

# RECOMMENDED EXEMPTION FROM FURTHER PALAEOLOGICAL STUDIES & MITIGATION:

## PROPOSED KAKAMAS KEREN SOLAR PLANT ON ERF 1654 KAKAMAS, KAI GARIB MUNICIPALITY, NORTHERN CAPE

John E. Almond PhD (Cantab.)  
*Natura Viva* cc,  
PO Box 12410 Mill Street,  
Cape Town 8010, RSA  
naturaviva@universe.co.za

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### 1. OUTLINE OF DEVELOPMENT

Keren Energy Kakamas (Pty) Ltd is proposing to construct a 10 MW Concentrating Photovoltaic (CPV) Energy Generation Facility on Kakamas (suid) Erf 1654, Kakamas, Kai Garib Municipality, in the Northern Cape (Fig. 2). Erf 1654 is currently zoned for agriculture and is owned by the local authority.

The proposed activity entails the construction of about 140 CPV solar panels with a footprint of about 20 ha. The CPV panels will be mounted on pedestals drilled and set into the ground. Extensive bedrock excavations are not envisaged, but some vegetation will need to be cleared from the site. Associated infrastructure includes a perimeter access road, single track internal access roads, trenches for underground cables, 2 to 4 transformer pads, a switching station, a maintenance shed, and a temporary construction camp.

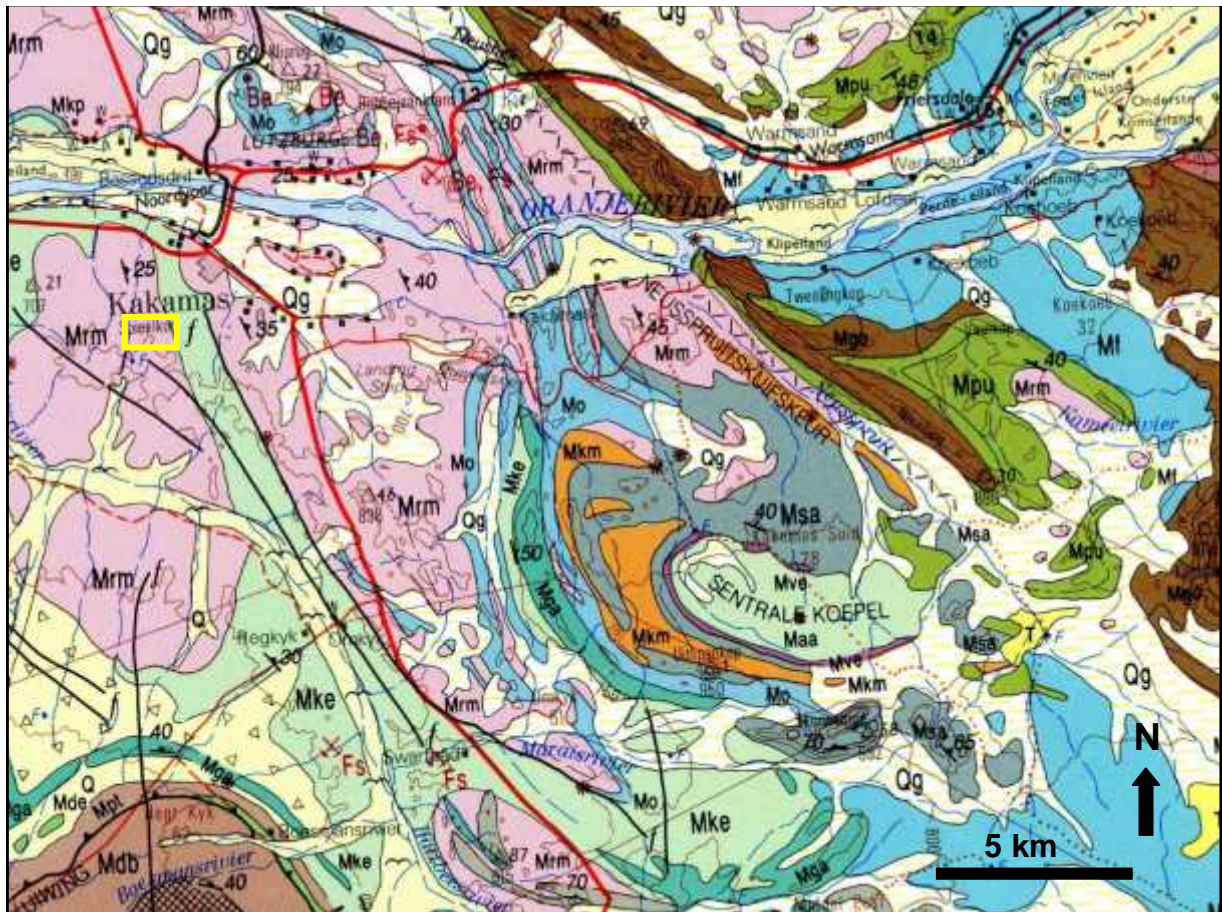
The present palaeontological heritage comment has been commissioned by EnviroAfrica cc, Somerset West as part of a comprehensive Heritage Impact Assessment of the proposed development (Contact details: Mr Bernard de Witt, EnviroAfrica cc, P. O. Box 5367, Helderberg, 7135; 29 St James St, Somerset West; mobile: +27 82 4489991; tel: +27 21 851 1616; fax: 086203308).

