

Phase 1 Palaeontological Impact Assessment with regard to proposed Township development on the Farm Lilyvale 30/2313, Bloemfontein, Free State Province.

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16 January 2017

Summary

The proposed development footprint is underlain by palaeontologically insignificant Jurassic dolerites. The site is also regarded as of low palaeontological significance with regards to the superficial residual soils capping the dolerite in places (Quaternary overburden). This is mainly due to a lack of suitable alluvial/fluvial deposits at the site. As far as the palaeontological heritage is concerned, the proposed development may proceed with no additional heritage assessments necessary, provided that all excavation activities are restricted to within the boundaries of the development footprint.

Introduction

A Phase 1 Heritage Impact assessment was carried out with regard to planned township development on the Farm Lilyvale 30/2313 in Bloemfontein, FS Province. (**Fig. 1**). The assessment is required as a prerequisite for new development in terms of the National Environmental Management Act and is also called for in terms of the National Heritage Resources Act (NHRA) 25 of 1999. The region's unique and non-renewable archaeological heritage sites are 'Generally' protected in terms of the National Heritage Resources Act (Act No 25 of 1999, section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority. As many such heritage sites are threatened daily by development, both the environmental and heritage legislation require impact assessment reports that identify all heritage resources in the area to be developed, and that make recommendations for protection or mitigation of the impact of such sites.

Methodology

The heritage significance of the affected area was evaluated on the basis of existing field data, database information and published literature. This was followed by a field assessment by means of a pedestrian survey. A Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a digital camera were used for recording purposes. Maps and aerial photographs (incl. Google Earth) were consulted and integrated with data acquired during the on-site inspection.

Terms of Reference

The task involved the following:

- Identify and map possible heritage sites and occurrences using available resources.
- Determine and assess the potential impacts of the proposed development on potential heritage resources;
- Recommend mitigation measures to minimize potential impacts associated with the proposed development.

Locality Data

The site covers approximately 20 ha and is situated east of Bloemendal Street and about 1 km south of the Free State Botanical Gardens (**Fig. 2 & 3**).

Site Coordinates (Fig. 2):

A) 29° 3'42.62"S 26°12'44.40"E

B) 29° 3'41.61"S 26°12'57.53"E

C) 29° 4'5.65"S 26°12'46.37"E

D) 29° 4'2.09"S 26°12'36.79"E

Background

The geology of the Bloemfontein area has been described by Theron (1963). According to the 1:250 000 scale geological map of the area the site is situated within the Beaufort Group, Adelaide Subgroup (Karoo Supergroup), primarily represented by late Permian, Balfour Formation sedimentary rocks, which are made up of alternating and potentially fossil-bearing sandstone and mudstone layers. The palaeontological footprint around Bloemfontein is

primarily represented by Late Permian Karoo vertebrate fauna and Late Cenozoic (Quaternary) macrofossils (Broom 1909 a, b; Kitching 1977, 1995; Churchill *et al* 2000; Rossouw 1999, 2006). Quaternary-age surface deposits in the region can be highly fossiliferous in places, especially those that are directly related to fluvial environments along major river courses, or near spring areas and pans. Fossil assemblages, individual specimens and fossilized hyena burrows have been found preserved in Late Pleistocene alluvial sediments of the nearby Modder River and its tributaries.

Field Assessment

The proposed development footprint is underlain by intrusive Jurassic dolerites (Karoo Dolerite Suite) and associated contact metamorphic metasediments that are capped in places by a veneer of residual soil and sand (**Fig. 4**).

Impact Statement and Recommendations

Dolerite, in the form of dykes, sills or inclined sheets is not considered palaeontologically significant. The site is also regarded as of low palaeontological significance with regards to the superficial residual soils capping the dolerite in places (Quaternary overburden). This is mainly due to a lack of suitable alluvial/fluvial deposits at the site. As far as the palaeontological heritage is concerned, the proposed development may proceed with no additional heritage assessments necessary, 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 and have no conflicting interests in the undertaking of the activity.



