

**Palaeontological Impact Assessment for the proposed  
Eskom Lephhalale Customer Network Centre (CNC)  
Project, Limpopo**

**Desktop Study**

**For  
Landscape Dynamics  
Environmental Consultants**

**19 May 2014**

**Prof Marion Bamford**  
Evolutionary Studies Institute  
University of the Witwatersrand  
P Bag 3, WITS 2050  
Johannesburg, South Africa

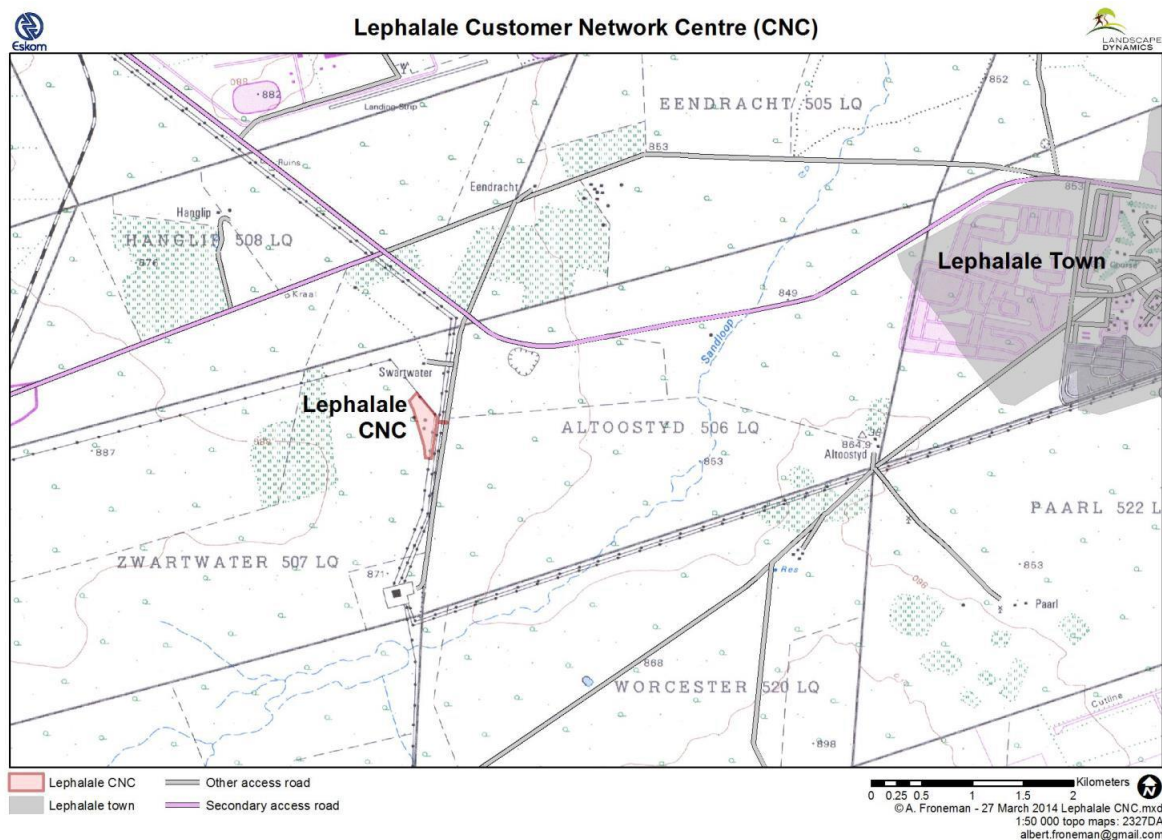
# Palaeontological Impact Assessment for the proposed Eskom Lephale Customer Network Centre (CNC) Project, Limpopo

## Background

As requested by Landscape Dynamics Environmental Consultants (Ms Annelize Grobler) here is a palaeontological desktop study for the proposed construction of a customer network centre (CNC) for their clients, Eskom. The proposed site is located on the farm Zwartwater 507-LQ situated west of Lephale, south of Matimba Power Station and east of the Medupi Power Station in the Limpopo Province. In accordance with the national legislation (National Heritage Act (Section 25 of 1999)) any sites to be developed must be assessed for the occurrence of any palaeontological material. If any fossils are likely to be present then their importance and rarity must be gauged and if they are important then plans must be put in place to remove the fossils (under a SAHRA permit and housed in a recognized institution), protect them and/or divert the proposed construction.

## Methods

The published geological and palaeontological literature, unpublished records and databases were consulted to determine if there are any records of fossils from the sites and the likelihood of any fossils occurring there.



