

**Phase 1 Palaeontological Impact Assessment for
structure locations marked along the proposed new 9
km-long section of the Helios power line near
Loeriesfontein, Northern Cape Province.**



Report prepared for HCAC Consultants by
Palaeo Field Services PO Box 38806
Langenhovenpark 9330

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Summary

The report is a final assessment of potential palaeontological impact with regard to structure locations marked **HEL/8TRA 2 to HEL/8TRA 16**, as recommended following a desktop assessment for a proposed new 9 km-long section of the Helios power line near Loeriesfontein. The Phase 1 assessment indicates that the marked structure locations are underlain by Ecca or dolerite bedrock and superficial deposits that will not be exposed to adverse palaeontological impact by the proposed development. It is advised that the construction of the proposed new 9 km-long section of the Helios power line can proceed without further palaeontological assessment.

Introduction

The report is a final assessment of potential palaeontological impact with regard to structure locations marked **HEL/8TRA 2 to HEL/8TRA 16**, as recommended following a desktop assessment for a proposed new 9 km-long section of the Helios power line near Loeriesfontein (Rossouw 2017). The site is located on the farm Sous 226, about 58 km north of Loeriesfontein in the Northern Cape Province (**Fig. 1 & 2**). The assessment is required as a prerequisite for new development in terms of the National Heritage Resources Act 25 of 1999. The Act identifies what is defined as a heritage resource, the criteria for establishing its significance and lists specific activities for which a heritage specialist study may be required. In this regard, categories of development relevant to the proposed development are listed in Section 34 (1), Section 35 (4), Section 36 (3) and Section 38 (1) of the Act, which also include the protection of geological and paleontological sites as well as palaeontological objects and material, meteorites and rare geological specimens. According to the SAHRIS Palaeo Sensitivity Map of South Africa (2016), the proposed development footprint is located within an area considered to be of moderate palaeontological sensitivity and for that reason requires a palaeontological desktop assessment

Methodology

The palaeontological significance of the affected areas was evaluated via a pedestrian survey as part of the field assessment.

Locality data

The structure locations are located on the farm Sous 226, about 58 km north of Loeriesfontein (**Fig. 3, Table 1**).

1:50 000 scale topographic map 3019BC Boegoefontein

1:250 000 scale geological map 3018 Loeriesfontein

Site coordinates (**Fig. 2**): A) 30°29'50.53"S 19°33'37.75"E to B) 29 30°25'52.26"S 19°36'38.74"E.

Field Assessment

The field assessment focused on structure locations that are potentially situated near or within potentially fossiliferous (Miocene to Plio-Pleistocene) gravelly alluvial deposits and pan sediments near water courses, depression margins and pan dune deposits related to infill deposits (drainage depressions) of the Carnarvon Leegte and associated gravel terraces of the palaeo- Sak River which was once part of the ancient Koa Valley (**Fig. 4**). The resulting survey (**Fig. 5 & 6**) indicates that the marked structure locations are primarily underlain by a mantle of gravelly sand, capped by a coarse gravel veneer (**Fig. 7**) and sandy alluvium within a down-wasted gravel matrix near ephemeral stream incisions (**Fig. 8**). No evidence of fossil remains or fossil exposures was observed.

Impact Statement and Recommendation

The field assessment indicates that the marked structure locations are underlain by Ecca or dolerite bedrock and superficial deposits that will not be exposed to adverse palaeontological impact by the proposed development. It is advised that the construction of the proposed new 9 km-long section of the Helios power line can proceed without further palaeontological assessment.

References

Rossouw L. 2017. *Palaeontological Desktop Assessment of the proposed new 9 km-long section of the Helios power line near Brandvlei, Northern Cape Province*. Report prepared for HCAC Consultants by Palaeo Field Services.

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.



22 / 11 / 2017

Table & Figures

Table 1. Site coordinates of the relevant structure locations.

Structure loc. number	Coordinates	
HEL/8TRA 2	30°29'44.33"S	19°33'37.08"E
HEL/8TRA 3	30°29'38.20"S	19°33'37.19"E
HEL/8TRA 4	30°29'31.75"S	19°33'37.29"E
HEL/8TRA 5	30°29'24.62"S	19°33'37.42"E
HEL/8TRA 6	30°29'17.94"S	19°33'37.53"E
HEL/8TRA 7	30°29'11.52"S	19°33'37.64"E
HEL/8TRA 10	30°28'55.57"S	19°33'36.68"E
HEL/8TRA 11	30°28'48.91"S	19°33'36.63"E
HEL/8TRA 12	30°28'43.29"S	19°33'36.58"E
HEL/8TRA 13	30°28'37.18"S	19°33'42.41"E
HEL/8TRA 14	30°28'30.65"S	19°33'48.65"E
HEL/8TRA 15	19°33'48.65"E	19°33'55.01"E
HEL/8TRA 16	30°28'16.88"S	19°34'1.78"E



Figure 2. Aerial view of the proposed development footprint.



