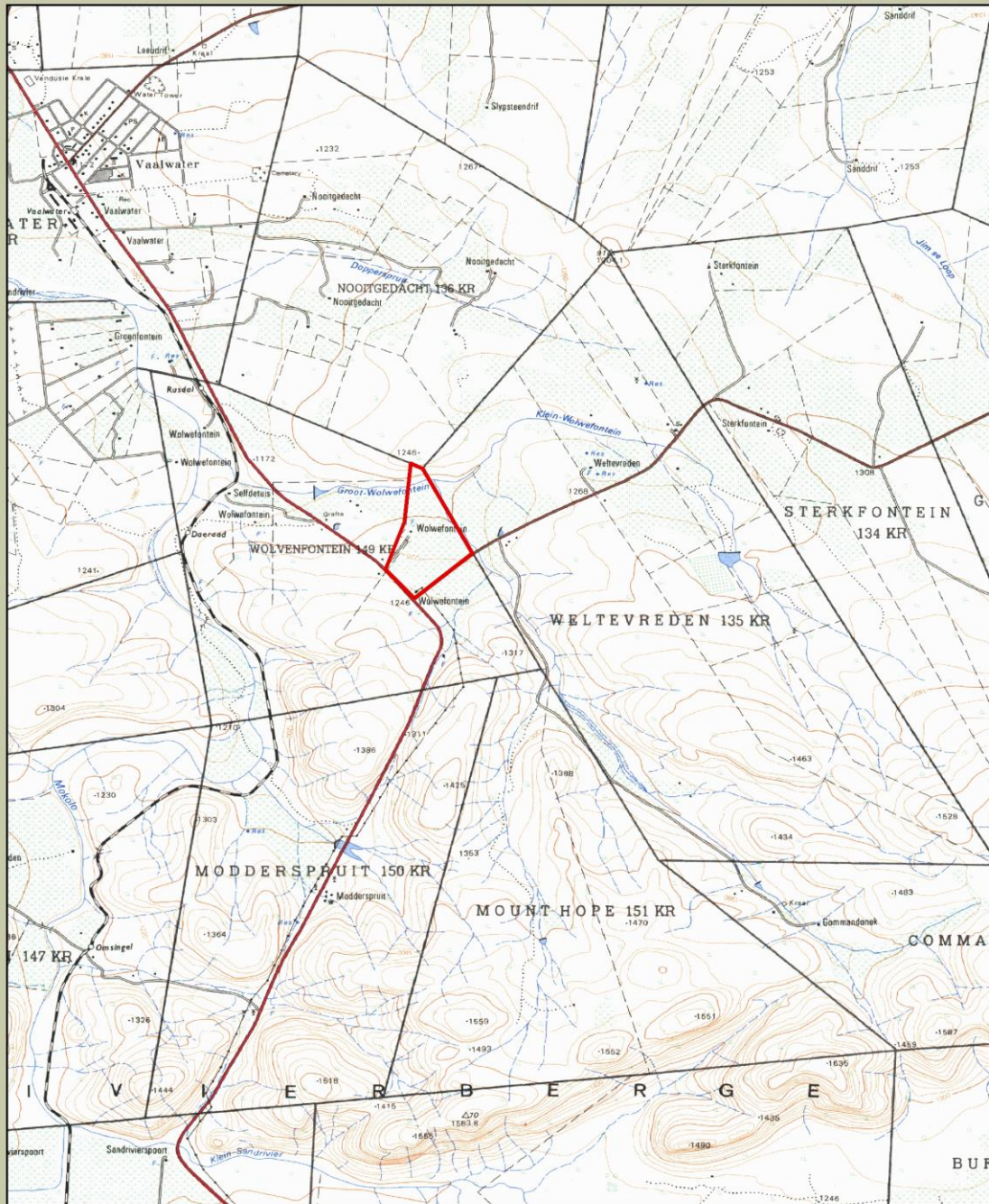


Photo 4: View of the farm house.


