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30 March 2013

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Dear Mr Turner,

Palaeontological Scoping Report – Sasol Shondoni conveyer

As requested, herewith a Desktop Palaeontological Impact Assessment with regard to the proposed development of the Sasol Shondoni conveyer in the vicinity of Secunda in Mpumalanga Province.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'B. Rubidge'.

Bruce Rubidge PhD, FGSSA, FRSSA, Pr Sci Nat

**PALAEONTOLOGICAL DESKTOP STUDY
SASOL SHONDONI CONVEYOR AMENDMENT PROJECT
SECUNDA, MPUMALANGA PROVINCE**

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EXECUTIVE SUMMARY

A desktop Palaeontological Impact Assessment was undertaken on the proposed Sasol Shondoni Conveyor Amendment Project, situated west of Secunda in Mpumalanga Province. The proposed development includes development of a new conveyer on the new Shondoni Mine.

The entire study area is underlain by rocks of the Karoo Supergroup comprising sedimentary rocks of the Permian Vryheid Formation and Jurassic Karoo Dolerites. In places Quaternary alluvial deposits are present along the banks of water courses.

Rocks of the Vryheid Formation contain rich coal deposits which are derived from the famous Permian *Glossopteris* flora which has Gondwana-wide distribution. As large parts of the proposed development will be on rocks of the Vryheid Formation this has the potential to affect fossil plants.

The process of coal mining has the potential to destroy palaeontological heritage. However the development of a conveyer system is unlikely to destroy fossils. If, in the unlikely event that fossils are exposed in the course of expanding the conveyer system a qualified palaeontologist must be contacted to assess the exposure for fossils so that the necessary rescue operations are implemented.

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REPORT

Background Information of the development

This desktop report is part of a Heritage Impact Assessment to determine the effect of the Sasol Shondoni Conveyor Amendment Project on palaeontological heritage. The development on the Sasol Shondoni Mine situated close to Secunda in Mpumalanga Province, comprises an upgrade and extension of a conveyor on an existing coal mine from Point 1 (Shondoni Shaft) to point 10 (Figure 1). This upgrade will occur on portions of the farms Zandfontein 130 IS, Grootspruit 279IS, Rietkuil 283 IS and Rietvley 320 IS and will not require any rezoning of land.

The study was commissioned by JMA Consulting (Pty) Ltd, Delmas and, following a directive from SAHRA I was asked to provide a desk top assessment of the affect that the proposed development will have on the palaeontological heritage.

