EL28611

MARQUA

Northern Territory, Australia

Final Report for the period 1 September 2011 to 30 July 2013 (EL28611)

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Copy to: DoR, Northern Territory
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Commodity: Phosphate, Base Metals, Uranium
1:250,000 Maps: SF53-12, Tobermorey, SF53-16 Hay River
1:100,000 Maps: 6352 Marqua, 6452 Toko, 6351 Mount Barrington, 6451 Adam
SUMMARY

The Marqua Project in the Northern Territory is located 400km east of Alice Springs and 300km southwest of Mount Isa (Figure 1). The area is highly prospective for minerals, with high grade phosphate drill intersections encountered and also potential for base metals and uranium.

Rox Resources Limited held a number of contiguous Exploration Licences in the area, EL28275, EL28276, EL28611 and EL28612, but recent rationalisation saw this reduced to just two Exploration Licences, EL28275 and 28611, and on 31 July 2013 EL28611 was also surrendered.

This report is for the total period of EL28611 from 1 September 2011 to 30 July 2013.

Previous exploration of EL28275 identified five phosphate prospects over a strike length of 30 km with outcrops grading up to 39.4% P₂O₅ along the phosphorus bearing Cambrian age Thorntonia Limestone. A repeat outcrop of this stratigraphy is interpreted to occur within EL28611, however it is a small synclinal area and the potential for a large resource is minimal.

Reconnaissance exploration work completed during 2012-2013 included geological prospecting and soil sampling. The results from EL28611 were not encouraging enough to continue exploration on the licence for phosphate.

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1. Marqua Tenements
1 INTRODUCTION

Rox Resources Limited’s (“Rox”) Marqua Project has recently consisted of tenements EL28275 and EL28611. The tenement area covers an area of approximately 667.4 km² that is prospective for phosphate mineralisation.

This report summarises Rox’s exploration activities for the total period of EL28611 from 1 September 2011 to 30 July 2013.

2 LOCATION AND ACCESS

The Marqua project area is located approximately 500 km by road east of Alice Springs, and is southeast of the Marqua Station homestead with good road access 40 km off the Plenty Highway and a network of established minor roads and station tracks (Figure 1).

Figure 1: Marqua Project Location
3 TENURE

This report covers tenement EL28611 as shown in Table 1 and Figure 2.

Table 1: EL28611

<table>
<thead>
<tr>
<th>Tenement</th>
<th>Registered Holder</th>
<th>Interest</th>
<th>Grant Date</th>
<th>Expiry Date</th>
<th>Area (sub-blocks)</th>
<th>Current Annual Rent (incl. GST)</th>
<th>Current Annual Minimum Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL 28611</td>
<td>Rox Resources Limited</td>
<td>100%</td>
<td>1 September 2011</td>
<td>31 August 2017</td>
<td>2</td>
<td>$22</td>
<td>$6,000</td>
</tr>
</tbody>
</table>

There are no Native Title Claims over the tenement area, which comprises the Marqua pastoral station. A meeting was convened for any interested Aboriginal parties on the tenement before exploration work commenced, but no parties attended. Previous heritage site locations were obtained by a search of the AAPA Register and were avoided during exploration.
4 GEOLOGY

4.1 Regional Geology

The project area is part of the southern Georgina Basin, comprising Neoproterozoic to Cambro-Ordovician platform cover of sedimentary rocks (dominantly sandstone, shale, limestone, dolostone) overlying the Precambrian basement of the Northern Australian Craton. This Precambrian basement is exposed along major fault systems on the southern margin of the basin.

The Northern Territory Geological Survey (NTGS) has recognised the mineral potential of the southern Georgina Basin and recently prepared a comprehensive review of both government and private exploration undertaken, and has now developed applicable ore genesis models (Dunster et al., 2007).

Since the 1960’s, the basin has been considered prospective mainly for Mississippi Valley Type (MVT) lead-zinc mineralisation. More recently, however, the potential for other commodities in a variety of geological settings has been investigated, and the basin is now regarded as having potential for several styles of base-metal mineralisation.

