

# **D-1867 UPGRADE, KWAZULU-NATAL DESK-TOP PALAEOLOGY REPORT**

## **FOR**

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## **BY**

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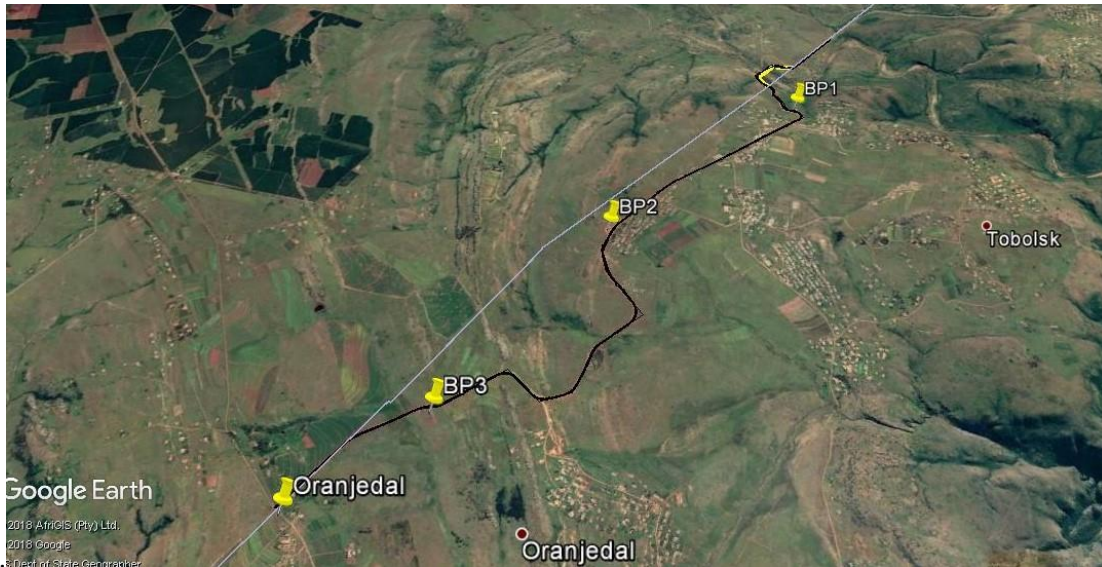
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## **EXECUTIVE SUMMARY**

According to the geology, there is little likelihood of any vertebrate fossils being found within this area. Impact is low and no mitigation required.

## 1. PROPOSED PROJECT

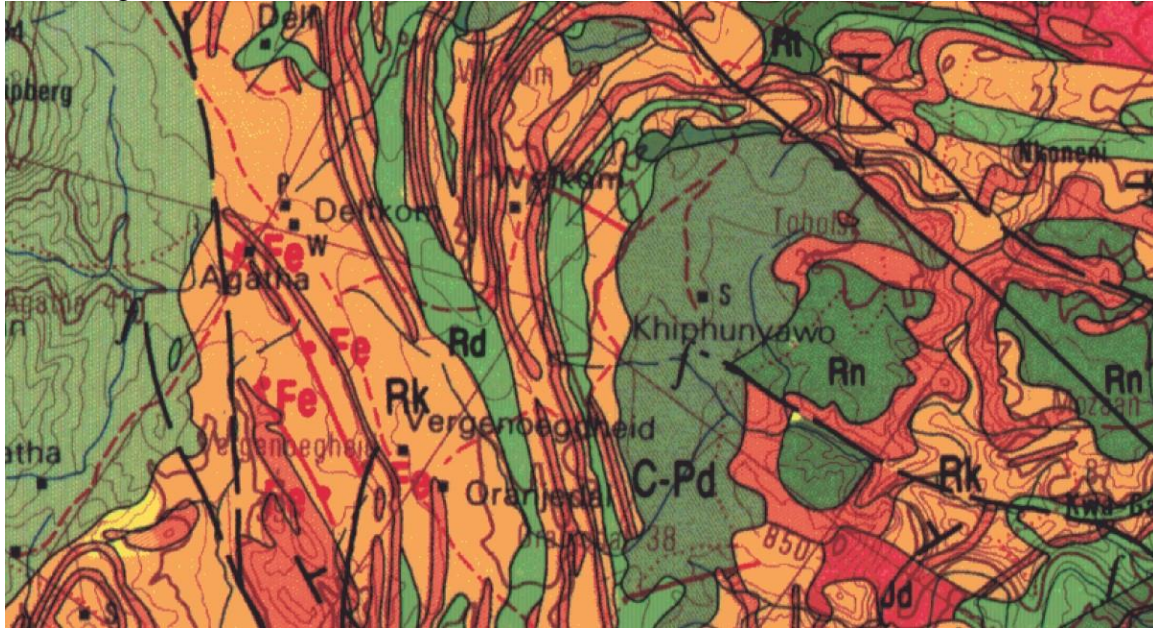
The D1867 is situated within the uPhongola Municipality of KwaZulu-Natal. The proposed upgrade comprises of a 10.5 km section of D 1867 in length starting at km 6 and ending at km 16.5. The project will include the upgrade of roads, and bridges. The project will also include the construction of borrow pits however the details are not yet available (Fig. 1).



**Fig. 1: Location Map (Image source GoogleEarth).**

## 2. GEOLOGY

The proposed road upgrade starts in the Dwyka Group (C-Pd) and continues into basement (Rk and Rd). Dolerite (Red: Jd) dykes and sills may be encountered on the route (Fig. 2).



*Fig. 2: Extract from the Vryheid 2730 1: 250 000 Geological map.*

The dolerite (Jd: Fig. 2) is intrusive and of late Karoo age (184 Ma) and represents the onset of the break-up of the Gondwana Supercontinent. Break-up was complete by 140 Ma. Dolerite is an igneous rock and is unfossiliferous.

From Fig. 2, Rk (shale, quartzite, subordinate iron rich shale, Banded Iron formation, conglomerate and lava), Rd (diabase) represent rocks of the Randian basement (2,500 – 3,000 Ma). The diabase (Rd) is a dolerite which has undergone greenschist metamorphism.

Sediments which now constitute the Dwyka Group were deposited during the Late Palaeozoic Glaciation (locally known as the Dwyka Glaciation). This was a world wide event. In the Southern African region, the glaciation commenced, at the end of the Carboniferous at 305 to 307 Ma (Visser, 1997), and ended in the Early Permian at about 290 Ma (Wopfer, 2002). This group can be further subdivided into the Elandsvlei and the Mbizane Formations (von Brunn & Visser, 1999). In the project area the Mbizane Formation predominates. This a generally sandy unit, with very little fine deposits.

### 3. PALAEOLOGY

Randian age rocks (2,500 – 3, 000 Ma) may contain unicellular microfossils. Although multi-cellular life only came into existence ~ 600 Ma, prior to this the world was dominated by single-celled life. These microfossils are the subject of academic study, but are very common when they are found.

In theory vertebrate fossils could be found within the Mbizane Formation of the Dwyka Group but none have been recorded to date. Trace fossils may be encountered but these are common.

### 4. IMPACTS

- **Impact: Low**
- **Mitigation: None required**

### 5. CONCLUSIONS

According to the geology, there is little likelihood of any vertebrate fossils being found within this area. Impact is low and no mitigation required.

### 6. REFERENCES

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