

# **ARCHAEOLOGICAL IMPACT ASSESSMENT THE PROPOSED ROMA ENERGY SOLAR FARM ON ERF 753 DANIELSKUIL NORTHERN CAPE PROVINCE**

Prepared for:

## **ENVIROAFRICA**

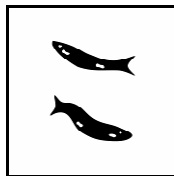
Att: Mr Bernard de Wit  
PO Box 5367  
Helderberg  
7135

E-mail: [Bernard@enviroafrica.co.za](mailto:Bernard@enviroafrica.co.za)

On behalf of:

## **ROMA ENERGY DANIELSKUIL (PTY) LTD**

By



Jonathan Kaplan  
**Agency for Cultural Resource Management**

5 Stuart Road  
Rondebosch  
7700

Ph/Fax: 021 685 7589

Mobile: 082 321 0172

E-mail: [acrm@wcaccess.co.za](mailto:acrm@wcaccess.co.za)

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## Executive summary

The Agency for Cultural Resource Management was commissioned to conduct an Archaeological Impact Assessment (AIA) for the proposed construction and operation of a 10 Mega Watt (MW) commercial Concentrated Photovoltaic (CPV) Energy Generation Facility on Erf 753 in Danielskuil in the Northern Cape. Danielskuil is located about 150 kms northwest of Kimberley and about 80 kms east of Kuruman on the R31. The site for the proposed solar farm is located south of the town, directly opposite the Idwala Lime mine. The land is privately-owned and is currently zoned for industrial use.

The AIA forms part of the Environmental Basic Assessment process that is being conducted by EnviroAfrica cc.

Due to a misunderstanding, the archaeologist was under the impression that, because of extensive infrastructure covering Erf 753, an alternative site, located south of the Idwala Lime Mine had been identified for a possible solar energy farm, and the proposed site therefore screened out. This is not the case, and the proposed site is now the preferred site, which unfortunately, was not subjected to an AIA.

The proposed site (Erf 753) for the Danielskuil solar energy farm is flat and featureless, comprising a mix of old grazing land, bush, scrub, and grassland vegetation. According to the biophysical assessment, the proposed site is also fairly severely degraded and covered by infrastructure that includes several large powerline servitudes, gravel access roads and associated infrastructure. There is virtually no surface stone covering the proposed site. There are no streams, pans, or water sources on the property.

A foot survey of the proposed alternative site was undertaken by the archaeologist on 5 March 2012 in which no archaeological remains were documented. The proposed 20 ha footprint area is flat and comprises pasture lands that have been heavily grazed. Apart from some flat outcroppings of grey dolomite that occurs on a slightly elevated ridge in the north western portion, there is no surface stone covering the site,

It is the archaeologist professional opinion that the probability of locating important archaeological heritage remains (i.e. stone artefacts) on the proposed site (Erf 753) will be low, for the following reasons:

- No archaeological remains were found during the assessment of the proposed alternative site.
- The context of the proposed site is similar to the alternative site in that it comprises grasslands and old pastures, is degraded and covered by extensive Eskom infrastructure.
- There are no streams, water courses, pans or drainage channels on or near the proposed site where archaeological remains may be expected to be found.
- There are no, significant landscape or any rocky outcrops on the proposed site.
- There is virtually no surface stone covering the proposed site.

- There are no old buildings, structures or any features on the proposed site, apart from those relating to Eskom infrastructure, which covers a large portion of the site and the surrounding landscape.
- There are no visible graves on the proposed site
- Apart from trenches for underground cabling, limited bedrock excavations are envisaged. The solar panels will be raised above ground and mounted on small footings drilled and set into the ground. The excavations for the footings are about 1.5 m in diameter and so the actual ground disturbance will be therefore quite limited and contained

Indications are that In terms of archaeological heritage, the proposed site (Erf 753) for the Danielskuil solar energy farm is not a sensitive, vulnerable or threatened archaeological landscape

With regard to the proposed development of the Roma Energy Solar Farm in Danielskuil, the following recommendations are therefore made:

1. An AIA of the proposed site (Erf 753) for the solar energy farm is not required and no further archaeological mitigation is required.
2. Should any unmarked human burials/remains or ostrich eggshell water flask caches be uncovered, or exposed during construction activities, these must immediately be reported to the archaeologist (Jonathan Kaplan 082 321 0172), or the South African Heritage Resources Agency (SAHRA) (Att Ms Mariagrazia Galimberti 021 462 4502). Burials, etc must not be removed or disturbed until inspected by the archaeologist.

