

Palaeontological Desktop Assessment of the proposed upgrade of Road D620 and Road D621, near Winterveld, Northwest Province.

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Summary

The proposed study area is underlain by palaeontologically insignificant Bushveld Complex granites capped by derived soils, coarse sands and alluvium considered to be of low palaeontological sensitivity. However, in the remote possibility that localized fossil material is discovered exposed within intact superficial overburden along the tributaries of the Soutpanspruit during the development phase, a professional palaeontologist must be called in immediately to confirm and record the finds. Taking this into account, the proposed development may proceed, provided that all excavation activities are restricted to within the boundaries of the development footprint.

Introduction

The report is an assessment of potential palaeontological impact with regard to the proposed upgrade of a section of Road D620 and D621 near Winterveld, situated about 12 km northwest of Shoshanguve in Northwest Province (**Fig. 1 & 2**).

Maps

1:50 000 scale topographic 2527BD Jericho and 2528AC Shoshanguve

1:250 000 scale geological map 2528 Pretoria

Site Coordinates:

Road D620

A) 25°26'37.33"S 28° 0'35.41"E

B) 25°22'29.06"S 28° 0'59.30"E

Road D621

A) 25°26'47.23"S 28° 0'50.46"E

B) 25°25'29.92"S 28° 2'59.72"E

Methodology

The assessment was carried out in accordance with National Heritage Resources Act 25 of 1999 with the aim to assess the potential impact on palaeontological heritage resources that may result from the proposed development. The palaeontological significance of the affected areas were evaluated through a desktop study and carried out on the basis of existing field data, database information and published literature.

Assumptions and Limitations

The assessment provided within this report is based upon a desktop study without the benefit of a site visit. The presentation of geological units present within the study area is derived from the 1:1 000 000 scale geological map of South Africa and the 1:250 000 scale geological map 2528 Pretoria, which may vary in their accuracy. It is also assumed, for the sake of prudence, that fossil remains are always uniformly distributed in fossil-bearing rock units, although in reality their distribution may vary significantly.

Background

According to the 1:1Ma geological map of Southern Africa and 1:250 000 scale geological map 2528 Pretoria, the proposed development footprint is set predominantly in Nebo Granite, (Bushveld Complex, Coertze et al. 1978). Large parts of the countryside are covered by coarse sands and grits derived from weathering of the underlying Nebo granite. Surrounding areas are covered by unconformably overlying Karoo sediments including Permian Ecca Group equivalent sediments (Hammanskraal Formation) and Triassic mudstones (Irrigasie Formation) or by alluvium (mostly sand).

Surface exposures are poor, but Glossopterid flora has been recorded within the Hammanskraal Formation especially in the coal zone at top of the succession, and mostly from borehole cores. Ancient human skeletal and associated Florisian faunal remains discovered at Tuinplaats (Springbok Flats) have been discovered in geologically recent calcareous soils (Quaternary overburden) at a depth of ± 1.0 m (Pike *et al.* 2004). There is currently no record of Quaternary fossil sites within the immediate vicinity of the development footprint. The latter is located about 3.6 km west-southwest of the

palaeontologically significant, 1.13 km-diameter, Tswaing impact crater, which will not be impacted by the proposed development.

Impact Statement Recommendation

The desktop investigation indicates that the proposed study area is underlain by palaeontologically insignificant Bushveld Complex granites that are capped by superficial (Quaternary) deposits considered to be of low palaeontological sensitivity. However, any development occurring within 50 m of a river bank may affect suitably developed overbank sediments (superficial alluvial deposits) with a low to moderate likelihood that it could yield Quaternary vertebrate fossil remains. Therefore, in the remote possibility that localized fossil material is discovered exposed within intact superficial overburden along the tributaries of the Soutpanspruit during the development phase (located between coordinates 25°25'53.65"S 28° 1'56.66"E and 25°25'45.92"S 28° 2'8.45"E , **Fig. 5**), it will in all probability resemble modern-looking, but more or less lithified animal bones and teeth and it will most likely be those belonging to bovids (Bovidae: the biological family of ruminant mammals that includes wildebeest, buffalo, antelopes, etc.). In such a case, a professional palaeontologist must be called in immediately to confirm and record the finds. In the meantime, *ex situ* remains must be wrapped in paper towels or heavy duty tin foil and stored in a safe place. The material should not be washed or cleaned in any way. *In situ* material must be kept in place and protected from further damage by covering it with light but rigid object like a box, bucket or metal sheet until further confirmation by the palaeontologist.

