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22 February 2014

Ms Engela Grobler
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Dear Ms Grobler,

Palaeontological Desktop Study – Anjutone Solar Plant Development

As requested, herewith a Desktop Palaeontological Impact Assessment with regard to the proposed Anjutone Photovoltaic (PV) Power Plant and Power Line Development in the Frances Baard District Municipality, Northern Cape Province.

Yours sincerely

Bruce Rubidge PhD, FGSSA, FRSSA, Pr Sci Nat

PALAEONTOLOGICAL DESKTOP STUDY
ANJUTONE PHOTOVOLTAIC POWER PLANT AND POWER LINE DEVELOPMENT, FRANCES BAARD DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE

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DATE: 22 February 2014

EXECUTIVE SUMMARY

A desktop Palaeontological Impact Assessment was undertaken on the proposed Anjutone 2 Photovoltaic (PV) Power Plant and Power Line Development situated on Portion 3 of the farm Machorogan 106, in the Frances Baard District Municipality, northeast of Delportshoop, Northern Cape Province. The proposed development is to set up a Solar Park.

The entire study area is underlain by rocks of the Precambrian Transvaal Supergroup and more superficially by late Caeonozoic calcretes of the Kalahari Group. Dolomites of the Transvaal Supergroup are known to contain fossil stromatolites, and there is a slight, but unlikely, possibility that the calcretes of the Kalahari Group could contain fossils of Caenozoic age.

In my opinion this development will not negatively affect palaeontological heritage. If, in the extremely unlikely event that fossils are exposed in the calcrete 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.

TABLE OF CONTENTS

REPORT

Background Information of the development

This desktop report is part of a Heritage Impact Assessment to determine the effect of the proposed Anjutone 2 Photovoltaic (PV) Power Plant and Power Line Development situated on Portion 3 of the farm Machorogan 106, in the Frances Baard District Municipality, Northern Cape Province. The study area is delimited by the Eskom " ULCO-Ganspan 1 ”power line to the north-west and the R370 road to the south-east and covers a surface area of about 250ha of the total farm area of 850ha.

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.

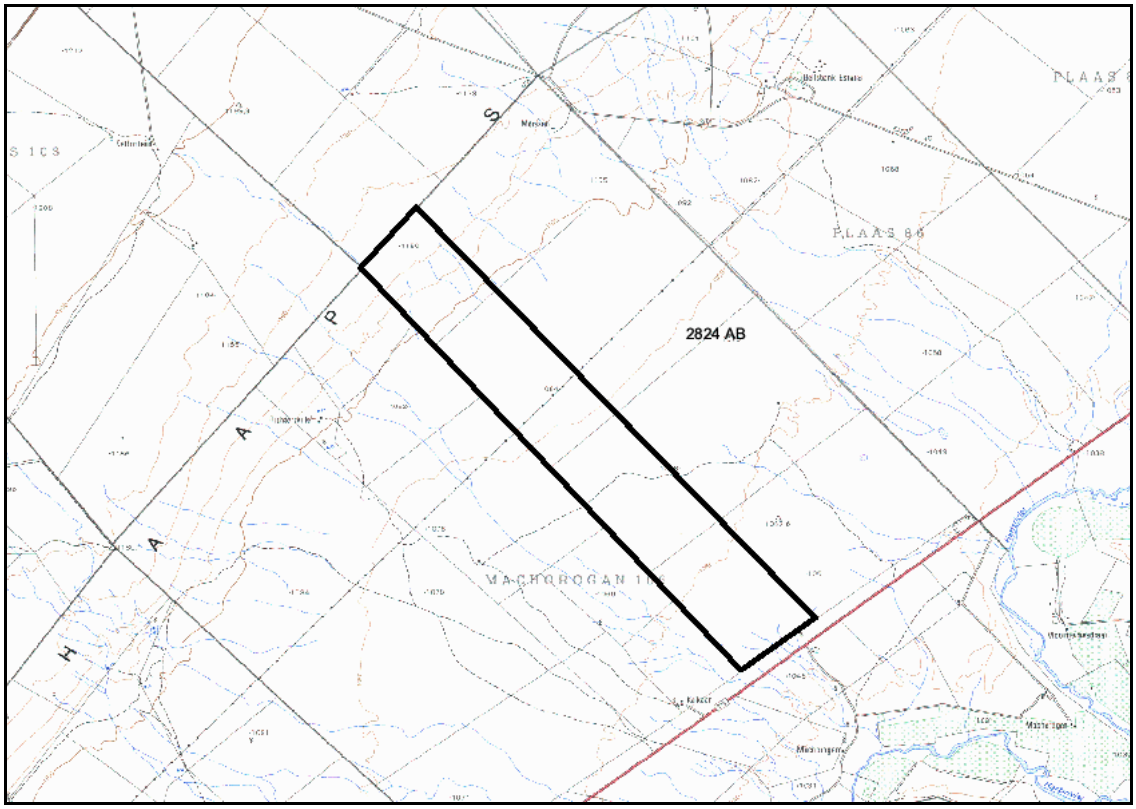

Figure 1: Map showing the position of the proposed Anjutone 2 Photovoltaic (PV) Power Plant and Power Line Development situated on Portion 3 of the farm Machorogan 106, in the Frances Baard District Municipality, Northern Cape Province (Map Sheet 2824 AB).

Details of the study area

The study area proposed for the development of a Solar Park is on Portion 3 of the farm Machorogan 106, in the Frances Baard District Municipality, north of Delportshoop Northern Cape Province (Figure 1) and is covered by the 1:50 000 topographical Map Sheet number 2824AB.

