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7 July 2014

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Dear Ms Grobler,

**Palaeontological Desktop Study – Avondale Solar Plant Development**

As requested, herewith a Desktop Palaeontological Impact Assessment with regard to the proposed Avondale Photovoltaic (PV) Power Plant and Power Line Development in the //Khara Hais Local Municipality, ZF Mgcawu District Municipality, Northern Cape Province.

Yours sincerely



**Bruce Rubidge** PhD, FGSSA, FRSSA, Pr Sci Nat

**PALAEONTOLOGICAL DESKTOP STUDY  
AVONDALE PHOTOVOLTAIC POWER PLANT DEVELOPMENT,  
//KHARA HAIS LOCAL MUNICIPALITY, ZF MGCAWU DISTRICT  
MUNICIPALITY, NORTHERN CAPE PROVINCE**

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**DATE: 7 July 2014**

## **EXECUTIVE SUMMARY**

A desktop Palaeontological Impact Assessment was undertaken on the proposed Avondale Photovoltaic (PV) Power Plant Development situated east of Upington on the farm Avondale 410, in the //Khara Hais Local Municipality, ZF Mgcawu District Municipality, Northern Cape Province. The proposed development is to set up a Solar Park.

The entire study area is underlain by rocks of the Precambrian Koras Group and more superficially by Tertiary calcretes and Quaternary sands of the Kalahari Group. The Precambrian rocks are not known to contain fossils but there is a slight, but unlikely, possibility that the Tertiary calcretes and Quaternary sands of the Kalahari Group could contain fossils.

In my opinion this development will not negatively affect palaeontological heritage. If, in the extremely unlikely event that fossils are exposed in the calcrete and alluvial deposits in the process of development activities, a qualified palaeontologist must be contacted to assess the exposure for fossils so that the necessary rescue operations are implemented.

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# REPORT

## Background Information of the development

This desktop report is part of a Heritage Impact Assessment to determine the effect of the proposed Avondale Photovoltaic (PV) Power Plant Development situated on the farm Avondale 410, in //Khara Hais Local Municipality, ZF Mgcawu District Municipality, Northern Cape Province. The study area is situated immediately north of the Orange River and the N14 highway between Upington and Olifantshoek and covers a surface area of about 250ha of the total farm area of 3426 ha.

The study was commissioned by Africa Geo-Environmental and Engineering Services Limpopo (AGES) (Pty) Ltd and I was asked to provide a desktop assessment of the effect that the proposed development will have on the palaeontological heritage.

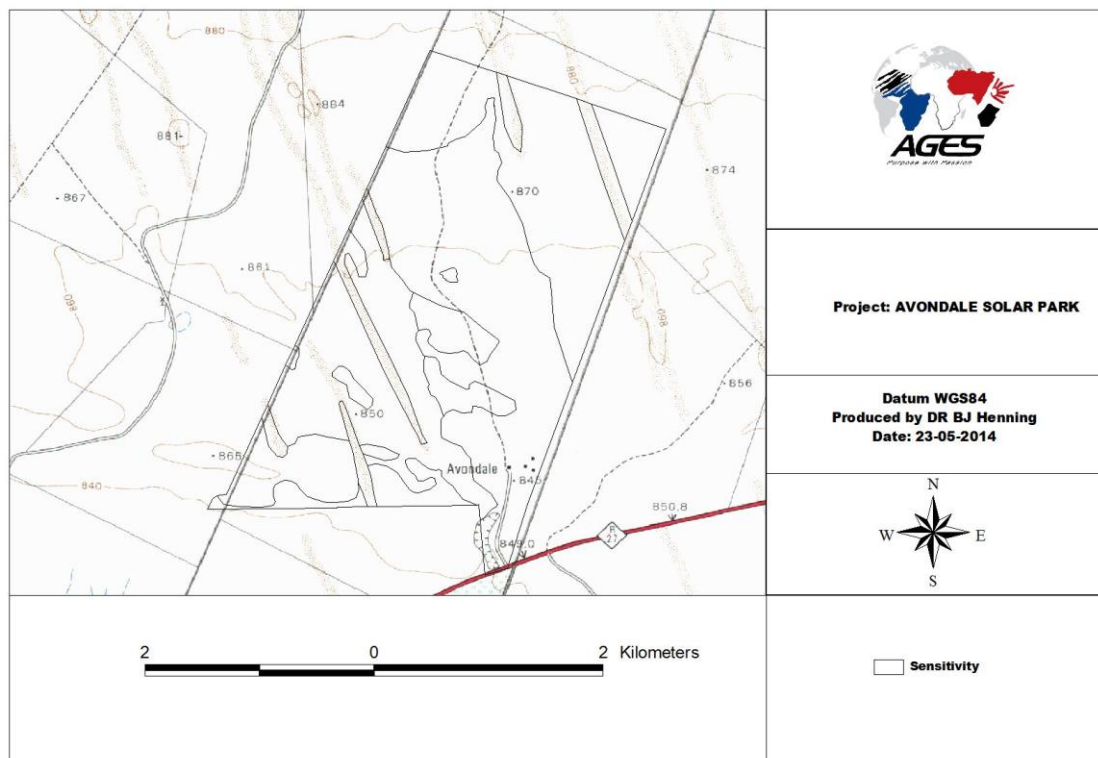


Figure 1: Map showing the position of the proposed Avondale Photovoltaic (PV) Power Plant Development situated on farm Avondale 410, in the //Khara Hais Local Municipality, ZF Mgcawu District Municipality, Northern Cape Province (Map Sheet number 2821BC).