Taking this into account, the proposed development may proceed, provided that all excavation activities are restricted to within the boundaries of the development footprint.

References

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DECLARATION OF INDEPENDENCE

I, Lloyd Rossouw, declare that I act as an independent specialist consultant. I do not have or will not have any financial interest in the undertaking of the activity other than remuneration for work as stipulated in the terms of reference. I have no interest in secondary or downstream developments as a result of the authorization of this project.

A handwritten signature in black ink, appearing to read 'L. Rossouw', written in a cursive style.

23 / 11 / 2018

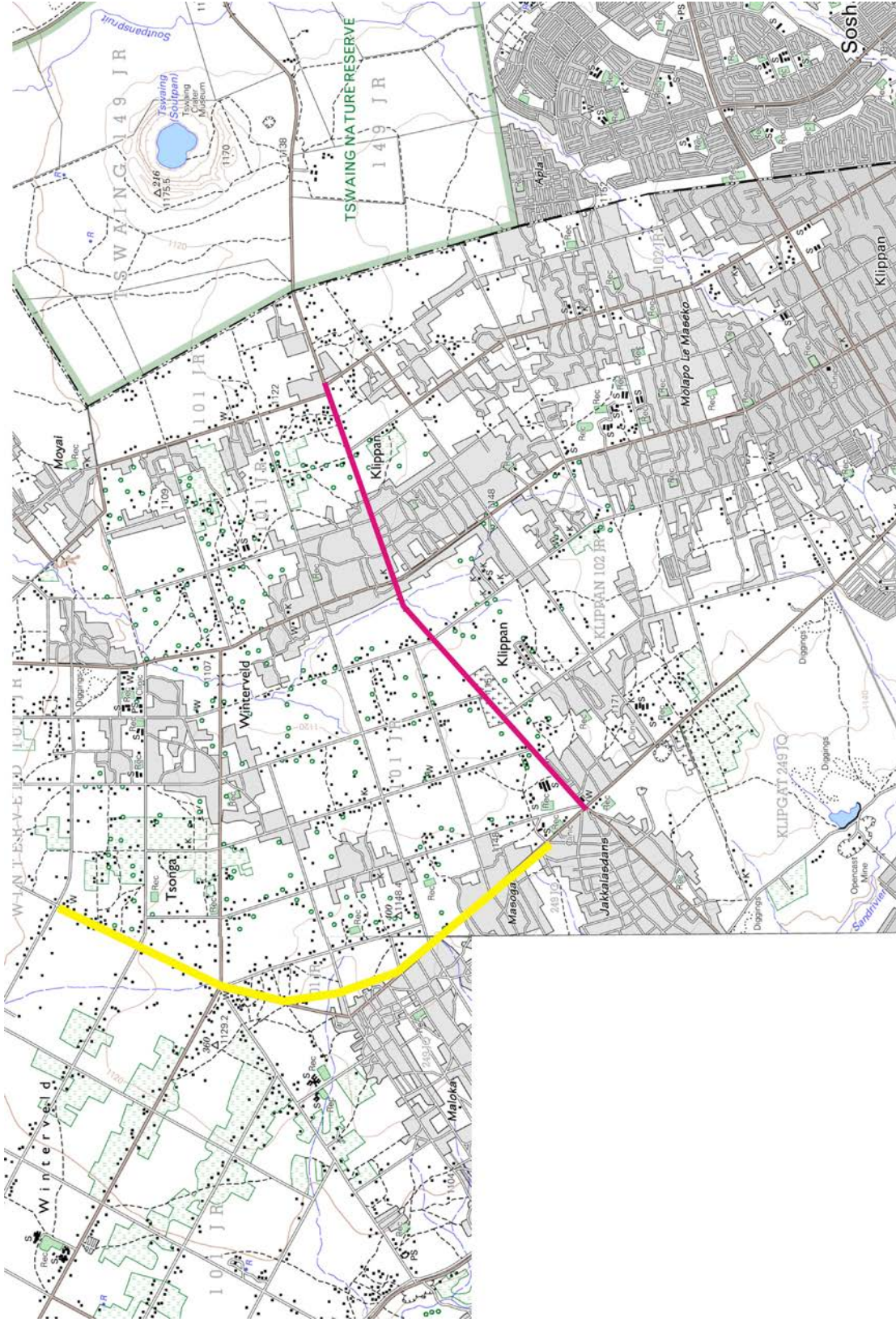


Figure 1. Map of the proposed development footprints on Road D620 (left) and D621 (right) (portions of 1:50 000 scale topographic 2527BD Jericho and 2528AC Shoshanguve).