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## 1. INTRODUCTION

### 1.1 Background and brief

Roma Energy Danielskuil (Pty) Ltd, commissioned the Agency for Cultural Resource Management to conduct an Archaeological Impact Assessment (AIA) for the proposed construction and operation of a 10 MW Concentrated Photovoltaic (CPV) Energy Generation Facility on Erf 753 in Danielskuil in the Northern Cape (Figures 1 & 2). The proposed development is situated within the Kgatelopele Local municipality. The subject property is zoned for Industrial use and is privately owned.

The AIA forms part of the Environmental Basic Assessment process that is being conducted by EnviroAfrica cc.

Roma Energy Danielskuil proposes to construct and operate a commercial solar energy that entails the construction of about 140 CPV solar panels covering a footprint area of about 20 ha (Figures 3-9)<sup>1</sup>. The CPV panels will be mounted on pedestals drilled and set into the ground. Extensive bedrock excavations are not envisaged, but some vegetation may need to be cleared from the site. Associated infrastructure includes single track internal access roads, trenches for underground cables, transformer pads, a switching station, a maintenance shed, and a temporary construction camp. The electricity generated from the project will be fed directly into the national grid to the Eskom Danielskuil substation which is situated alongside the proposed facility. Note that due to the extensive infrastructure covering the proposed site, the solar modules have been spread out over the surrounding landscape (refer to Figure 3).

Due to a misunderstanding, the archaeologist was under the impression that, because of extensive Eskom infrastructure covering Erf 753, an alternative site, located south of the Idwala Lime Mine, had been identified for a possible solar energy farm, and the proposed site had therefore been screened out. This is not the case, and the proposed site is the preferred site, which unfortunately, was not subjected to an AIA. For the purpose of this study, only the alternative site was searched for archaeological heritage remains (refer to Figure 10).

## 2. HERITAGE LEGISLATION

The National Heritage Resources Act (Act No. 25 of 1999) makes provision for a compulsory Heritage Impact Assessment (HIA) when an area exceeding 5000 m<sup>2</sup> is being developed. This is to determine if the area contains heritage sites and to take the necessary steps to ensure that they are not damaged or destroyed during development.

The NHRA provides protection for the following categories of heritage resources:

- Landscapes, cultural or natural (Section 3 (3))
- Buildings or structures older than 60 years (Section 34);
- Archaeological sites, palaeontological material and meteorites (Section 35);

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<sup>1</sup> Photographs of the proposed site were supplied by the biophysical and via specialists

## Archaeological study proposed solar energy farm near Danielskuil

- Burial grounds and graves (Section 36);
- Public monuments and memorials (Section 37);
- Living heritage (defined in the Act as including cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems and the holistic approach to nature, society and social relationships) (Section 2 (d) (xxi)).



