BPI for Palaeontological Research

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Engela Grobler
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Dear Ms Grobler,

Palaeontological Assessment – Lichtenburg Solar Park

As requested, I have undertaken a study to assess the possible affect on palaeontological heritage which will result from the setting up of a Solar Park on portion 10 of the Farm Lichtenburg Town and Townlands 27 IP close Lichtenburg in Northwest Province.

In my opinion this development will not negatively affect palaeontological heritage, but have made some mitigation suggestions.

Please come back to me if there is anything you do not understand or are unhappy with in the report.

Yours sincerely

Professor Bruce Rubidge PhD, Pr Sci Nat

LICHTENBURG SOLAR PARK, NORTHWEST PROVINCE - PALAEONTOLOGICAL IMPACT ASSESSMENT

Introduction

An impact assessment was undertaken to determine the effect on palaeontological heritage which could result from establishment of a proposed solar park and transmission line developments on portion 10 of the Farm Lichtenburg Town and Townlands 27 IP on the northern side of Lichtenburg in Northwest Province (Figure 1).

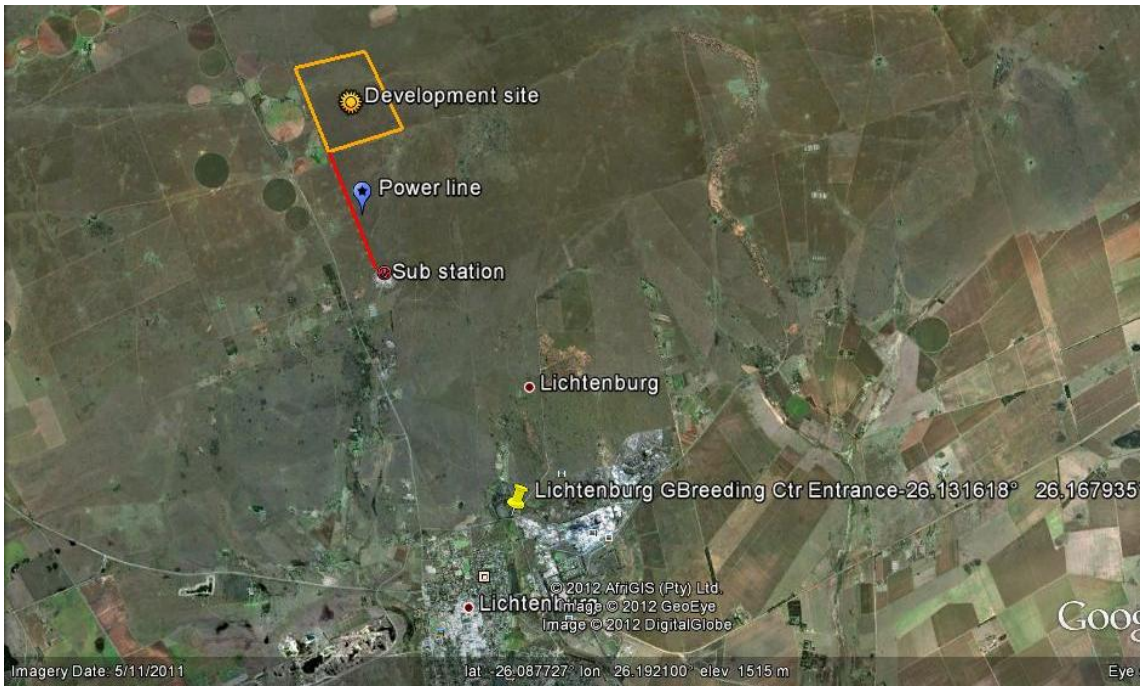

Figure 1: Google satellite image showing the site of the proposed solar park and the new power line linking it to the Watershed substation on portion 10 of the Farm Lichtenburg Town and Townlands 27IP close to Lichtenburg in Northwest Province.

Methodology Used

A site visit was undertaken to the study area. Using the map layout for the proposed Solar Park development (Figure 1) all the areas which will be affected by the development were visited to assess whether the development will have any impact on palaeontological heritage and the area was searched for possible fossil localities.

Generalised geology of the area affected

The properties on which the proposed development will take place are underlain by rocks of the Precambrian Monte Christo Formation, Malmani Subgroup of the Transvaal Supergroup. The entire area is covered by grassveld (Figure 2).

Figure 2: The entire study area is covered by grassveld

Specific geology of the area to be developed

Figure 3: In a few places in the study area there are outcrops of chert and quartzite.

The entire area affected by the development of the Solar Park on the portion 10 of the Farm Lichtenburg Town and Townlands 27 IP is underlain by rocks of the Monte Christo Formation, Malmani Subgroup of the Transvaal Sequence comprising mainly chert, quartzite, and dolomite. Rock outcrops are not extensive in the study area as most of the area is covered by soil and grassveld, but there are small isolated outcrops. In the

northwestern portion of the property where the solar plant will be located there are small outcrops of quartzite and chert (Figure 3) and south of this are a few small outcrops of dolomite (Figure 4).

Figure 4: Isolated outcrops of dolomite are present in the north of the study area.

Further south the soil covering becomes thicker as is evidenced by holes made by burrowing animals in the soil cover (Figure 5) and there are no rock outcrops. In fact the rock which does stick out though the soil covering appears to be isolated blocks which are not *in situ*.

Figure 5: Burrows show the thickness of soil covering in the southern part of the study area.

Palaeontological Heritage

The rocks of the Malmani Group, which outcrop extensively in South Africa, are known to preserve fossils of stromatolites. Despite an extensive search no stromatolites were found in the study area. As the dolomites of the Transvaal Supergroup form a cast landscape with sinkholes and caves which in many places are filled with fossil-bearing Quaternary deposits, particularly in the so-called "Cradle of Humankind World Heritage Site" near Krugersdorp, an intensive search was undertaken for any signs of Quaternary carst infill. No such occurrences were found in the study area.

Recommendation

As the development of the solar plant and the connecting power lines to the south will not involve major excavation, coupled with the fact that the soil covering is quite thick in most places, it is unlikely that rock outcrops will be exposed by the development. The cast landscape associated with the dolomites of the Transvaal Supergroup has the potential to contain fossil-bearing Quaternary deposits. In the unlikely event that Quaternary rocks bearing fossil bones are exposed in the process of development activities, this should be reported to a qualified palaeontologist/palaeoanthropologist so that the necessary heritage mitigation procedures can be put in place. Depending on the nature of the fossils discovered, this could entail excavation and removal to a registered palaeontological museum collection. A list of professional palaeontologists is available from South African Heritage Resources Agency (SAHRA).

As it is very unlikely that fossils will be uncovered by the proposed mining activities, I suggest that the development goes ahead without any permit requirements for palaeontological heritage.

Bibliography

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