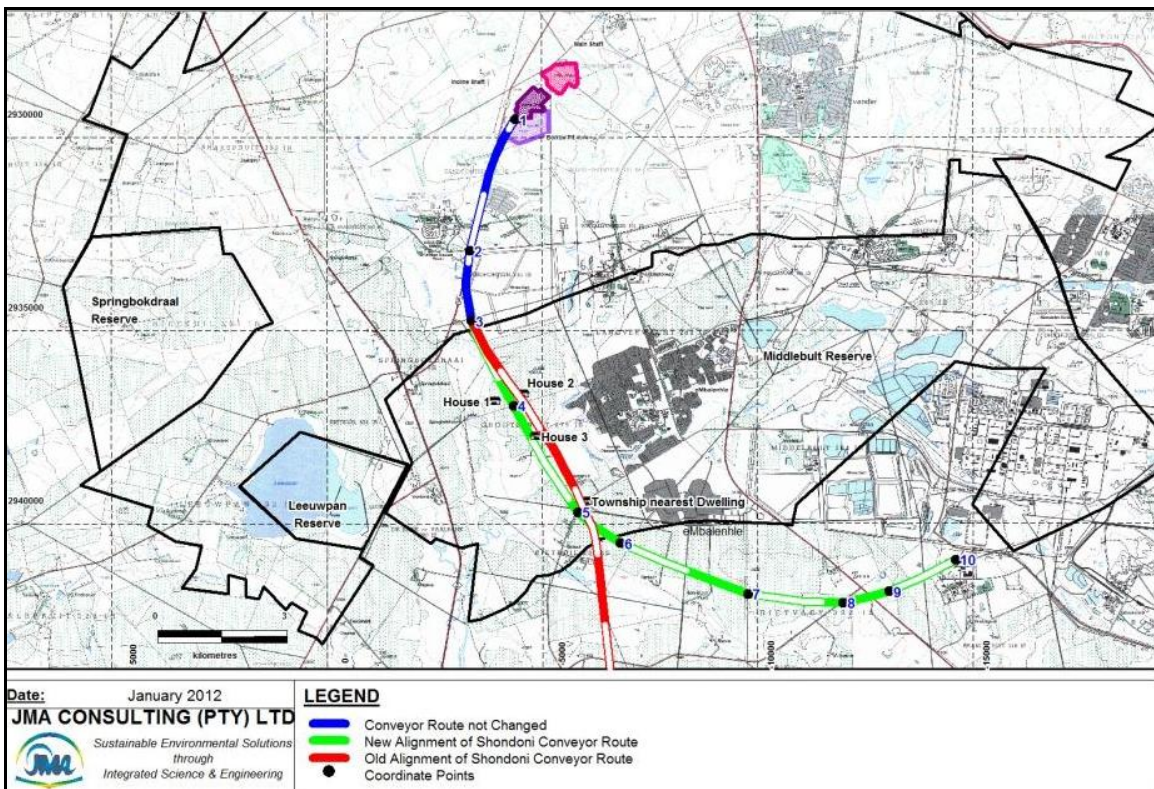


Figure 1: Path of conveyor route of the Shondoni Conveyor. The new conveyor route is shown in green.

Details of the study area

The study area forms portion of the new Sasol Shondoni Mine situated close to Secunda in Mpumalanga Province (Figure 1) and is covered by the 1:50 000 topographical map Sheets 2628BD Leandra (3), 2628DB Willemsdal (3), 2629AC Evander (3) and 2629CA Secunda (3)). This upgrade will occur on portions of the farms Zandfontein 130 IS, Grootspuit 279IS, Rietkuil 283 IS and Rietvley 320 IS (Figure 2).

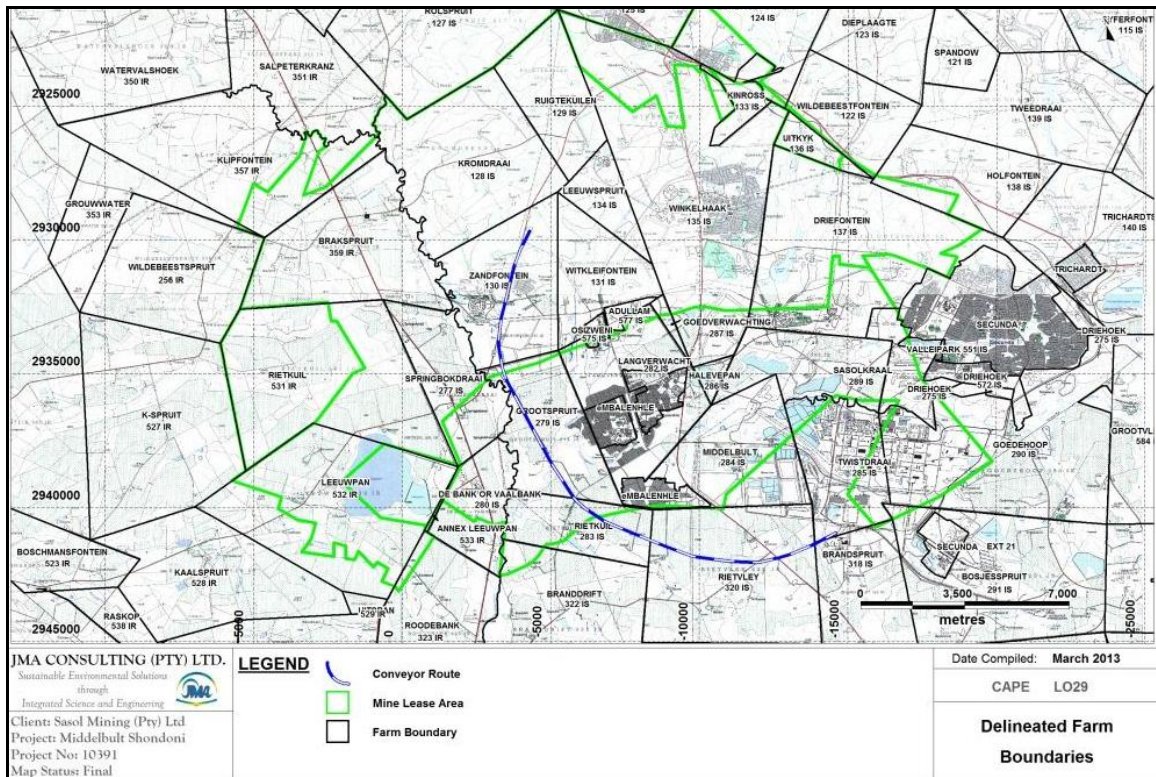


Figure 2: Map showing the extent of the conveyor development relative to farm boundaries

Geological Setting

The entire area is underlain by rocks of the Karoo Supergroup comprising sedimentary rocks of the Permian Vryheid Formation and Jurassic Karoo Dolerites. The mudrocks, coals and sandstones of the Vryheid Formation were deposited in a delta plain depositional environment.

In places Quaternary alluvial deposits are present along the banks of water courses (Figure 3).