Figure 3. Potentially sensitive areas marked for inspection include thinly laminated grayish black to black mudrock exposures, water courses, linear depressions and well-developed pan dune deposits.

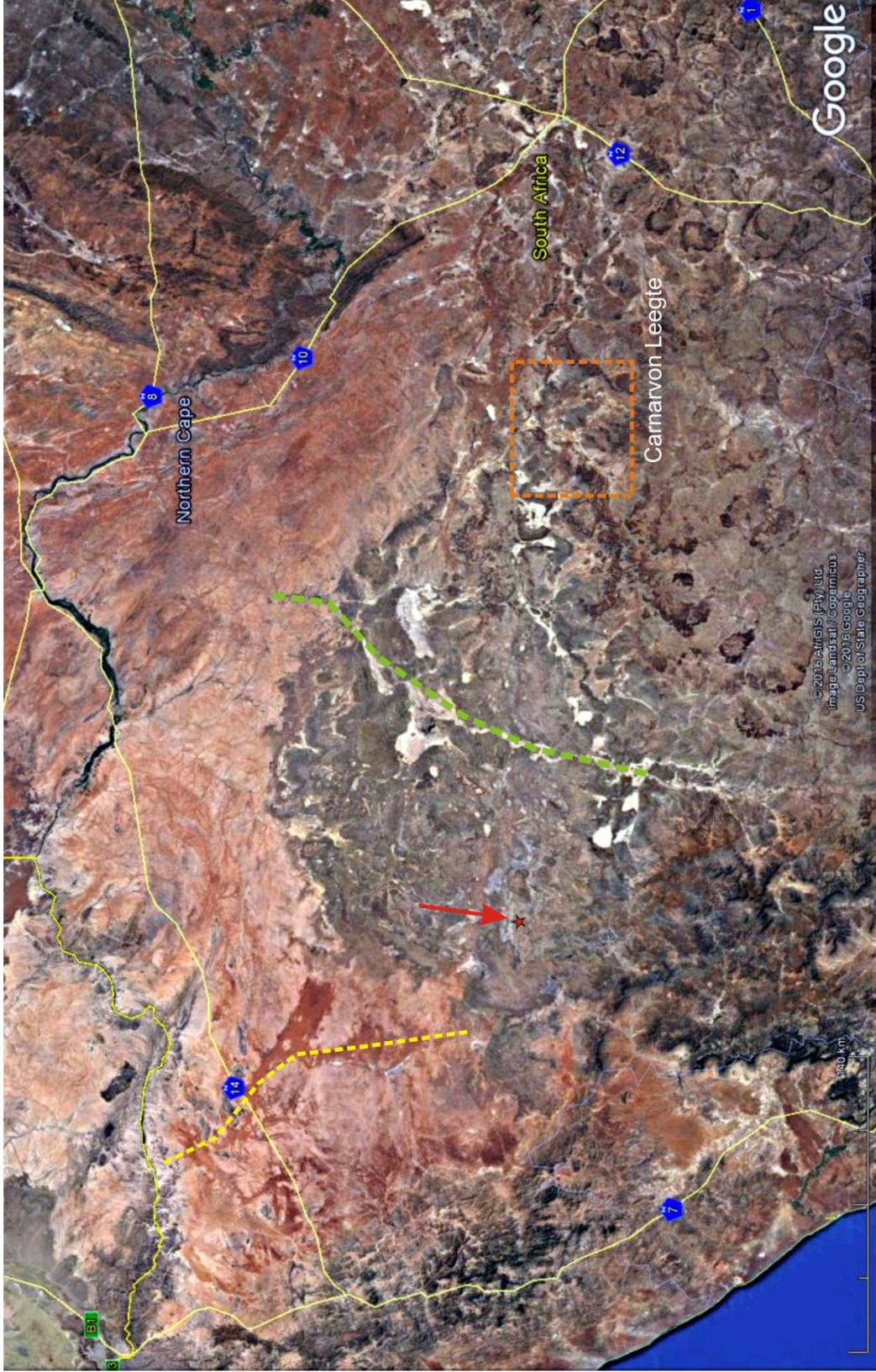


Figure 4. Tertiary Sak River and Koa Valley fluvial systems (green and yellow line, respectively). Helios footprint marked by red star.