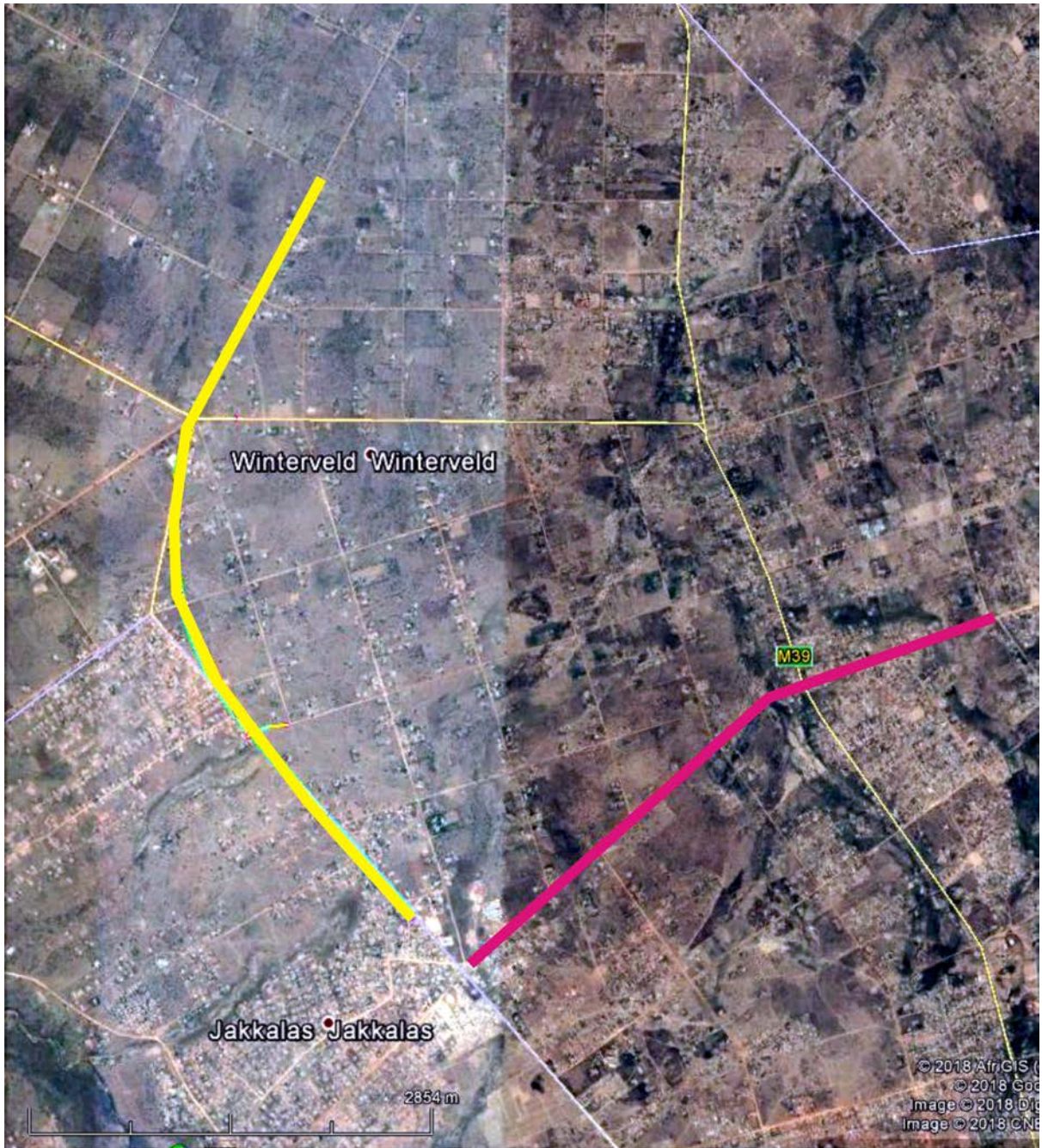


Figure 2. Aerial view of the proposed development footprints.