Geological Setting

The entire area is underlain by rocks of the Transvaal Supergroup comprising sedimentary rocks of the Precambrian Gaap Group (Campbell Rand Subgroup) which comprise dolomites. Over most of the study area these rocks are overlain by Caenozoic Calcretes of the Kalahari Group (Figure 2).

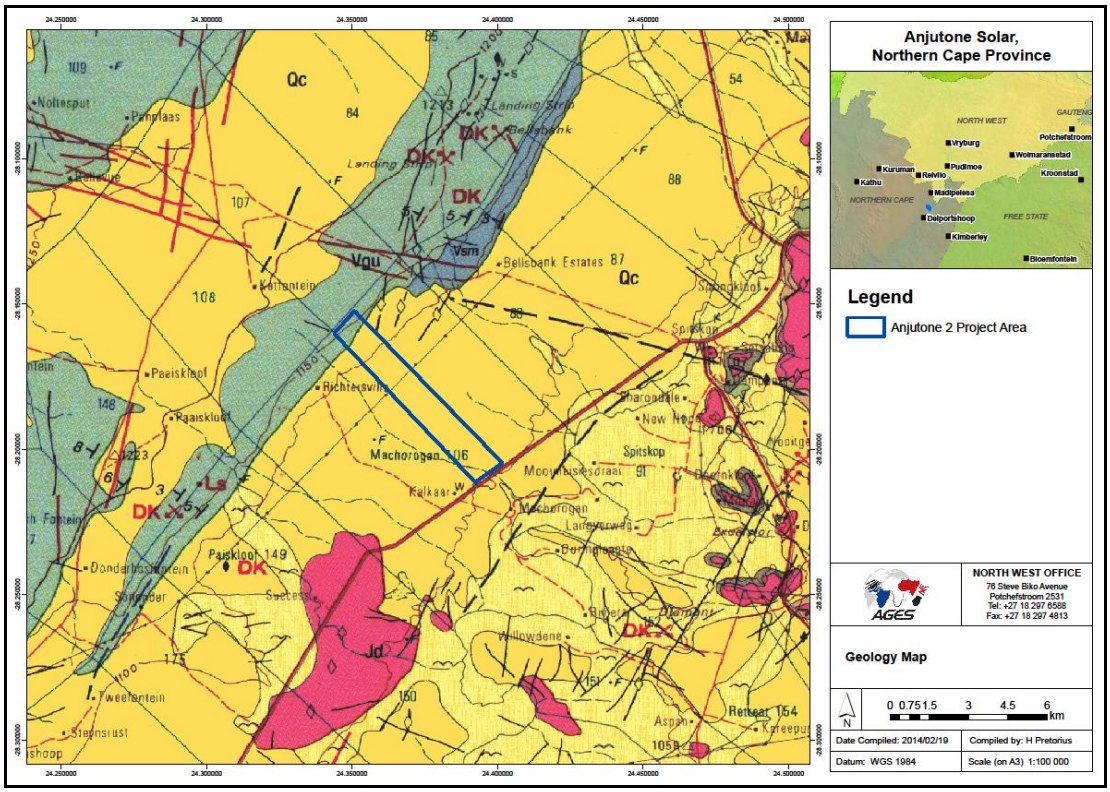

Figure 2: Geology of the Study area (1:250 000 Geological Map Series of the Republic of South Africa, Sheet number 2824 Kimberley). Blue quadrangle shows study area

Palaeontological Heritage

The dolomites and carbonite rocks of the Ghaap Group which are exposed in only a small part in the northwest of the study area could potentially host fossil of

stromatolites. The calcretes of the Kalahari Group which are also sedimentary of origin could also host much younger fossils but this is extremely unlikely.

Collections of stromatolites from the Transvaal Supergroup are present in the collections of the Evolutionary Studies Institute (ESI), formerly BPI Palaeontology, at the University of the Witwatersrand, and the Council for Geoscience in Pretoria.

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 Caenozoic 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 Anjutone 2 Solar Park will extend over Precambrain rocks of the Transvaal Supergroup as well as Caenozoic calcrete deposits 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 Anjutone 2 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.

Bibliography

Almond J.E., de Klerk B, and Gess R.W. (in prep). Palaeontological heritage of the Eastern Cape. SAHRA technical report.

Botha-Brink, J. 2012. Palaeontological impact assessment of the proposed Olien Solar Project development on Portion of Farm 300, Barkly West, near Lime Acres, Northern Cape. McGregor Museum. SAHRIS case number 543.

Eriksson PG., Altermann W. And Hartzer FJ. 2006. The Transvaal Supergroup and its precursors. *In*: Johnson MR, Anhaeusser and Thomas RJ (Eds). *The Geology of South Africa*. Geological Society of South Africa, Johannesburg/Council for Geoscience, Pretoria. pp. 237-260.

Mac Rae C. 1999. *Life etched in stone: fossils of South Africa*. The Geological Society of South Africa, Johannesburg, pp 305.

Mc Carthy, T.S. and Rubidge, B.S. 2005. *The story of Earth and Life – a southern African perspective on the 4.6 billion year journey*. Struik Publishers, Cape Town. pp 333.

Partridge TC, Botha GA, and Haddon IG. 2006. Cenozoic deposits of the interior. *In*: Johnson MR, Anhaeusser and Thomas RJ (Eds). *The Geology of South Africa*. Geological Society of South Africa, Johannesburg/Council for Geoscience, Pretoria. pp. 585-604.