



## BPI for Palaeontological Research

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Private Bag 3, WITS 2050, South Africa • Telephone +27 11 717-6682 • Fax +27 11 717-6694

Email: [bruce.rubidge@wits.ac.za](mailto:bruce.rubidge@wits.ac.za)

**31 July 2008**

Mr Alfonso Niemand  
Nature and Business Alliance Africa (Pty) Ltd.

alfonso@yebo.co.za

Dear Alfonso,

### **Risiville Water Pipeline**

As requested by you I have undertaken an EIA to assess the affect that the installation of a water pipeline in Risiville will have on palaeontological heritage in the area. My report is included herewith.

In my opinion this development will not negatively affect palaeontological heritage in the area affected.

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

Yours sincerely

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

**Professor Bruce Rubidge**

## INSTALLATION OF WATER PIPELINE IN RISIVILLE – PALAEOLOGICAL IMPACT ASSESSMENT

### **Introduction**

An EIA was undertaken along the proposed course of the water pipeline in Risiville, Gauteng, from the corner of Blackwood and Brockett streets to the water reservoir at Three Sister East to determine the affect that the installation will have on palaeontological heritage in the area. This report covers the area which is to be affected by the installation of the water pipeline.

### **Generalised Geology of the route traversed**

The entire traverse route of the proposed pipeline is underlain by rocks of the Vryheid Fomation of the Ecca Group which are Permian in age. This formation comprises sandstones and mudstones and elsewhere in South Africa is known to have an abundance of fossil plants at localities where it outcrops

### **Specific geology of route**

The proposed pipeline will extends from the corner of Blackwood and Brocket streets and will run adjacent to the latter road on the western side. An existing trench on this side of the road provides a useful window into the geology of the area (Figure 1). It is evident that thick soil covers the rocks of the Vryheid Formation in this region, and in one place there is an abundance of rolled pebbles suggesting a localized terrace deposit of the ancient Vaal River.



*Figure 1: Trench on western side of Brockett Street showing thick soil cover.*

The proposed pipeline turns eastwards to follow the verges of Gardner Street. This is a long winding road which is built up, initially with houses on either side. Further along it

is bordered by farmland on the northerly side. The verges along the entire length of Gardner Street have been disturbed by human habitation, and are either overgrown by grass, or covered by soil or paving (Figure 2).



*Figure 2: Verges alongside Gardner Street where proposed pipeline will pass..*

At the corner of Gardner and Blackwood streets the proposed pipeline will extend eastwards for a long distance along the immediate northern verge of Blackwood Road. A fortuitous trench which has been dug in the verge about half way along the pipe traverse along Blackwood Road (Figure 3) indicates that the verges are covered by a thick layer of soil overburden.



*Figure 3: Trench in position of pipe traverse along Blackwood Road.*

The proposed pipeline will cross the R42 road below the existing powerline crossing and continue its final traverse across grassland to the reservoir. Close inspection of the grassland area reveals a thick covering of black soil (Figure 4), and it is unlikely that excavation for the pipeline will reach the underlying rocks of the Vryheid Formation.



*Figure 4: Grassland covering final traverse to reservoir*

A deep pit to expose water pipes at the reservoir for maintenance purposes reveals the presence of green mudrocks of the Vryheid Formation about three metres below the surface, which are overlain by a scree and soil deposit (Figure 5). A search in the green mudrocks of the Vryheid Formation revealed no fossils.



*Figure 5: Excavation pit at the reservoir reveals rocks of the Vryheid Formation about three metres below the surface.*

## **Palaeontological Heritage**

The rocks of the Vryheid Formation of the Ecca Group are internationally 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.

During the course of this palaeontological environmental impact assessment no fossils were discovered, and because of the absence of rock outcrops in the affected area it is unlikely that fossils will be encountered. The entire area, underlain by the Vryheid Formation, which will be crossed by the proposed pipeline is either covered by grassland or else by disturbed verges alongside roads and appear to be covered by a thick soil covering. It is thus very unlikely that any fossil heritage will be damaged by activities relating to the installation of the proposed pipeline.

## **Recommendation**

As there are no outcrops of fossil bearing rocks of the Vryheid formation in the path of the proposed pipeline, in my opinion construction of this gas pipeline pipeline will not affect any palaeontological heritage.

Because important plant fossil localities are known close to Vereeniging, excavations for the laying of the pipeline could encounter fossil-bearing rocks of the Vryheid Formation, particularly close to the water reservoir. My survey has indicated that this is unlikely because of thick soil covering the rocks of the Vryheid Formation over most of the area. Although unlikely, if construction activities do expose extensive mudrocks of the Vryheid Formation, it will create a unique opportunity to explore the area for fossils. It is thus recommended that, should fossil bearing mudrocks of the Vryheid Formation be exposed by excavation activities, a qualified palaeontologist be contacted to assess the exposure for fossils.

A handwritten signature in blue ink, appearing to read 'B. I. Rubidge', is positioned above the name of the signatory.

**Professor Bruce Rubidge**

