PALAEONTOLOGICAL HERITAGE STATEMENT:

Proposed Herbert PV Power Station II adjacent to Herbert Substation near Douglas, Northern Cape Province.

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1. BACKGROUND

On 23 August 2011 the Department of Environmental Affairs granted an Environmental Authorisation to AE-AMD Renewable Energy (Pty) Ltd for the proposed construction of a photovoltaic power station and its associated infrastructure on Portions 50 and 51 of the farm Atherton 82, within the boundaries of the Siyancuma Local Municipality and the Pixley Ka Seme District Municipality in the Northern Cape. While an area of 284 ha was studied during the EIA process conducted at the Herbert substation, the final plans submitted with the EIA report only covered 111 ha. Van Zyl Environmental Consultants cc, Upington, has been appointed by AE-AMD Renewable Energy (Pty) Ltd to apply for the authorisation of two further PV power station developments, Herbert II and III, that would cover the remainder of the study area. Each of the three developments on the study area would be registered to a separate SPV company.

This present palaeontological heritage statement refers to the development of the Herbert II PV Power Station with a generation capacity of up to 20 MW (DEA Ref: 12/12/20/2637).

A desktop palaeontological impact assessment, followed by a separate field-based assessment, were carried out by Almond (2010a, 2010b) for the Herbert PV Power Station 1, situated some 7 km north-east of Douglas.

2. IMPACT SIGNIFICANCE OF PROPOSED NEW DEVELOPMENT

Following a site visit, the palaeontological assessment of the entire Herbert study area, which includes the footprints of the authorized as well as the two proposed new PV power stations, was summarized as follows (Almond 2010b):

> The present scoping study shows that bedrock exposure in the study area around the Herbert electrical substation is insufficient to determine whether this is underlain by Dwyka or Ecca Group sediments. Apart from occasional stromatolitic limestone or dolomite erratics reworked from the 2.6-2.5 billion year old Ghaap Group, the varied Permo-carboniferous sediments of the Mbizane Formation (Dwyka Group) near Douglas appear to be largely unfossiliferous but are of scientific interest for their rich variety of glacial-related features. These include extensive ice-scoured rock pavements, some of which feature numerous well-preserved rock engravings. The Early Permian Prince Albert Formation (Ecca Group) rocks in the region yield a sparse but palaeontologically interesting fauna of fossil fish, invertebrates, coprolites and petrified wood, mainly preserved within cannon-ball sized nodules. However, in the substation study area itself the Karoo Supergroup bedrocks are entirely blanketed with a thick (2 or more meters) layer of surface calcrete on top of which lies a thin veneer of Kalahari sands and down-wasted gravels. These superficial deposits

are only sparsely fossiliferous, and no fossils were observed within them during the present scoping study.

It is concluded that the shallow excavations envisaged during construction of the proposed photovoltaic power station are unlikely to intersect fossil-bearing bedrock and no specialist palaeontological mitigation is recommended here. Should fossil remains be encountered during development, however, the responsible ECO should inform SAHRA at the earliest opportunity to consider possible mitigation measures.

For the same reasons outlined above, the two proposed new PV power station developments at Herbert are considered to be of LOW significance in terms their potential impact on fossil heritage resources.