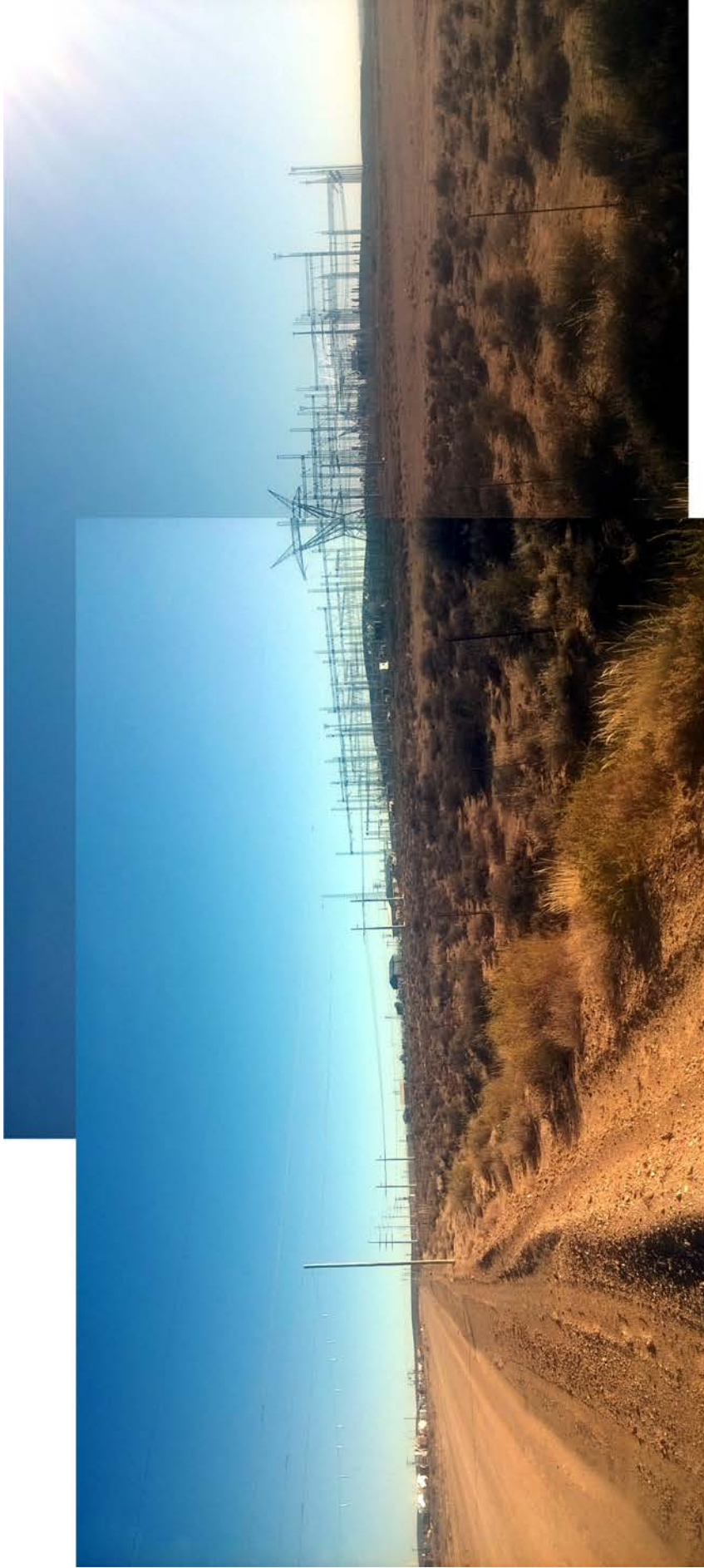


Figure 5. General view of the terrain, looking north towards the substation (point A).



Figure 6. Panoramic view of the terrain, looking west-northwest towards structure location HEL/8TRA 16



Figure 7. The structure locations are primarily underlain by a mantle of gravelly sand, capped by a coarse gravel veneer.
Scale 1 = 10 cm.



Figure 8. Sandy alluvium within a down-wasted gravel matrix near ephemeral stream incisions (top) and linear depressions (below).