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Palaeontological Impact Assessments & Heritage Management,
Natural History Education, Tourism, Research

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Palaeontological Heritage Comment:

**PROPOSED KOTULO TSATSI PV1 SOLAR ENERGY FACILITY ON
PORTION 2 OF FARM STYNS VLEY 280, HANTAM LOCAL
MUNICIPALITY, NORTHERN CAPE PROVINCE**

The company Kotulo Tsatsi Energy (Pty) Ltd is proposing to develop a solar energy facility known as Kotulo Tsatsi Energy PV1 with a contracted capacity of up to 200 MW on Portion 2 of Farm Styns Vley 280 near Kenhardt in the Namakwa District Municipality (Hantam Local Municipality), Northern Cape.

The project area has previously been authorised for CSP project infrastructure and has been subjected to a combined desktop and field-based palaeontological heritage assessment by the author (*cf* Almond 2015). The area is largely underlain by post-glacial basinal mudrocks of the Prince Albert Formation (Ecca Group, Karoo Supergroup) of Early Permian age which are locally intruded by dolerites of the Karoo Dolerite Suite (Figure 1). Late Caenozoic alluvial sediments are mapped towards the northern border of the project area. Various other, but unmapped, Late Caenozoic superficial deposits such as eluvial / downwasted and sheet wash gravels are also present at surface.

Almond (2015) concluded that:

Desktop analysis of the fossil records of the various sedimentary rock units underlying the broader SolarReserve Kotulo Tsatsi Solar Energy Facility study area, including the solar energy facility development area and transmission/distribution overhead power line corridor, combined with field assessment of numerous representative rock exposures within and close to this area, indicate that all of these units are of low to very low palaeontological sensitivity. The potentially fossiliferous Karoo Supergroup bedrocks (Dwyka and Ecca Groups) are deeply weathered and extensively calcretised near-surface. Over the majority of their outcrop areas the bedrocks are mantled by various superficial deposits that may reach thicknesses of several meters and that are of low palaeontological sensitivity. These include alluvium, colluvium, as well as a wide range of surface gravels, calcrete hardpans and pan sediments. The only fossil remains recorded during the field assessment are (1) small-scale fossil burrows within Prince Albert Formation mudrocks of Early Permian age, (2) downwasted, ice-transported blocks (erratics) of Precambrian stromatolitic carbonate within surface gravels overlying the Dwyka Group tillites, and (3) rare calcretised termitaria (termite nests) of probable Pleistocene or younger age embedded within weathered

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Dwyka bedrocks. These fossils are all of widespread occurrence within Bushmanland and Namaqualand. Special protection or mitigation measures for the very few known fossil sites within the study area are therefore not considered warranted. Because of the generally sparse occurrence of fossils within all of the bedrock formations concerned in the SolarReserve Kotulo Tsatsi Solar Energy Facility study area, as well as within the pervasive overlying superficial sediments (soil, alluvium, colluvium etc), the magnitude of impacts on local palaeontological heritage resources is conservatively rated as LOW.

The potentially fossiliferous sedimentary rock units represented within the present study area (e.g. Prince Albert Formation, calcretes) are of widespread occurrence and this is also likely to apply to most of the fossils they contain. It concluded that the cumulative impacts on fossil heritage resources posed by the known solar energy developments in the Kenhardt region is low.

Given the low impact significance of the proposed SolarReserve Kotulo Tsatsi Solar Energy Facility development as far as palaeontological heritage is concerned, no further specialist palaeontological heritage studies or mitigation are considered necessary for this component of the alternative energy project, pending the discovery or exposure of substantial new fossil remains during development.

