

## **Proposed new vineyard development on Farm 1726 Renosterkop, Farm 1290 & Farm 1537 Augrabies, Northern Cape**

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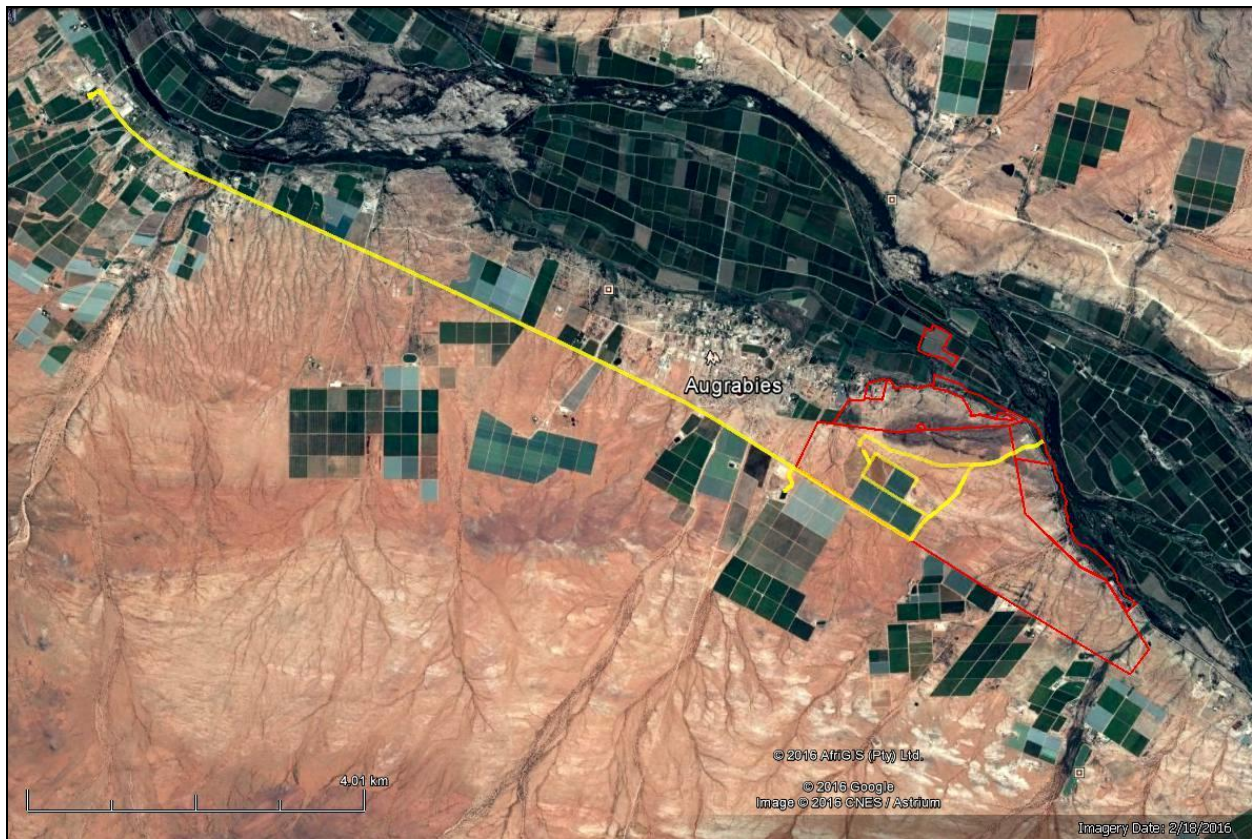
### **Executive summary**

The proposed agricultural development comprises new vineyards and a short buried pipeline on Farm 1726 Renosterkop, Farm 1290 and Farm 1537 near Augrabies, c. 1 km south of the River Orange, Northern Cape. The development footprint is underlain by (1) ancient Precambrian igneous and metamorphic bedrocks that do not contain fossils as well as (2) sparsely fossiliferous or unfossiliferous superficial sediments (alluvium, aeolian sands, surface gravels) of probable Quaternary to Recent age. In view of the small development footprint and the very low palaeontological sensitivity of the study region, no further specialist studies or mitigation are considered necessary for this project as far as fossil heritage is concerned. However, should substantial fossil remains (e.g. vertebrate bones and teeth) be encountered during construction, the responsible ECO should inform SAHRA at the earliest opportunity to consider possible mitigation measures.

### **1. Project description**

Oseiland Eiendom (Pty) Ltd is proposing to develop new vineyards on Farm 1726 Renosterkop, Farm 1290 and Farm 1537 Augrabies situated c. 11 km NW of Kakamas, Kai! Garib Municipality, Northern Cape (Fig. 1). The proposed agricultural development will cover a footprint area of about 77 ha and is located about one kilometre south of the River Orange and due east of Augrabies settlement. Water for the new vineyards will be supplied from a pump station located on the banks of the Orange River on the north-eastern edge of the study area. The vineyards will be supplied with water *via* a 3.2 km-long buried pipeline placed alongside existing gravel farm roads. The property is currently zoned for Agriculture. Existing access roads will be used, and no new access roads will be constructed.