# **APPENDIX B**

## **Location Maps**


# Vaalwater Solar Park 1:50 000 Series Vaalwater 2428AC



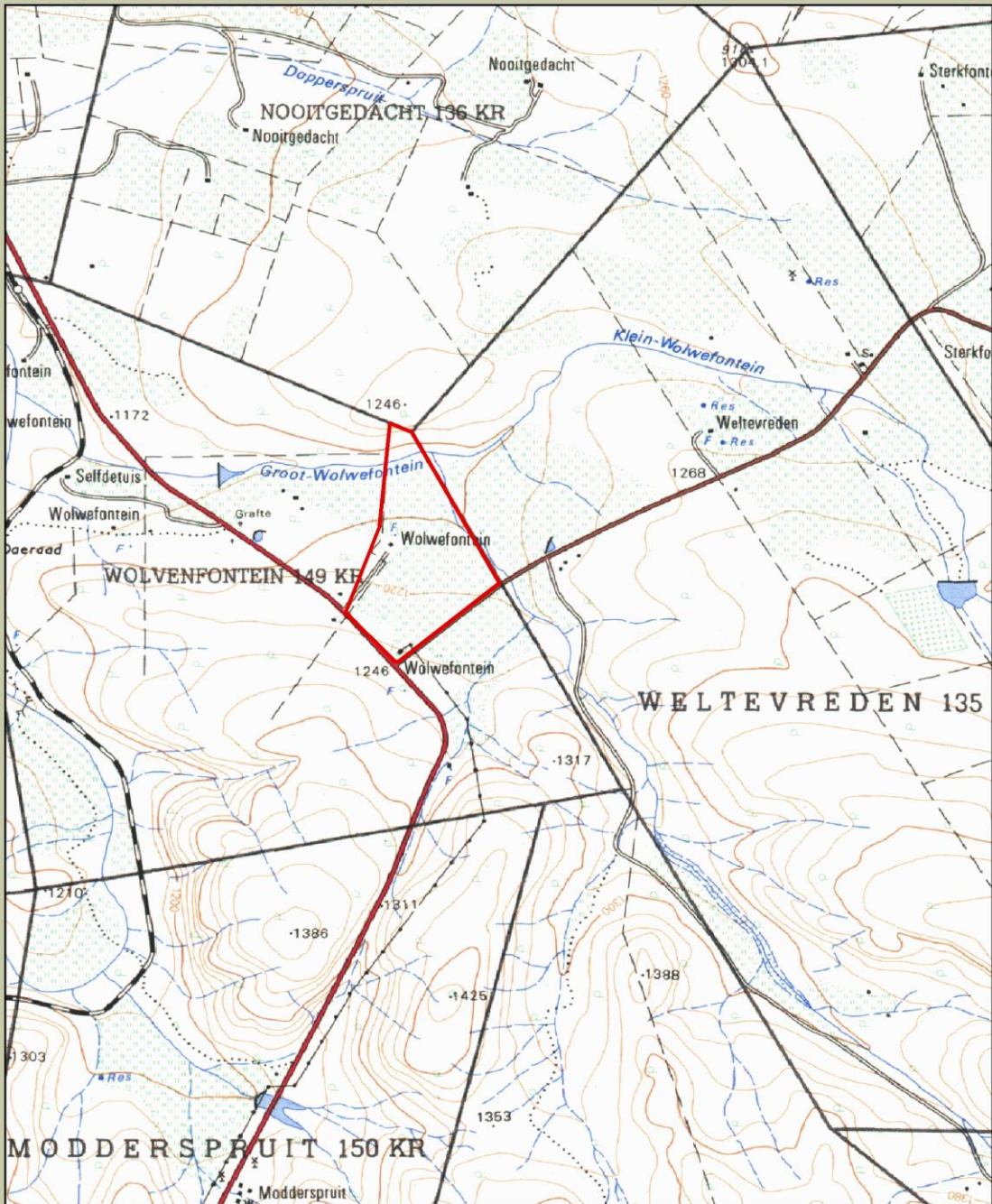
**Legend**

 Study Area

0                      2                      4 Kilometres



# Vaalwater Solar Park 1:50 000 Series Vaalwater 2428AC



### Legend

 Study Area

0 1 2 Kilometres