During the construction phase all deeper (> 1 m) bedrock excavations (e.g. excavations for the CSP central receiver tower foundations, molten salt storage tanks & power block and associated infrastructure, water storage tanks, evaporation ponds, heliostat footing, underground cables, internal access roads, distribution/transmission overhead power line towers, the on-site substation, pipeline, construction camps, laydown areas and assembly plant) should be monitored for fossil remains by the responsible ECO. Should substantial fossil remains such as vertebrate bones and teeth, plant-rich fossil lenses or dense fossil burrow assemblages be exposed during construction, the responsible Environmental Control Officer should safeguard these, preferably in situ, and alert SAHRA, i.e. The South African Heritage Resources Authority, as soon as possible (Contact details: Mrs Colette Scheermeyer, P.O. Box 4637, Cape Town 8000. Tel: 021 462 4502. Email: cscheermeyer@sahra.org.za) so that appropriate action can be taken by a professional palaeontologist, at the developer's expense. Mitigation would normally involve the scientific recording and judicious sampling or collection of fossil material as well as associated geological data (e.g. stratigraphy, sedimentology, taphonomy) by a professional palaeontologist.

These mitigation recommendations should be incorporated into the Environmental Management Programme (EMPr) for the proposed development.

A revised project design for the now authorised Kotulo Tsatsi solar energy facility involves a technology change from the previously authorised CSP project infrastructure to PV project infrastructure. In this regard, the solar PV facility will be connected to the grid via a previously authorised grid connection solution 2 , which consists of a collector substation, switching station and a power line to the Eskom Aries Substation located north-east of the project site.

This letter is to confirm that the conclusions and recommendations made in the original Palaeontological Heritage Assessment report by Almond (2015) remain unchanged and apply in full to the revised Kotulo Tsatsi PV3 solar energy facility, as outlined in the recent Heritage Impact Assessment by CTS Heritage (2023).

Pending the potential discovery of new fossil remains before or during the construction phase, no further palaeontological studies or mitigation are considered to be necessary for this development. The Chance Fossil Finds Procedure, compiled by CTS Heritage and attached to

their HIA report (CTS 2023), should be included within the EMPr for the solar energy facility and fully implemented during the construction phase.



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KEY REFERENCES

ALMOND, J.E. 2008. Fossil record of the Loeriesfontein sheet area (1: 250 000 geological sheet 3018). Unpublished report for the Council for Geoscience, Pretoria, 32 pp.

ALMOND, J.E. 2014a. Proposed Exheredo CSP and PV solar energy facilities on the Farm Styns Vley 280 near Kenhardt, Northern Cape Province. Palaeontological heritage assessment: desktop study, 28 pp. Natura Viva cc, Cape Town.

ALMOND, J.E. 2014b. Proposed Exheredo CSP and PV solar energy facilities near Kenhardt, Northern Cape Province. Palaeontological heritage assessment: combined desktop & field-based study, 61 pp. Natura Viva cc, Cape Town.

ALMOND, J.E. 2014c. Proposed transmission line for the Exheredo CSP and PV solar energy facilities near Kenhardt, Northern Cape Province. Palaeontological heritage assessment: combined desktop & field-based study, 59 pp. Natura Viva cc, Cape Town.

ALMOND, J.E. 2015. Proposed Solarreserve Kotulo Tsatsi CSP and PV Solar Energy Facilities near Kenhardt, Northern Cape Province. Palaeontological heritage assessment: combined desktop and field-based study, 119 pp. Natura Viva cc, Cape Town.

ALMOND, J.E. & PETHER, J. 2008. Palaeontological heritage of the Northern Cape. Interim SAHRA technical report, 124 pp. Natura Viva cc., Cape Town.

CTS HERITAGE 2023. Proposed development of Kotulo Tsatsi Energy PV3 near Kenhardt, Northern Cape. Heritage Impact Assessment, 95 pp. CTS Heritage, Cape Town.