An EIA for this agricultural development proposal is being co-ordinated by Pieter Badenhorst Professional Services (PO Box 1058, Wellington, 7654. Cell: 0827763422. Fax: 0866721916. E-mail: pbps@iafrica.com). The present report contributes to the HIA component being compiled by Jonathan Kaplan of ACRM (5 Stuart Road, Rondebosch, 7700. Ph/Fax: 021 685 7589. Cell: 082 321 0172. E-mail: acrm@waccess.co.za).



**Figure 1. Google earth© satellite image showing the broader vineyard and pipeline study site (red polygon) on Farm 1726 Renosterkop, Farm 1290 and Farm 1537 Augrabies situated just east of Augrabies settlement and c. 11 km NW of Kakamas, Northern Cape. Internal roads and the R359 tar road are indicated in red and yellow respectively. The pump station is located along the banks of the Orange River on the north-eastern edge of the study area.**

## 2. Geological context

Field photos and satellite images show an arid, sparsely-vegetated, fairly flat-lying study area at 650-670 m amsl that is mantled in orange-brown sandy soils and gravels and drained by numerous dendritic ephemeral stream systems, tributaries of the Orange River that runs about one kilometre to the north. The area lies on the southern and southwestern side of a small, west-east trending hill called Renosterkop and has been disturbed in part by trenching.

The geological setting of the study area is shown on the 1: 250 000 geology sheet 2820 Upington (Fig. 2; Council for Geoscience, Pretoria) (Moen 2007). The underlying bedrocks are ancient Precambrian granite-gneisses such as the **Augrabies** and **Riemvasmaak Gneisses** of the **Namaqua-Natal Province** that are some 1.5 billion years old and entirely unfossiliferous (Cornell *et al.* 2006, Almond & Pether 2008).

The study area lies well away from the deeply-incised valley of the River Orange, so ancient (Tertiary - Quaternary) alluvial gravels of the Orange River system – which are known to be highly fossiliferous elsewhere (*e.g.* Partridge *et al.* 2006) are unlikely to be present here.

Superficial sediments away from the main drainage courses largely comprise surface gravels (mainly alluvial, sheetwash and deflation deposits), scree breccias derived from local elevated exposures of bedrock), reddish aeolian and locally-derived sands and perhaps near-surface calcretes, the last especially over lime-rich bedrock. The red sands may in part be assigned to the upper part of the **Kalahari Group (Gordonia Formation)** of late Caenozoic (Neogene /

Quaternary) age and the remaining alluvial sediments and probably of a similar, geological youthful age. Although fossil remains are occasionally encountered in these younger fluvial and terrestrial units – for example reworked mammalian bones and teeth, freshwater molluscs, calcretised root casts, termitaria, ostrich egg shells, land snail shells (Almond 2008, Almond & Pether 2008 and refs. therein) - they are sparsely distributed and occur over a very wide area, so the chances of serious impacts on unique fossil heritage resources here are only slight.