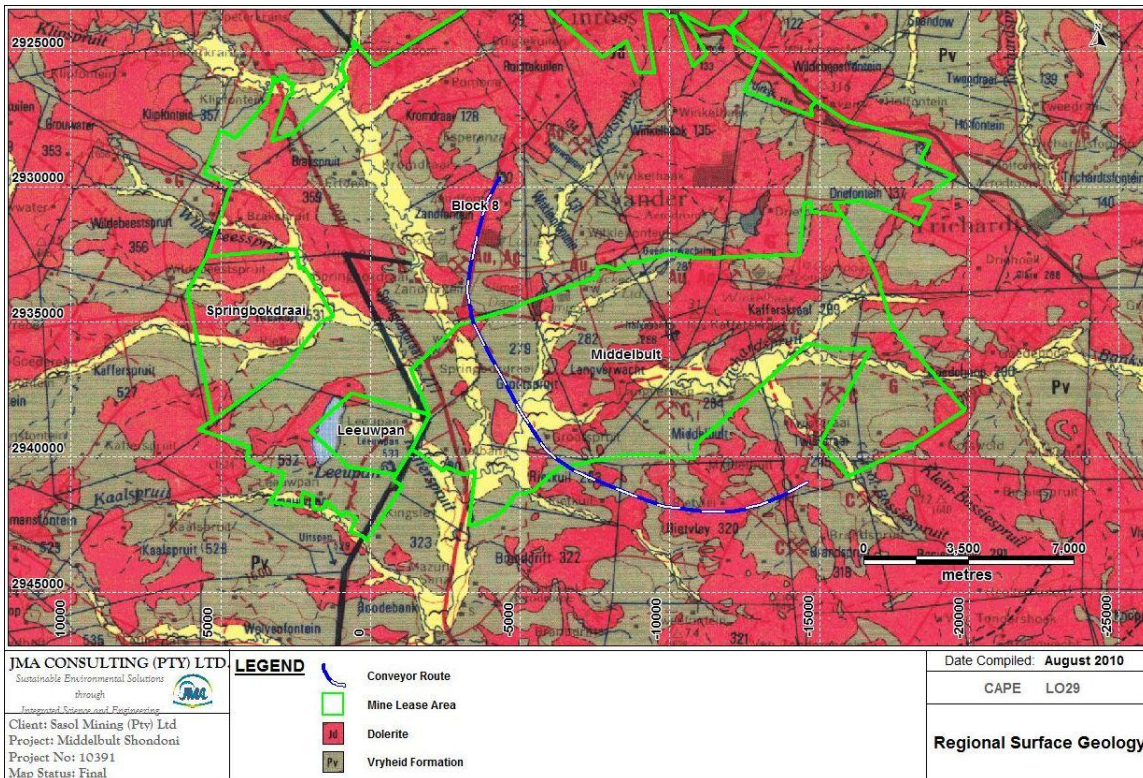


Figure 3: Geology of the Study area (1:500 000 Hydrological Map Series of the Republic of South Africa, Sheet 2526 Johannesburg, 1999)

Palaeontological Heritage

As the Jurassic dolerites of the Karoo Supergroup, which cover a large portion of the study area, are of plutonic origin there is no chance that they will contain fossils.

The rocks of the Vryheid Formation of the Ecca Group are renowned for their wealth of plant fossils of the famous Gondwanan *Glossopteris* flora which has been described from Permian-aged rocks. This flora is the source of the coal which is mined from the Vryheid Formation in South Africa and is the reason for the coal mining operations. Within the Vryheid Formation there are occurrences of well-preserved elements *Glossopteris* flora comprising wood and/or leaves. Large collections of fossil flora from this Formation are present in the collections of the Council for Geoscience in Pretoria and the BPI Palaeontology at the University of the Witwatersrand in Johannesburg.

There is a slight chance that the Quaternary alluvial deposits could contain fossils, but this is unlikely.

Recommendation

Because important plant fossil localities are known from the Vryheid Formation the proposed mining development activities may expose rocks of the Vryheid Formation which are not currently visible as they are covered by soil and vegetation.

If construction activities expose extensive mudrocks of the Vryheid Formation or in the Quaternary alluvial deposits, it will create a unique opportunity to explore the area for fossils. It is thus recommended that, should fossils be exposed, a qualified palaeontologist be contacted to assess the exposure for fossils before further development takes place so that the necessary rescue operations are implemented. 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).

Conclusions

The proposed development of Sasol Shondoni Conveyor Project will cover Permian-aged sedimentary rocks of the Vryheid Formation of the Karoo Supergroup, as well as limited occurrences of Quaternary alluvial deposits. There is a good possibility that the rocks of the Vryheid Formation could contain fossil plant material of *Glossopteris* flora, and only a very slight chance of fossils in the Quaternary deposits. It is considered that the development of the conveyor system as set out in Figure 1 should proceed, but that if fossils are uncovered in the course of construction activities, the developer immediately calls in a qualified palaeontologist to assess the situation and, if necessary, undertake excavation of the fossils.

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