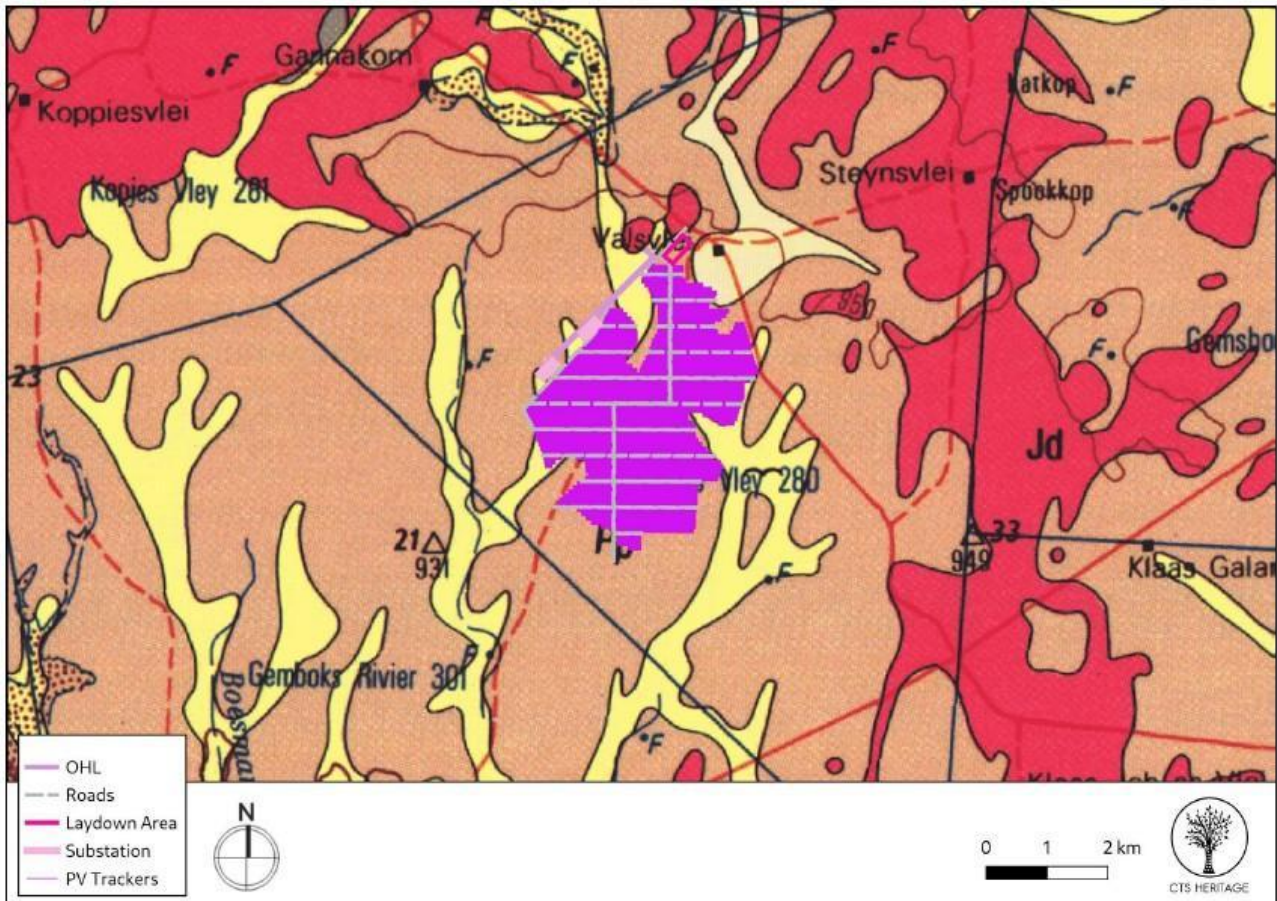


Figure 1: Extract from 1: 250 000 geological map 2920 Kenhardt (Council for Geoscience, Pretoria) showing the project area for the proposed Kotulo Tsatsi PV3 solar energy facility on Portion 2 of Farm Styns Vley 280 near Kenhardt, Northern Cape (lilac polygon). The main geological units mapped here include: buff (Pp) = Prince Albert Formation (Early Permian, Ecca Group, Karoo Supergroup); red (Jd) = Karoo Dolerite Suite (Early Jurassic); Pale yellow (with or without stipple) = Late Caenozoic alluvium and pan sediments [Image prepared by CTS Heritage, Cape Town]