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Operator: Minemakers Australia Pty Ltd
Tenement: EL29351 (Banka Banka)
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ABSTRACT

This report describes exploration activities during the first year of tenure for EL29351 where exploration is aimed at the discovery of economic phosphate deposits. The tenement is located 120 km north-northeast of Tennant Creek and lies on the 1:250,000 HELEN SPRINGS SE53-10 sheet. The Banka Banka prospect is located on the eastern edge of the Palaeoproterozoic Tomkinson Creek Group, a predominantly arenaceous sequence. The prospect is a joint venture between Minemakers Australia Pty Ltd (MAPL) and Geotech International Pty Ltd and was granted on 4 October 2012 comprising 36 blocks. Exploration is aimed at the discovery of economic phosphate deposits proximal to the Alice Springs-Darwin railway. Such deposits are known to occur in shallow marginal marine sediments at the eastern edge of the Georgina Basin and associated with basement highs such as at Minemakers’ Wonarah project located approximately 230km to the east-southeast. The geology in the immediate area consists of Palaeoproterozoic Tomkinson Creek Group, a dominantly arenaceous sequence, particularly in the basal portions, with siltstone and shale more important in the upper portions. This stratigraphy is overlain by undeformed Middle Cambrian sedimentary rocks. Early Cambrian lithologies are represented by the Helen Springs Volcanics that consist of amygdaloidal tholeiitic basalt and a basal sandstone unit. The Middle Cambrian, potentially phosphorite-hosting, Gum Ridge Formation was deposited in shallow shelf epicontinental seas subject to episodic peritidal influence. Lithologies consist principally of limestone and associated phosphorite units. The tenement was acquired to replace ground that had been recently dropped due to failure to meet expenditure commitments. No exploration work took place during the current tenure. The tenement was relinquished as part of the rationalisation of a regional phosphate exploration joint venture with Geotech International.
CONTENTS

1. INTRODUCTION .................................................................................................................. 1
2. LOCATION .......................................................................................................................... 1
3. TENURE .................................................................................................................................. 1
4. GEOLOGY ................................................................................................................................ 3
5. WORK COMPLETED AND DISCUSSION .............................................................................. 5
6. CONCLUSIONS AND RECOMMENDATIONS ........................................................................ 6
7. REFERENCES ........................................................................................................................ 7

FIGURES

Figure 1: Location of EL29351 ......................................................... Error! Bookmark not defined.
Figure 2: Stratigraphy and phosphate occurrences of the Georgina Basin ......................... 3
Figure 3: Location of EL29351, formerly part of EL26710, in the Barkly Sub-Basin of the Georgina Basin ......................................................................................................................... 4
1. **INTRODUCTION**

This report describes exploration activities during the first year of tenure for EL29351, Banka Banka, which is operated by Minemakers Australia Pty Ltd (MAPL). Exploration is aimed at the discovery of economic phosphate deposits proximal to the Barkly Highway and close to the Alice Springs-Darwin rail link. Such deposits are known to occur in shallow marginal marine sediments at the western edge of the Georgina Basin, similar to MAPL’s Wonarah project located approximately 230 km to the east-southeast. The presence of economically significant phosphate mineralisation in the eastern Georgina Basin has yet to be established.

2. **LOCATION**

EL29351 is located 120 km north-northeast of Tennant Creek in the Northern Territory (Figure 1). The tenement lies on the 1:250,000 HELEN SPRINGS SE53-11 and the 1:100,000 BRUNCHILLY 5760 map sheets. The tenement covers relatively flat land within the pastoral property Banka Banka. Land use is dominated by cattle grazing.

3. **TENURE**

EL29351 covering 36 blocks (117.2 km²) was granted on 4 October 2012 to Minemakers Australia Pty Ltd for a period of six years.

A joint venture agreement between Minemakers Australia Pty Ltd and Geotech was signed on 12 May 2009. The agreement provides participating interests for Minemakers (80%) and Geotech (20%), with Geotech being free-carried from expenditure contributions until a Decision to Mine. Field exploration activities were subject to consultations with the pastoral lessee and, through the Northern Land Council, with the Native Title claimants (Banka Banka Native Title Claim NTD 6005/01).
Figure 1: Location of EL29351.
4. GEOLOGY

The Banka Banka prospect is located on the eastern edge of the Palaeoproterozoic Tomkinson Creek Group, a dominantly arenaceous sequence particularly in the basal portions with siltstone and shale more important in the upper portions (Donnellan, 2004). This stratigraphy is overlain by undeformed Middle Cambrian marine sedimentary rocks that comprise the western edge of the Georgina Basin which has been divided into two sub-basins called Barkly and Undilla (Figures 2 and 3). Early Cambrian deposition is represented by the Helen Springs Volcanics that consist of amygdaloidal tholeiitic basalt and a basal sandstone unit. These rocks unconformably overlie the Tomkinson Creek Group.

The Middle Cambrian Gum Ridge Formation was deposited in shallow shelf epicontinental seas subject to episodic peritidal influence. Lithologies consist principally of limestone that includes fine-grained sandstone, siliciclastic mudstone, bioclast, oncoid, stylolitic and cryptomicrobial limestone, marly limestone, fossiliferous nodular chert; carbonate and evaporitic pseudomorphs (Hussey et al., 2001). Occasional trilobites, brachiopods and sponge spicules occur in this formation. There are a number of mapped exposures of Gum Ridge Formation in and adjacent to the tenement and geological mapping has identified a number of exposures of slightly younger and related Anthony Lagoon beds (op. cit.). Both of these units are capable of hosting phosphorite deposits. The Gum Ridge Formation is the primary target for phosphorite mineralisation.

![Figure 2. Stratigraphy and phosphate occurrences of the Georgina Basin (after Khan et al, 2007).](image-url)
Figure 3. Location of EL29351, formerly part of EL26710, in the Barkly Sub-Basin of the Georgina Basin (after Khan et al, 2007).
5. WORK COMPLETED AND DISCUSSION

No work was completed on the tenement.
6. CONCLUSIONS AND RECOMMENDATIONS

The tenement was picked up to replace ground that had to be dropped from EL26710 because of a failure to meet minimum expenditure commitments. The tenement was part of a phosphate exploration joint venture between Minemakers Australia Pty Ltd and Geotech International Pty Ltd. The tenemented area was postulated to be adjacent to a basement high based on regional gravity and magnetics and therefore potentially a place of phosphate deposition during the Cambrian. The joint venture was dissolved in early 2013 on the basis that the tenements had low prospectivity for phosphate and that any phosphate present would be likely to be typical Georgina Basin phosphorite; very high silica content, very low reactivity and therefore unlikely to be able to sold as a beneficiated rock. The alternative development route of downstream processing of mined phosphate rock into a phosphoric acid or fertiliser product via the typical “wet” process is considered to be an even more difficult sell as the capital costs would be very high. Minemakers has decided to focus on the development of its Wonarah deposit and manufacture of superphosphoric acid using a proprietary, cheaper process and consequently is not interested in further greenfields phosphate exploration.
7. REFERENCES


Morete S.S. and Pellatt A. 2012 *Annual Report for EL26710 (Booda Bore) for the period ending 23 October, 2012*. Minemakers Australia Pty Ltd