**Figure 1.** Location of proposed development. Map supplied by Landscape Dynamics

## Geology and Palaeontology

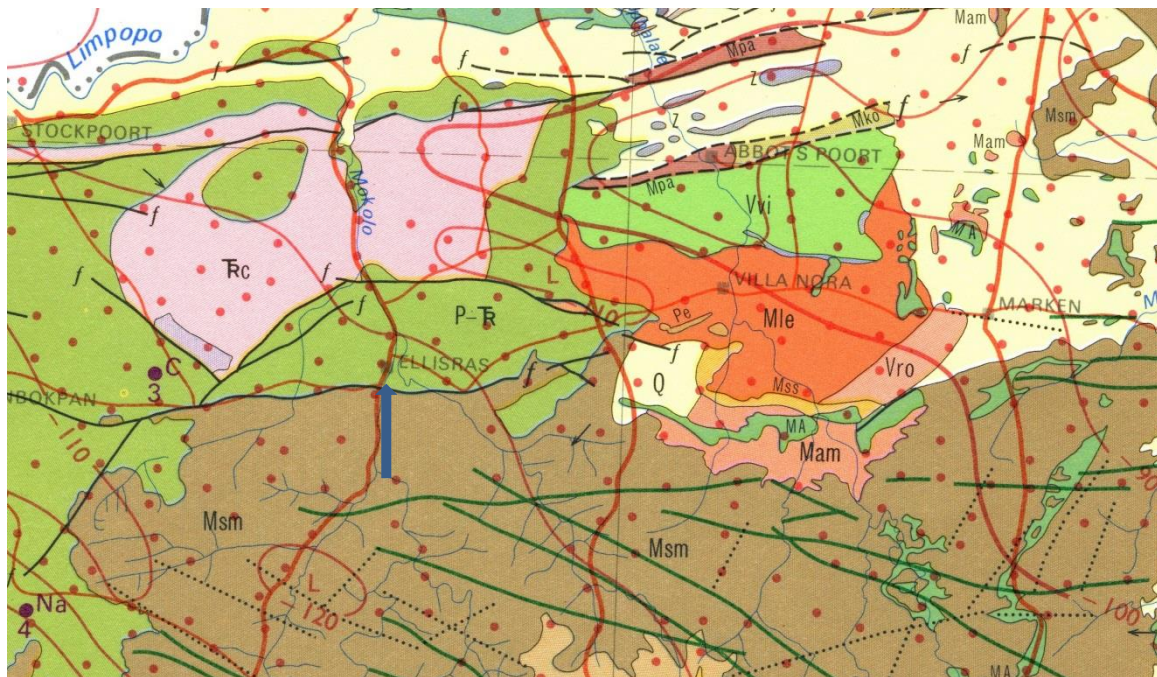


Figure 2. Geological map of the surrounding area of Lephalale (formerly Ellisras) (arrow). Abbreviations of the rock types are explained in Table 1. Map enlarged from the Geological Survey 1: 1 000 000 map 1984.

Symbol	Group/Formation	Lithology	Approximate Age
Q	Quaternary	Alluvium, sand, calcrete	Recent
Trc	Clarens Formation	Sandstone, siltstone	Ca. 220 Ma
P-Tr	undifferentiated	Shales, sandstones, mudstones, coal	Permian and Triassic, Karoo; 280-200 Ma
Msm	Waterberg Group, Sandriviersberg and Mogalakwena Formations	Sanstone and conglomerate	Ca. 2000 Ma
Mle	Lebowa Granite Suite	granite	2050 Ma

Table 1: Explanation of symbols for the geological map and approximate ages taken from Eriksson et al., (2006).

The Karoo Supergroup is very poorly exposed in the Ellisras Basin (Johnson et al., 2006) but from borehole data the underlying sediments comprise a number of Formations with coal seams. The underlying Formations are from top (youngest) down to oldest are the Clarens Formation, Lisbon formation, Greenwich Formation and six others. There are a few outcrops of the Clarens Formation in the general area (but not on the proposed site) which is predominantly aeolian. The next Formation, the Lisbon Formation is predominantly of fluvial origin with some aeolian contribution but has no plant material preserved (Johnson et al., 2006: 489).

The proposed CNC building and access road construction is not likely to penetrate below the usual building regulation foundations of 1-2m depth and so will not penetrate any of the other sedimentary layers.

### **Recommendation**

Since the rocks in this region are either mostly much too old (Archaean in age) to contain fossils or no fossils have been recorded on the surface (previously agricultural land) it is extremely unlikely that any fossils will be found in the proposed construction area. If, however, any fossils are discovered during the construction then it is strongly recommended that a palaeontologist be called to assess their importance and rescue them if necessary.

As far as the palaeontology is concerned the proposed development can go ahead. A phase 2 study is not necessary.

### **References**

Cowan, R., 1995. History of Life. 2<sup>nd</sup> Edition. Blackwell Scientific Publications, Boston. 462pp.

Erikssen, P.G., Altermann, W., Hartzler, F.J., 2006. The Transvaal Supergroup and its pre-cursors. In: Johnson, M.R., Anhaeusser, C.R. and Thomas, R.J., (Eds). The Geology of South Africa. Geological Society of South Africa, Johannesburg / Council for Geoscience, Pretoria. pp 237-260.

Johnson, M.R., van Vuuren, C.J., Visser, J.N.J., Cole, D.I., Wickens, H.deV., Christie, A.D.M., Roberts, D.L., Brandl, G., 2006. Sedimentary rocks of the Karoo Supergroup. In: Johnson, M.R., Anhaeusser, C.R. and Thomas, R.J., (Eds). The Geology of South Africa. Geological Society of South Africa, Johannesburg / Council for Geoscience, Pretoria. Pp 461 – 499.