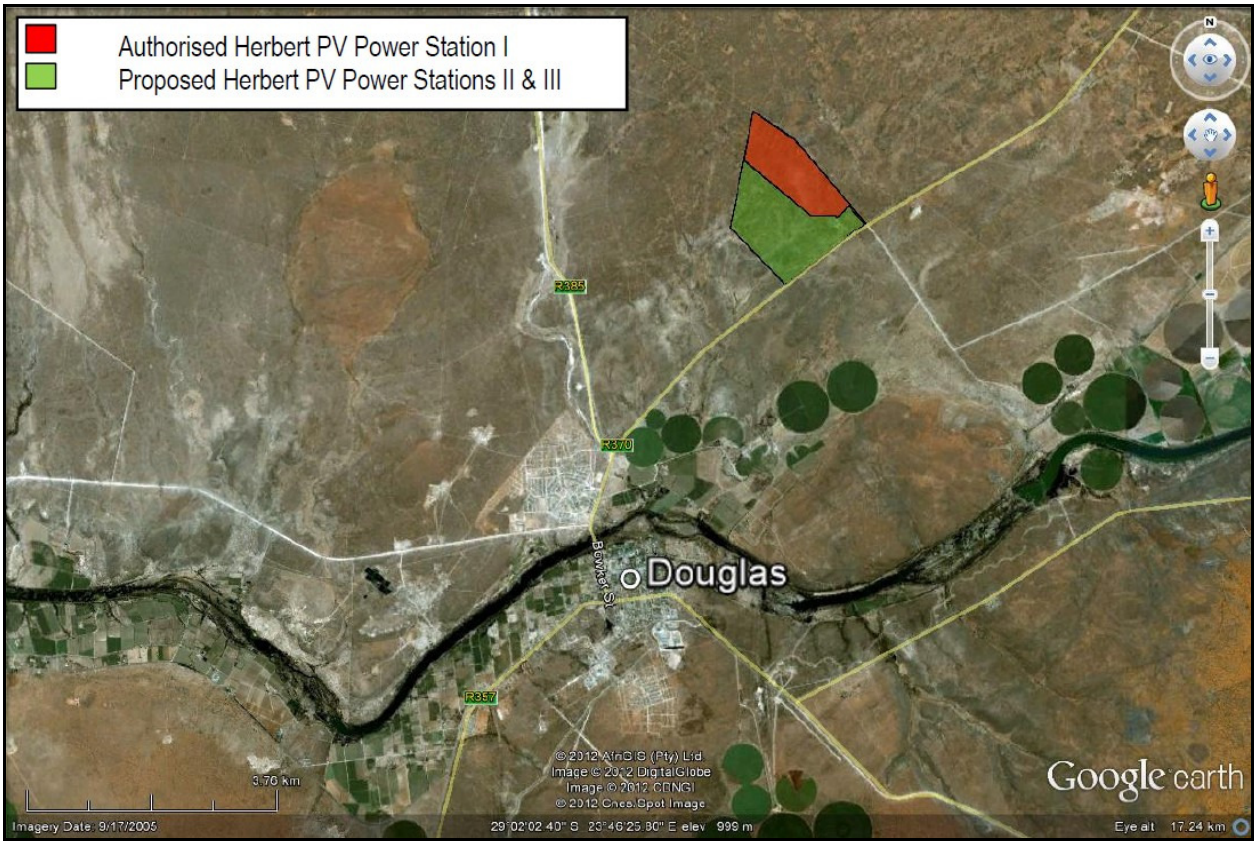

Fig. 1. Location of the proposed new Herbert PV Power Stations II and III as well as the authorised PV Power Station I at Eskom Herbert Substation, *c.* 7 km north-east of Douglas, Northern Cape (Figure abstracted from the BID document kindly supplied by Van Zyl Environmental Consultants cc, Upington).

3. CONCLUSIONS & RECOMMENDATIONS

Significant additional impacts on fossil heritage resources are not anticipated in the case of the proposed new PV Power Plant II at Herbert. Given the generally low palaeontological sensitivity of the near-surface rocks in the study region, the cumulative impact of the three adjacent developments is assessed as low. Pending the discovery of new fossil material on site, further palaeontological studies or mitigation for this project are not considered necessary.

Should substantial fossil remains be exposed during construction, however, these should be safeguarded – if possible *in situ* – and SAHRA should be notified by the responsible ECO as soon

as possible so that appropriate palaeontological mitigation (fossil sampling and relevant data collection) can be undertaken.

4. REFERENCES

ALMOND, J.E. 2010a. Proposed photovoltaic power station adjacent to Herbert Substation near Douglas, Northern Cape Province. Palaeontological impact assessment: desktop study, 23 pp. Natura Viva cc, Cape Town.

ALMOND, J.E. 2010b. Proposed photovoltaic power station adjacent to Herbert Substation near Douglas, Northern Cape Province. Palaeontological impact assessment: field scoping study, 21 pp. Natura Viva cc, Cape Town.

QUALIFICATIONS & EXPERIENCE OF THE AUTHOR

Dr John Almond has an Honours Degree in Natural Sciences (Zoology) as well as a PhD in Palaeontology from the University of Cambridge, UK. He has been awarded post-doctoral research fellowships at Cambridge University and in Germany, and has carried out palaeontological research in Europe, North America, the Middle East as well as North and South Africa. For eight years he was a scientific officer (palaeontologist) for the Geological Survey / Council for Geoscience in the RSA. His current palaeontological research focuses on fossil record of the Precambrian - Cambrian boundary and the Cape Supergroup of South Africa. He has recently written palaeontological reviews for several 1: 250 000 geological maps published by the Council for Geoscience and has contributed educational material on fossils and evolution for new school textbooks in the RSA.

Since 2002 Dr Almond has also carried out palaeontological impact assessments for developments and conservation areas in the Western, Eastern and Northern Cape under the aegis of his Cape Town-based company *Natura Viva* cc. He is a long-standing member of the Archaeology, Palaeontology and Meteorites Committee for Heritage Western Cape (HWC) and an advisor on palaeontological conservation and management issues for the Palaeontological Society of South Africa (PSSA), HWC and SAHRA. He is currently compiling technical reports on the provincial palaeontological heritage of Western, Northern and Eastern Cape, Gauteng, Limpopo and the Free State for SAHRA and HWC. Dr Almond is an accredited member of PSSA and APHP (Association of Professional Heritage Assessment Practitioners – Western Cape).

Declaration of Independence

I, John E. Almond, declare that I am an independent consultant and have no business, financial, personal or other interest in the proposed project, application or appeal in respect of which I was appointed other than fair remuneration for work performed in connection with the activity, application or appeal. There are no circumstances that compromise the objectivity of my performing such work.

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