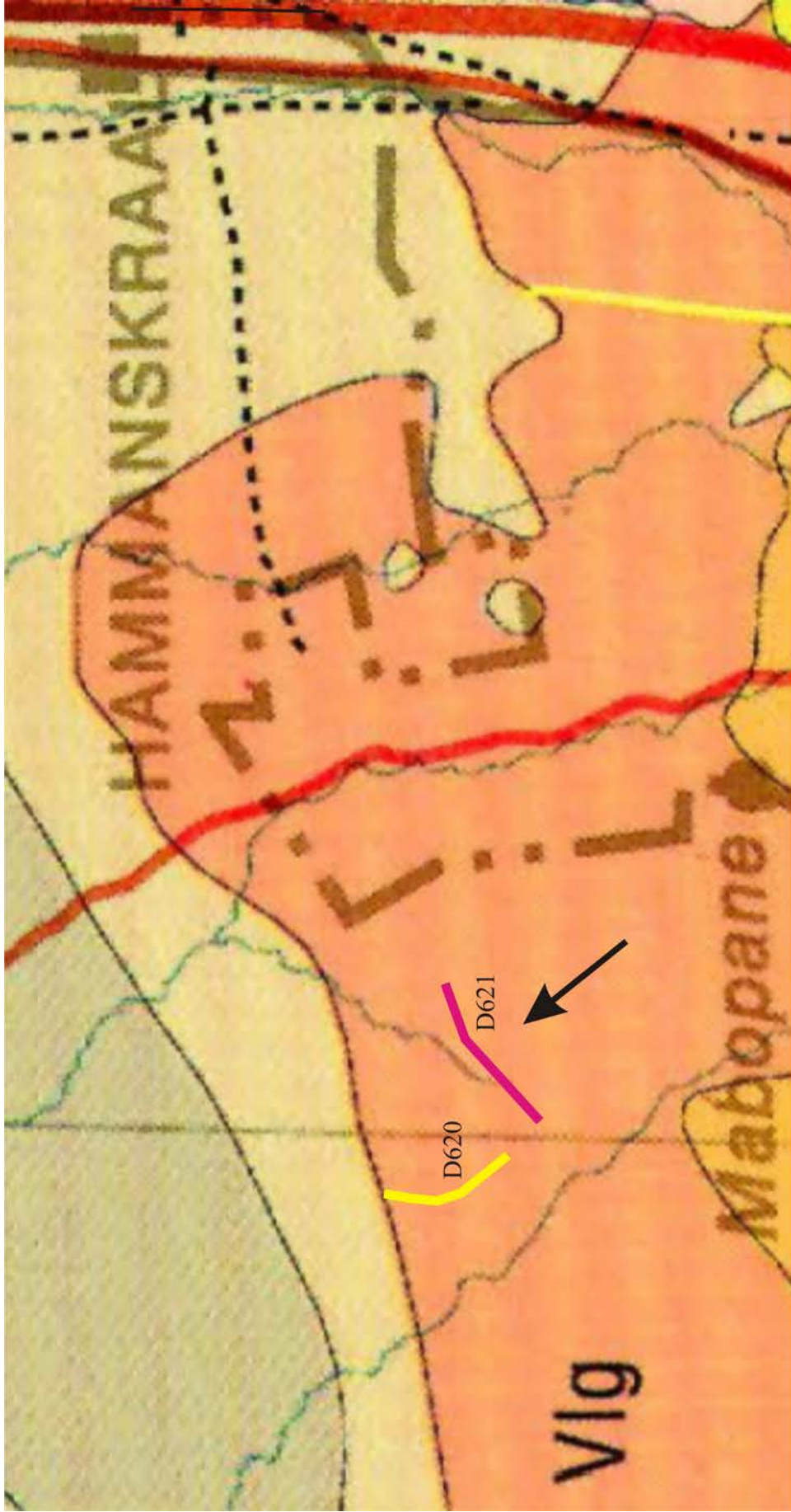


Figure 3. Portion of 1:1Ma scale geological map of the area showing the study areas set predominantly within Bushveld Complex granites (Vlg).