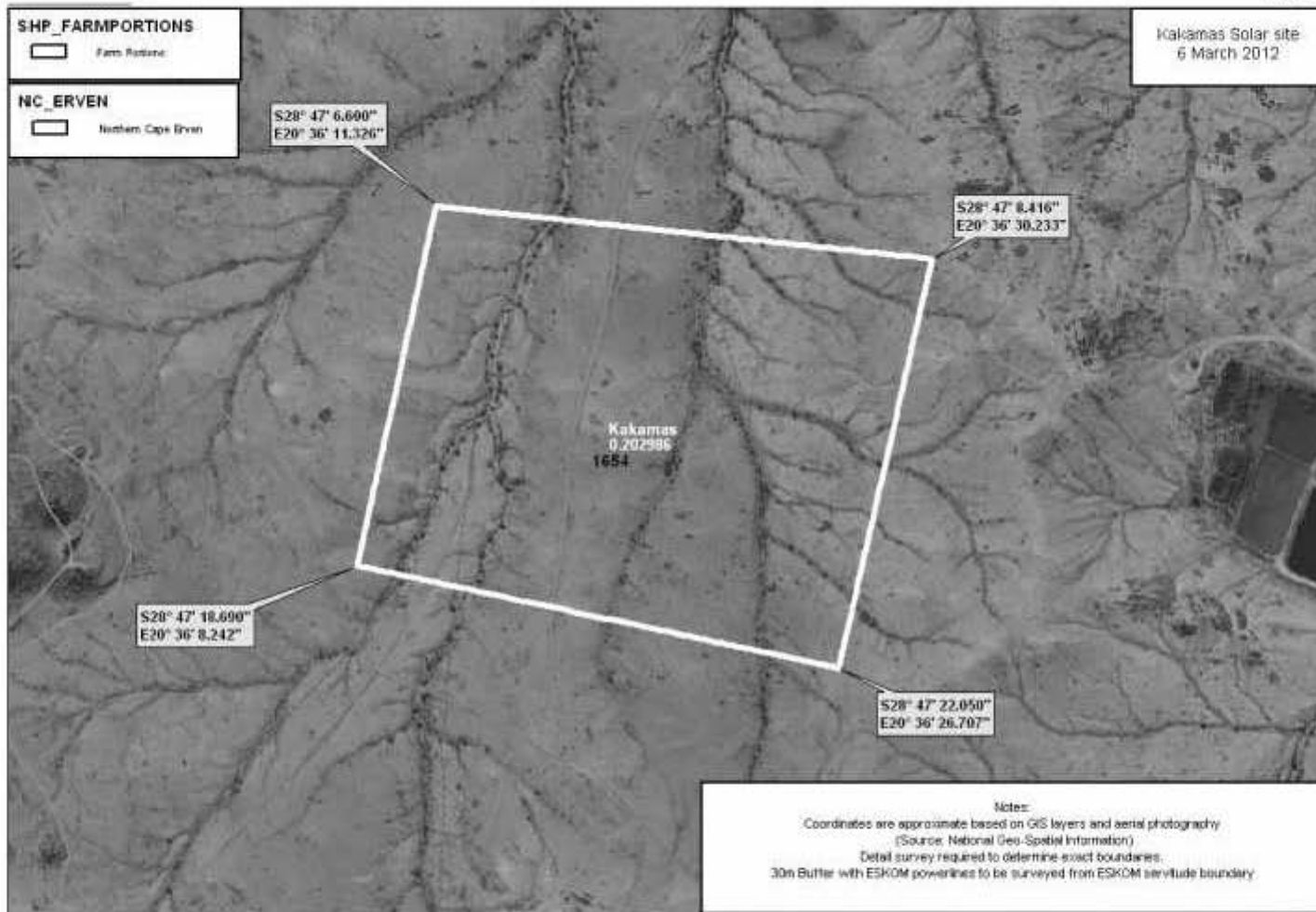
### 2. GEOLOGICAL BACKGROUND

The proposed solar plant study area (28° 46' S, 20° 35' E) is situated on arid, gravelly terrain at 690m amsl on the south-western outskirts of the town of Kakamas, some 4 km south of the Orange River (Fig. 2). The area is traversed by several shallow, dendritic stream systems that intermittently drain northwards into the Orange River. The N14 trunk road runs 1.8 km to the north.

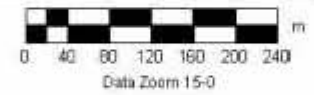
The geology of the study area near Kakamas is shown on the 1: 250 000 geology map 2820 Upington (Council for Geoscience, Pretoria; Fig. 1 herein). A comprehensive sheet explanation for this map has been published by Moen (2007). The proposed Kakamas Keren solar plant is underlain by ancient Precambrian basement rocks – the **Riemvasmaak granite-gneiss (Mrm)** – that belong to the **Namaqua-Natal Province** of Mid Proterozoic (Mokolian) age (Cornell *et al.* 2006, Moen 2007). These basement rocks are approximately two to one billion years old and entirely unfossiliferous (Almond & Pether 2008).

The Precambrian basement rocks within the study area are mantled with a spectrum of other coarse to fine-grained **superficial deposits** such as rocky soils, downwasted gravels, colluvium





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### 3. PALAEOLOGICAL HERITAGE

The Precambrian metamorphic and igneous basement rocks of the Namaqua-Natal Metamorphic Province in the study area are entirely unfossiliferous.

**Alluvial gravels** of the Orange River of Miocene and younger age are locally highly fossiliferous (e.g. Hendy 1984, Schneider & Marias 2004, Almond 2009 and extensive references therein) but, as argued above, these are *not* mapped within the study area.

The palaeontological sensitivity of the Kakamas solar plant study area is assessed as LOW.

### 4. CONCLUSIONS & RECOMMENDATIONS

The overall impact significance of the proposed Kakamas Keren solar plant development is considered to be LOW because:

- Most of the study area is underlain by unfossiliferous metamorphic basement rocks (granite-gneisses *etc*) or mantled by superficial sediments of low palaeontological sensitivity;
- Extensive, deep excavations are unlikely to be involved in this sort of solar park project.

**It is therefore recommended that exemption from further specialist palaeontological studies and mitigation be granted for this solar plant development.**

Should any substantial fossil remains (e.g. vertebrate bones and teeth, shells, petrified wood) be encountered during excavation, however, these should be reported to SAHRA for possible mitigation by a professional palaeontologist.

### 5. REFERENCES

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John E. Almond