16 / 01 / 2018

Figures

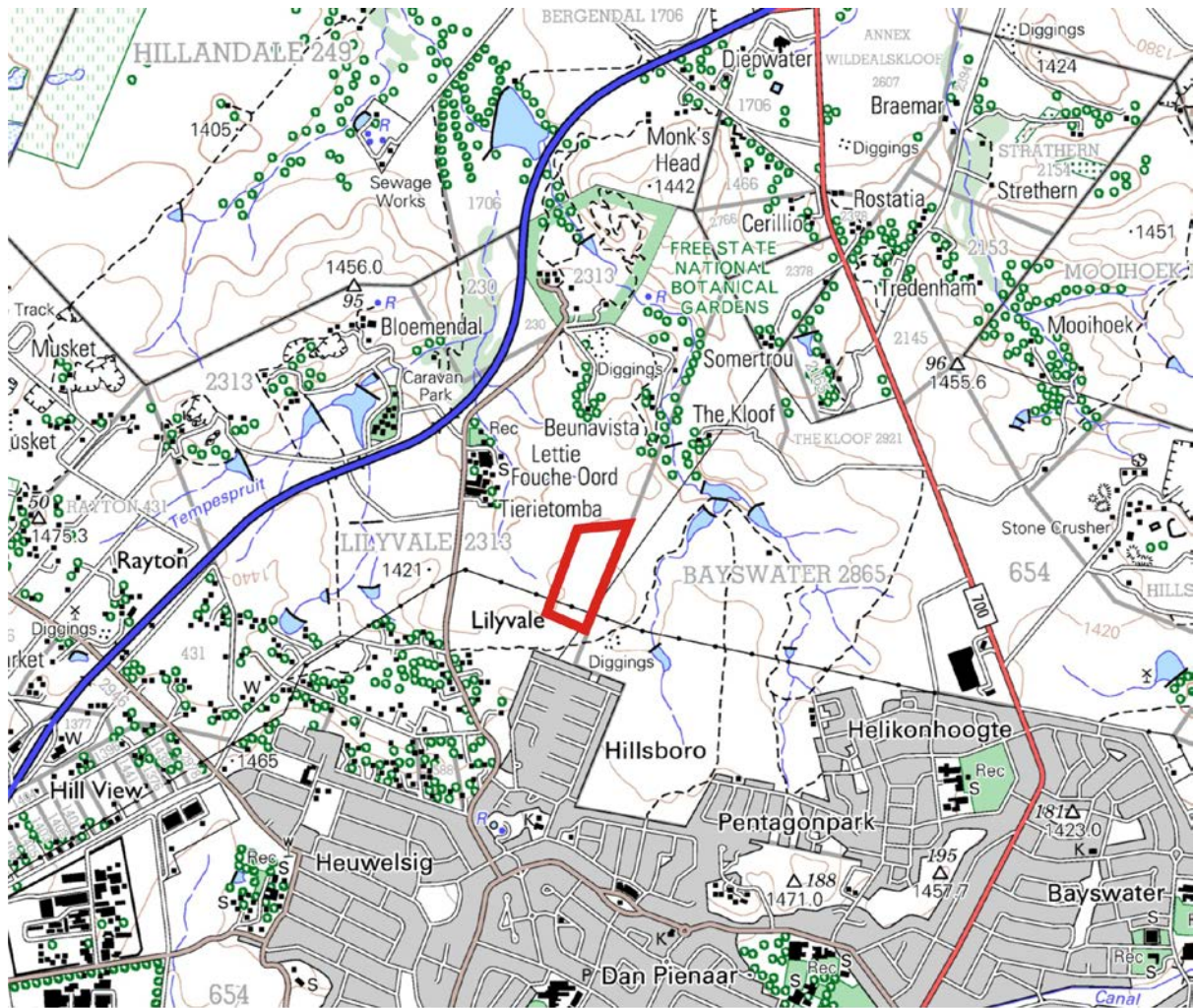


Figure 1. Map of the study area (portion of 1:50 000 scale topographic 2926 Bloemfontein).



Figure 2. Aerial view and layout of the site.

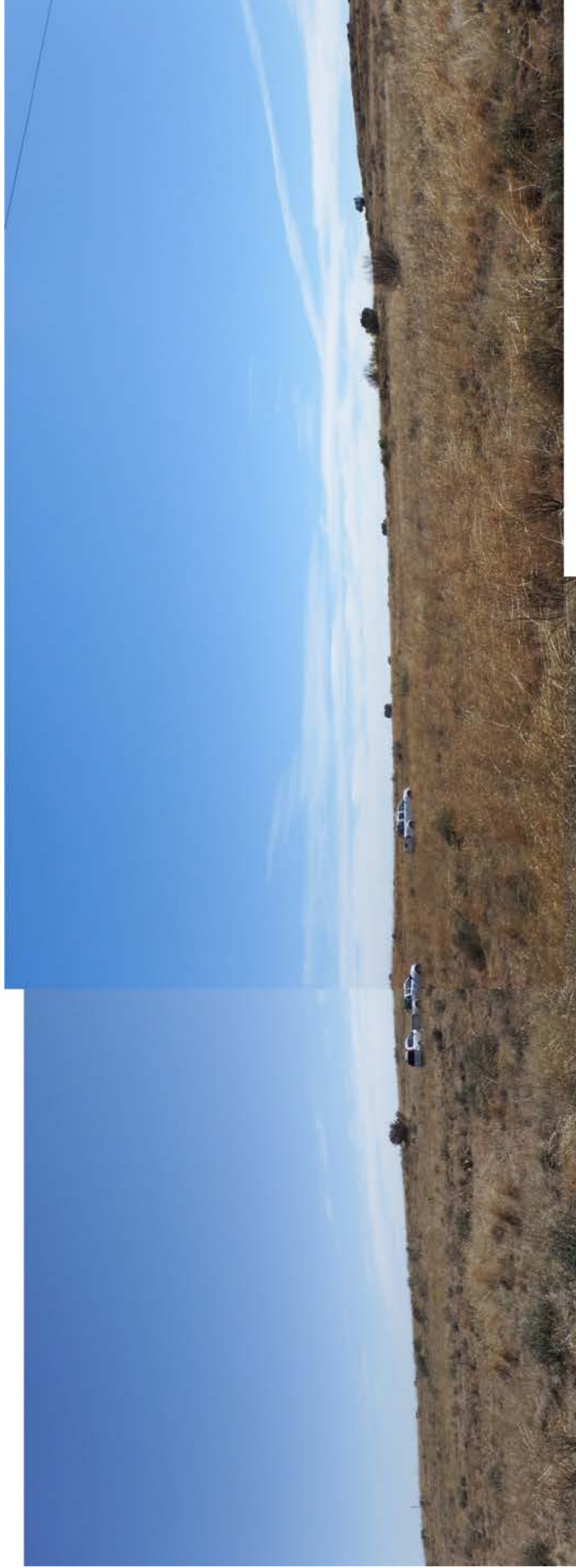


Figure 3. General view of the terrain, looking north.



Figure 4. Extensive dolerite outcrop, looking south (top), west (center) and southeast (bottom).