Figure 1. Locality Map

 Study site



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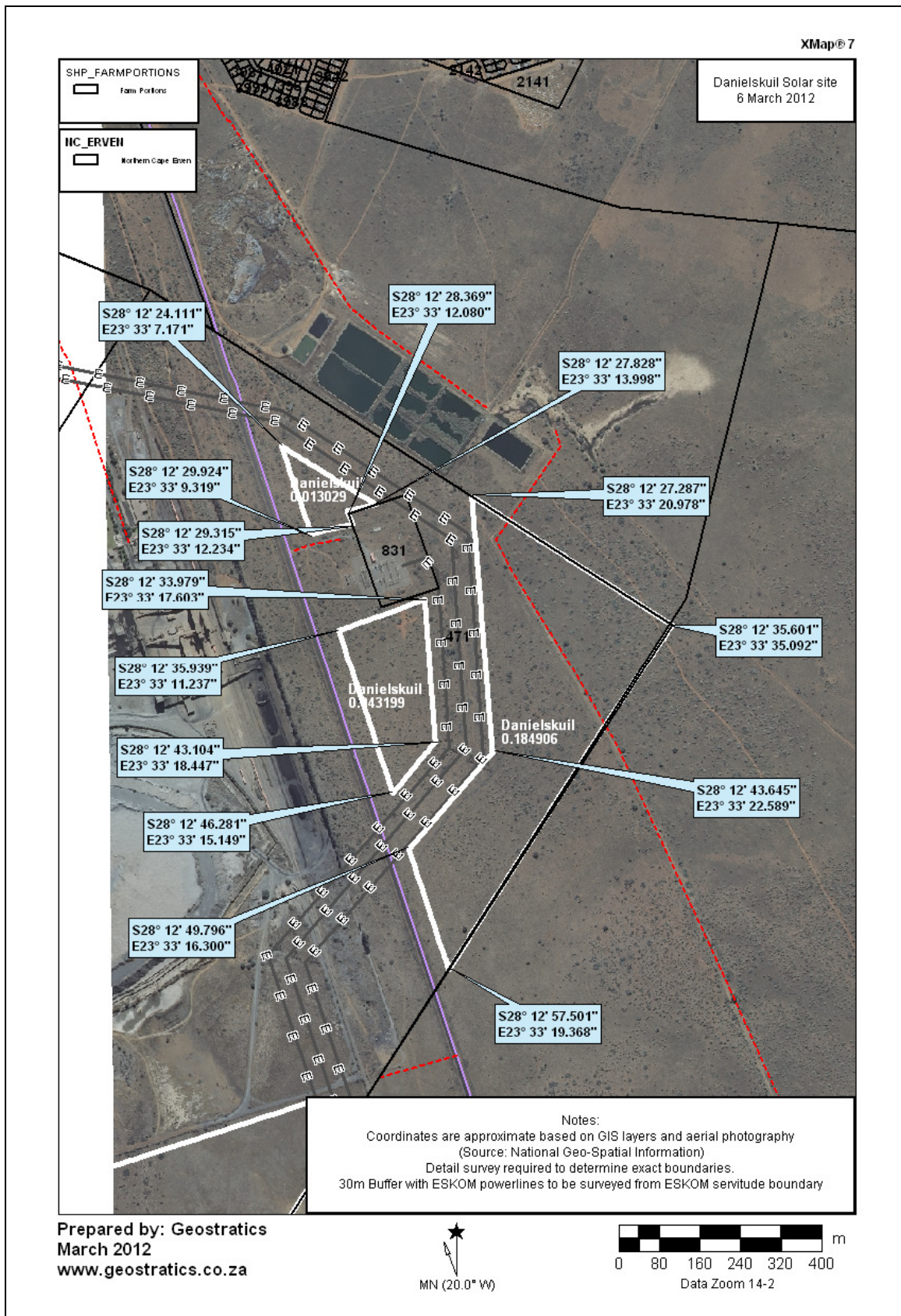


Figure 2. Aerial photograph of the footprint areas for the proposed Danielskuil Solar Energy Farm



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Figure 3. Proposed layout of the Danielskuil solar modules on Farm 753. Note how the modules are spread out over the landscape



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Figure 4. The proposed site view facing north east



Figure 7. The proposed site view facing east



Figure 5. The proposed site view facing north



Figure 8. The proposed site view facing north east



Figure 6. The proposed site view facing north



Figure 9. The proposed site view facing south west



### 3. DESCRIPTION OF THE RECEIVING ENVIRONMENT

An aerial photograph indicating the proposed and proposed alternative Roma Energy Solar Farm in Danielskuil is illustrated in Figure 10. Danielskuil is located about 150 kms northwest of Kimberley and about 80 kms east of Kuruman on the R31. The site (Erf 753) for the proposed solar farm is located about 2 km south of the town on the R31, directly opposite (i. e. east of) the Idwala Lime mine.

The proposed alternative site is located adjacent to the Idwala mine and west of the R31. The alternative site is a flat piece of pasture land that has been heavily grazed (Figures 11 & 12). There is no surface stone covering the site. There are no significant landscape features on the property, which is fenced in. An, Eskom servitude defines the western boundary of the site. There is some weathered surface dolomite stone on a slightly elevated ridge line in the north western corner of the property. Surrounding land use is the Idwala mine and agriculture (grazing). There are no old buildings, structures or features, old equipment, public memorials or monuments on the proposed and proposed alternative site. There are no visible graves on the alternative site.

The 20 ha footprint area for the proposed solar energy farm is also flat and featureless, comprising a mix of old grazing land, bush and grassland vegetation (refer to Figures 4-9). According to the biophysical study, the proposed site is also fairly severely degraded and covered by infrastructure that includes large powerline servitudes, gravel access roads and associated infrastructure. There is no surface stone covering the site. There are no streams, pans, or water sources on the proposed site. According to the botanist Mr Peet Botes (pers. com.), there are no visible graves on the proposed site.