Figure 4. The study area is located about 3.6 km west-southwest of the palaeontologically significant, 1.13 km-diameter, Tswaing impact crater, which will not be impacted by the proposed development.

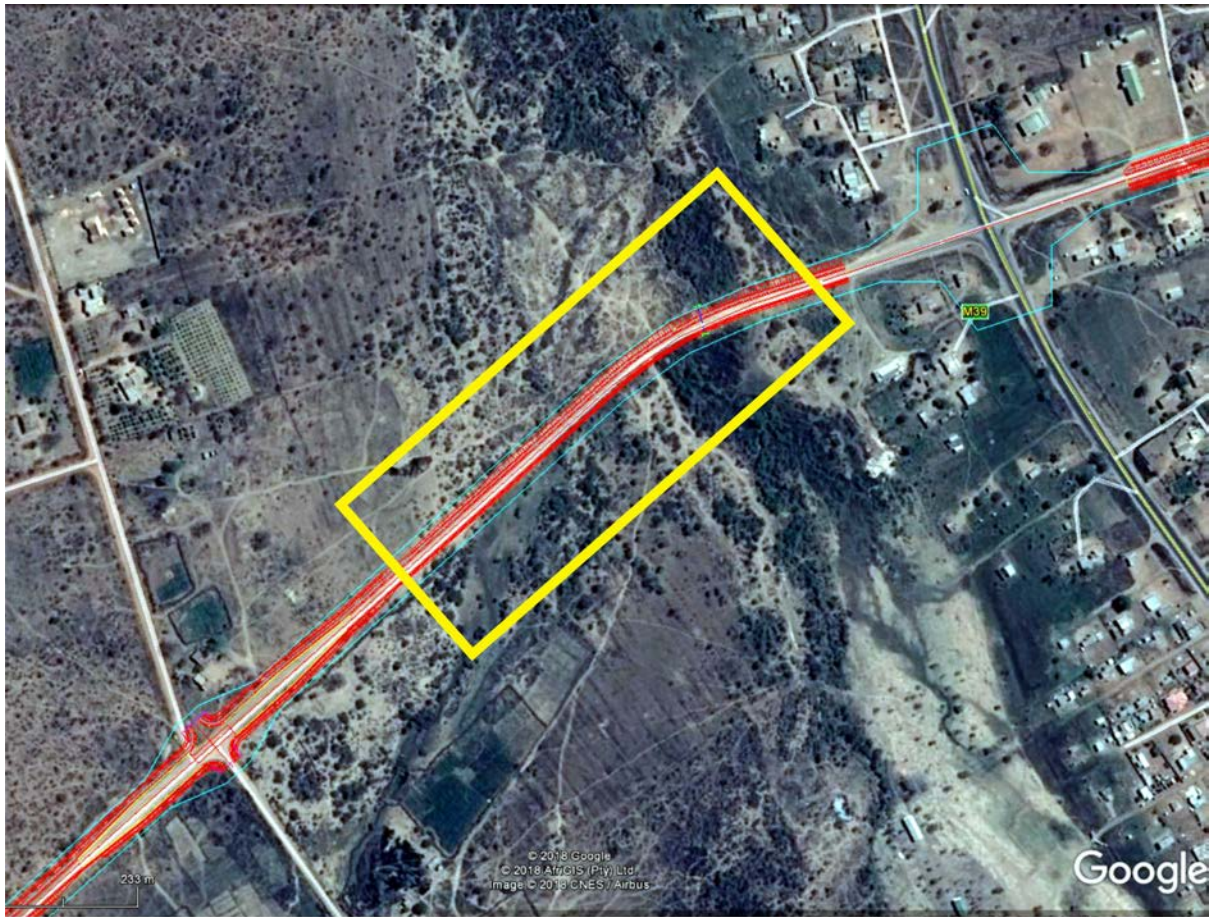


Figure 5. Aerial view of potentially intact superficial overburden along the tributaries of the Soutpanspruit along D621 located between coordinates 25°25'53.65"S 28° 1'56.66"E and 25°25'45.92"S 28° 2'8.45"E).