## Details of the study area

The study area proposed for the development of a Solar Park is on the farm Avondale 410, in the //Khara Hais Local Municipality, ZF Mgcawu District Municipality, Northern Cape Province (Figure 1) and is covered by the 1:50 000 topographical Map Sheet number 2821BC.

## Geological Setting

The entire area is underlain by rocks of the Precambrian Koras Group (Kalkpunt and Leeudraai formations). Tertiary calcretes are present in one area toward the south of the property and most of the study is covered by Quaternary aeolian sands of the Kalahari Group (Figure 2).

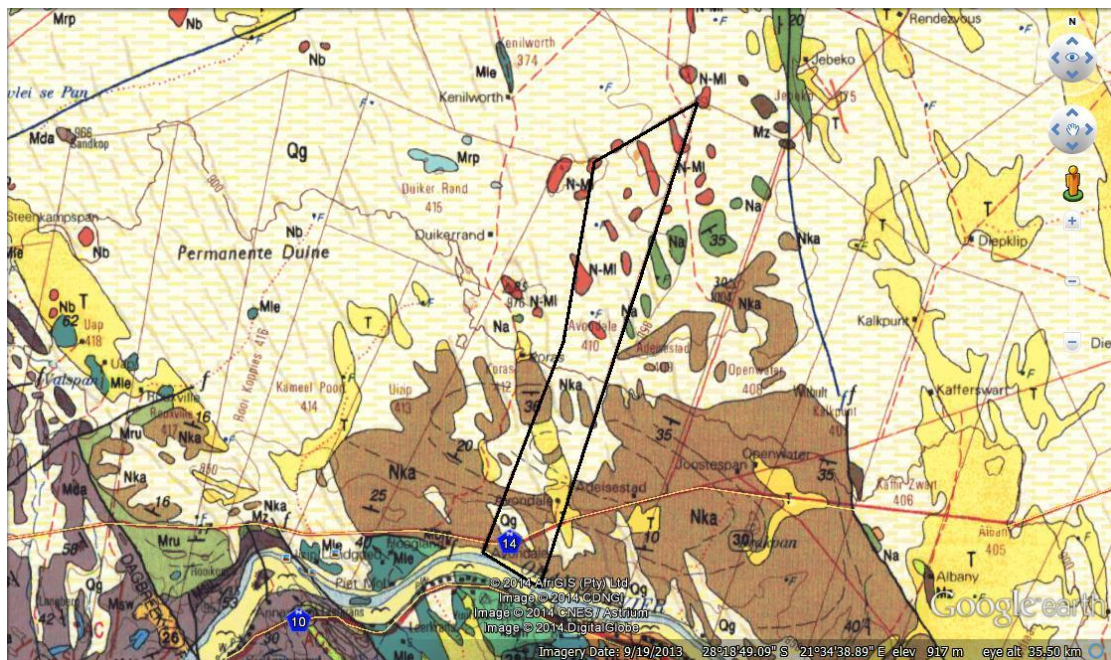


Figure 2: Geology of the Study area (1:250 000 Geological Map Series of the Republic of South Africa, Sheet number 2820 Upington) Black quadrangle shows study area.

## Palaeontological Heritage

The rocks of the Koras Group which underlie the study area are Precambrian in age and are not known to contain fossils. The Tertiary calcretes and Quaternary sands of the Kalahari Group, which are sedimentary of origin, could possibly host fossils but this is extremely unlikely.

## **Recommendation**

Because of the nature of the construction of solar parks it is extremely unlikely that the proposed development will have any effect on palaeontological heritage. However if fossils are exposed in the Tertiary calcretes and Quaternary deposits of the Kalahari Group it will create a unique opportunity to explore the area for fossils. It is thus recommended that, in the unlikely event that fossils are exposed as a result of construction activities, a qualified palaeontologist must be contacted to assess the exposure for fossils before further development takes place so that the necessary rescue operations are implemented. Depending on the nature of the fossils discovered this could entail excavation and removal to a registered palaeontological museum collection. A list of professional palaeontologists is available from South African Heritage Resources Agency (SAHRA).

## **Conclusions**

The proposed development of the Avondale Solar Park will extend over Precambrian rocks of the Koras Group as well as Tertiary calcrete deposits and Quaternary sands of the Kalahari Group. It is extremely unlikely that fossils will be exposed as a result of the solar park development. It is considered that, from a palaeontological perspective, the development of the proposed Avondale Solar Park should proceed, but that if fossils are uncovered in the course of construction activities, the developer immediately calls in a qualified palaeontologist to assess the situation and, if necessary, undertake excavation of the fossils.

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