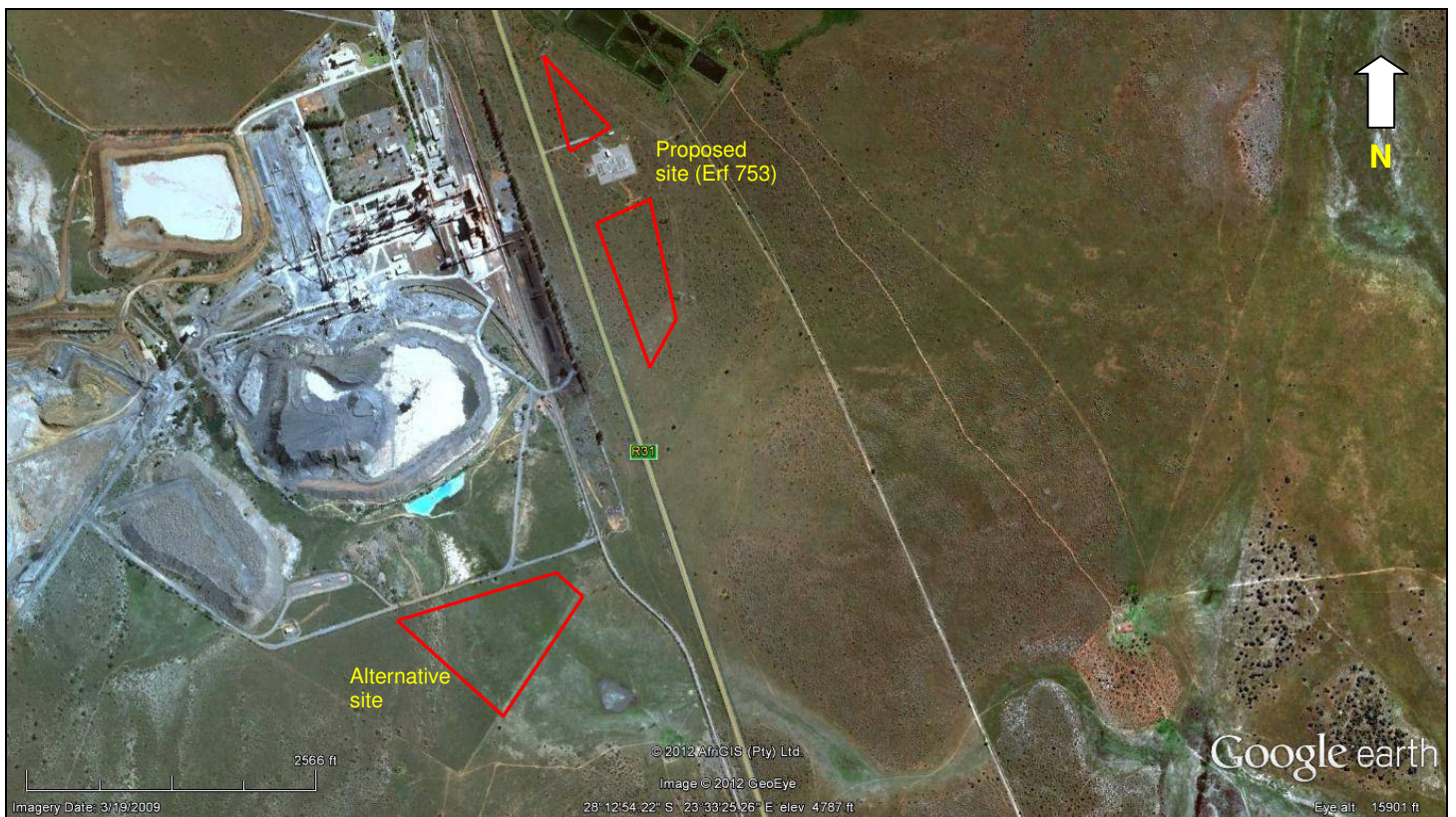


Figure 10. Aerial photograph of the proposed and proposed alternative sites for the Roma Danielskuil Solar Energy Farm.





Figure 11. View proposed alternative site facing west



Figure 12. View of the proposed alternative site facing north east

## **4. STUDY APPROACH**

### **4.1 Method of survey**

A fairly detailed foot survey of the proposed alternative site was undertaken by J Kaplan on 5 March, 2012. A track path of survey was also created (refer to Figure 13).