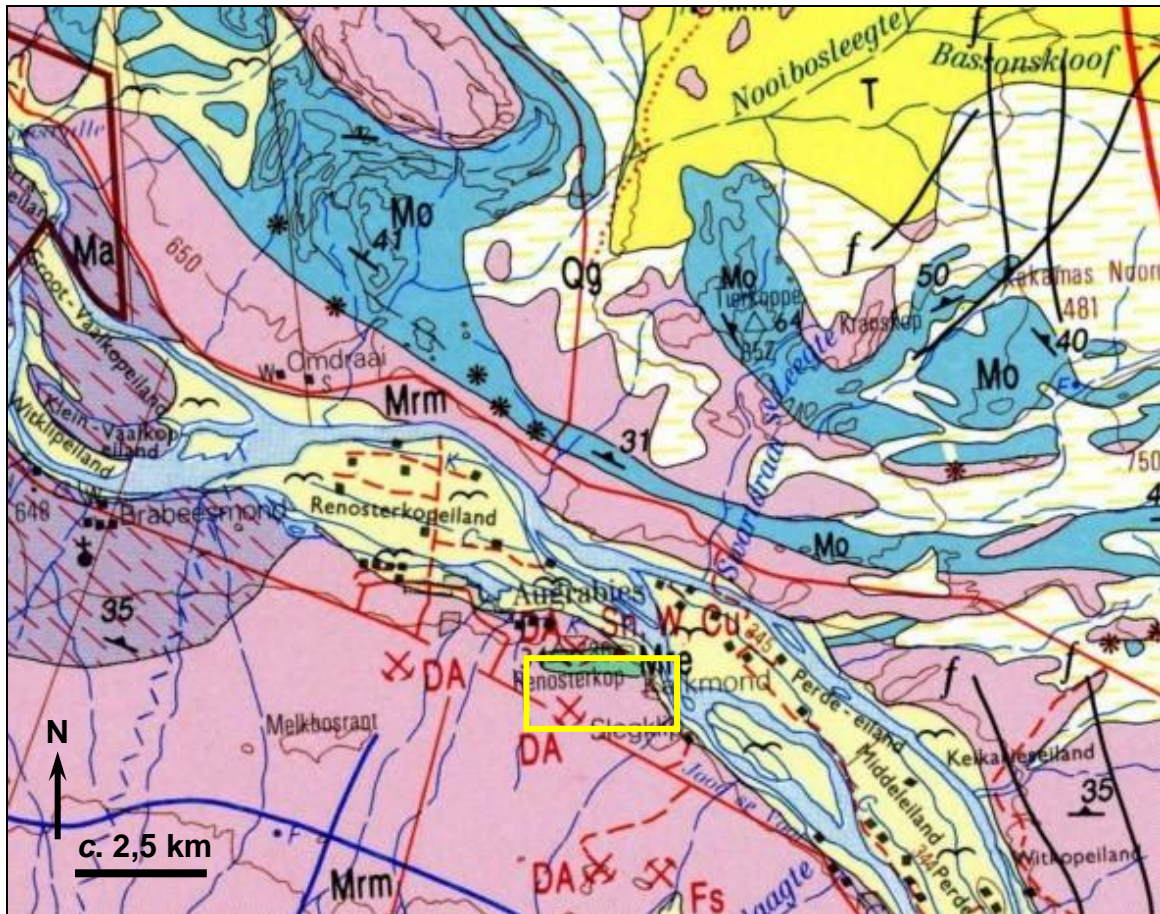


Figure 2. Extract from 1: 250 000 sheet 2820 Upington (Council for Geoscience, Pretoria) showing the geology of the Augrabies vineyard project study area (yellow rectangle) on the southern side of the Orange River and c. 11 km NW of Kakamas, Northern Cape. Bedrock units Ma (purple, Augrabies Gneiss) and Mrm (pink, Riemvasmaak Gneiss) beneath the study area are unfossiliferous Precambrian (Proterozoic) basement rocks of the Namaqua-Natal Metamorphic Province. Renosterkop ridge is likewise built of gneissose Precambrian rocks (Mre, pale green, Renosterkop Gneiss).

### 3. Conclusions & recommendations

In view of the low palaeontological sensitivity of both the ancient Precambrian bedrocks as well as of the geologically recent superficial sediments along the Orange River in the Kakamas – Augrabies region, the proposed agricultural development – including new vineyards and a short buried pipeline - is not considered to pose a significant threat to palaeontological heritage.

**Pending any significant new fossil discoveries in the area, no further specialist studies or mitigation are considered necessary for this agricultural project.**

All South African fossil heritage is protected by the National Heritage Resources Act, 1999. Should substantial fossil remains - such as vertebrate bones and teeth, or petrified logs of fossil wood - be

encountered at surface or exposed during construction, the ECO should safeguard these, preferably *in situ*. They should then alert the relevant provincial heritage management authority as soon as possible - *i.e.* SAHRA (Contact details: Dr Ragna Redelstorff, SAHRA, P.O. Box 4637, Cape Town 8000. Tel: 021 202 8651. Email: rredelstorff@sahra.org.za). This is to ensure that appropriate action (*i.e.* recording, sampling or collection of fossils, recording of relevant geological data) can be taken by a professional palaeontologist at the developer's expense.

These mitigation recommendations should be incorporated into the Environmental Management Programme (EMPr) for this agricultural project. Please note that:

- All South African fossil heritage is protected by law (South African Heritage Resources Act, 1999) and fossils cannot be collected, damaged or disturbed without a permit from SAHRA or the relevant Provincial Heritage Resources Agency;
- The palaeontologist concerned with potential mitigation work will need a valid fossil collection permit from SAHRA and any material collected would have to be curated in an approved depository (*e.g.* museum or university collection);
- All palaeontological specialist work should conform to international best practice for palaeontological fieldwork and the study (*e.g.* data recording fossil collection and curation, final report) should adhere as far as possible to the minimum standards for Phase 2 palaeontological studies developed by SAHRA (2013).

#### 4. 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.

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CORNELL, D.H., THOMAS, R.J., MOEN, H.F.G., REID, D.L., MOORE, J.M. & GIBSON, R.L. 2006. The Namaqua-Natal Province. *In*: Johnson, M.R., Anhaeusser, C.R. & Thomas, R.J. (Eds.) The geology of South Africa, pp. 461-499. Geological Society of South Africa, Marshalltown.

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SAHRA 2013. Minimum standards: palaeontological component of heritage impact assessment reports, 15 pp. South African Heritage Resources Agency, Cape Town.

#### 5. 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, Limpopo, Mpumalanga, Northwest and Free State under the aegis of his Cape Town-based company *Natura Viva cc*. He was 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 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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