A desk top study was also done.

### **4.2 Constraints and limitations**

There were no constraints or limitations associated with the study of the proposed alternative site. The site has been heavily grazed and archaeological visibility was very good.

### **4.3 Identification of potential risks**

It is argued, based on the results of the study of the alternative site that it is unlikely that any important or significant archaeological heritage (i. e. stone tools) will be impacted by the proposed project given the transformed nature and disturbed context of the receiving environment.

### **4.4 Results of the desk top study**

Bushman rock engravings occur in the hills south west of Danielskuil and the well known and nationally important Wonderwerk Cave (a National Monument) is located about 30 kms west of the town on the R31 to Kuruman (Beaumont and Morris 1990; Morris and Beaumont 2004; Morris 1998). Rock engravings also occur at Lime Acres about 20 kms south of Danielskuil, west of the R385 (Morris 2010). Morris (2010) also documented occasional flaked stone at Owendale, an abandoned mine about 13 kms south west of Danielskuil, on the road to Postmansberg. Lita Webley (2010) recorded small numbers of Early, Middle, and Later Stone Age flakes in banded ironstone and chalcedony on the farm Humansrus, a few kilometres south of Owendale on the R385, indicating the long antiquity of the archaeological heritage in this part of the Northern Province, which stretches back more than 1 million years. Beaumont and Boshier (1974) have excavated a prehistoric pigment (specularite) mine on the farm Doornfontein a few kilometres north of Postmansburg. The Doornfontein site consists of a number of chambers which have been dug into a hillside. Archaeological excavations uncovered a large numbers of stone artefacts as well as pottery, decorated ostrich eggshell pieces, beads and bone implements. Radiocarbon dates place the mining activities to 1200 years ago. Fragmentary human remains from the Blinkklipkop mine north-east of Postmasburg suggest that the early miners were of Khoisan physical type rather than representing Iron Age settlement (Webley 2010). Kaplan (2011) also documented low density scatters of LSA tools during a survey for a treated water pipeline in Postmansberg.



## 5. FINDINGS

No archaeological heritage remains were documented during the study of the proposed alternative site. Apart from the weathered surface dolomites in the north western corner of the property, there is virtually no surface stone on the proposed site, which has been heavily grazed.

## 6. CONCLUSION

It is argued that development of the proposed Roma Energy Solar Energy facility on Erf 753 in Danielskuil will have a very limited impact on important archaeological remains.

It is the archaeologist's professional opinion that the probability of locating important archaeological heritage (i.e. stone artefacts) on the proposed site will be low. The reasons for this are the following:

- No archaeological remains were found during the assessment of the alternative site.
- The context of the proposed site is similar to the alternative site in that it comprises grasslands and old pastures, is degraded and in the case of Erf 753, covered by extensive Eskom infrastructure.
- There are no streams, water courses, pans or drainage channels on or near the proposed site where archaeological remains may be expected to be found.
- There are, no significant landscape or any rocky outcrops on the proposed site.
- There is virtually no surface stone covering the proposed site.
- There are no old buildings, structures or any features on the proposed site, apart from, those relating to Eskom infrastructure (transmission line servitudes, access roads, etc), which covers a large portion of the site and the surrounding landscape.
- There are no visible graves on the proposed site.
- Apart from trenches for underground cabling, limited bedrock excavations are envisaged. The solar panels will be raised above ground and mounted on small footings drilled and set into the ground. The excavations for the footings are about 1.5 m in diameter and so the actual ground disturbance will therefore be quite limited and contained

Indications are that In terms of archaeological heritage, the proposed site (Erf 753) for the Danielskuil solar energy farm is not a sensitive, vulnerable or threatened archaeological landscape

## **7. RECOMMENDATIONS**

With regard to the proposed development of the Roma Energy Solar Farm on Erf 753 in Danielskuil, the following recommendations are therefore made:

1. An Archaeological Impact Assessment of the proposed site is not required and no further archaeological mitigation is required.
2. Should any unmarked human burials/remains or ostrich eggshell water flask caches be uncovered, or exposed during construction activities, these must immediately be reported to the archaeologist (Jonathan Kaplan 082 321 0172), or the South African Heritage Resources Agency (SAHRA) (Att Ms Mariagrazia Galimberti 021 462 4502). Burials must not be removed or disturbed until inspected by the archaeologist.

## 8. REFERENCES

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