The area is considered to have potential for Cambrian limestone hosted phosphate. Prospective units within the Georgina Basin include the Middle Cambrian Beetle Creek Formation of the eastern basin, its stratigraphic equivalent in the south, the Arthur Creek Formation, and the underlying Thorntonia Limestone which is recognised basin-wide. Prospective ground for phosphate rock within these Middle Cambrian units occurs along the basin margins and adjacent to basement highs within the basin interior.

4.2 Local Geology

The Marqua project area is located in the structurally complex south-eastern portion of the Georgina Basin, which is comprised of basement granitoids, Neoproterozoic tillites and arkosic sedimentary rocks, overlain by Cambrian and Cambro-Ordovician limestone, dolostone, shale and clastic sedimentary rocks of the Toko Syncline.

These units have been disrupted by multiple folding and faulting events. Faulting in the project area generally trends northwest and individual faults have been locally offset by later northeast trending faults. Part of the regionally significant Toomba Fault Zone lies in the eastern portion of the tenements and segregates a structurally complex zone dominated by arkosic sediments to the southwest from limestone, dolostone and sandstone of the Toko Syncline to the north.

The Toomba Fault Zone is a reverse fault which dips ~45° towards the southwest and lies in close proximity to a number of parallel folds and faults including the Field River Anticline (Figure 2). A northwest trending fault zone in the Christmas Dam area represents a structural divide between gently north dipping sedimentary rocks to the west and steep to vertical dipping sediments to the east (Figure 2).
Figure 2: NTGS Geological Map

4.3 Geological Model For Phosphate

The processes responsible for the formation of high-grade marine phosphate rock deposits (known as phosphorite if it contains greater than 15% $P_2O_5$) are the subject of some uncertainty. It is recognized that regions favourable to large-scale phosphate deposition occur along ocean margins where deep upwelling currents rich in phosphate are trapped within relatively shallow lagoons and embayments.

The phosphate-rich waters lead to high levels of biological activity which results in the deposition of organic-rich sediments (black shales) within confined anoxic depositional centres. Phosphate liberated into interstitial and bottom waters, principally from the bacterial decay of organic matter, is believed to be responsible for the formation of phosphorites both by direct precipitation of phosphate minerals from solution and by replacement of siliceous and calcareous skeletal debris (forming coquinite phosphorites).

This process appears to occur near the water sediment interface at the transition between anoxic and oxic zones so that phosphorite deposits are typically laterally offset from black shale accumulations. Mechanical reworking of sediments may also play a significant role in the formation of some high-grade phosphorite deposits.
5 PREVIOUS EXPLORATION

5.1 Other Companies

The Marqua area has been subject to exploration for over 30 years. Mapping of the Marqua area (Tobermory 1:250,000 map sheet) was carried out by BMR 1959-1960 and subsequent remapping was done throughout the 1970’s and 1980’s. Exploration during that time was mainly focussed on base metals and involved rock chip and stream sampling. During 1977-1978 and 1983 the BMR drilled four cored stratigraphic holes in the area. Anomalous zinc levels were found in these holes (BMR 1976/36) (Dunster et. al., 2007).

Subsequently Agip undertook base metal exploration in 1981 over the tenement area (CR19830328). Reconnaissance rock chip sampling and mapping demonstrated that base metals are anomalous within the Late Proterozoic Wonnadinna Dolostone and Thorntonia Limestone. Sixteen holes were drilled during 1982 to test the zinc anomalies over a strike length of 8km.

Saracen Minerals drilled nineteen percussion holes in 1988 (CR19880057) with the aim of detecting possible platinum-group element mineralisation associated with the black shales. No platinum group elements were detected.

MIM explored the area in the early 1990’s to test for MVT style Pb and Zn and Carlin-style Au and Pt (CR19920506). Re-assays of Saracen Minerals percussion drill holes and ten additional drill holes within the prospective units concluded that mineralisation is structurally controlled.

In conjunction with regional re-mapping of the Tobermorey map sheet, NTGS drilled cored stratigraphic hole NTGS99/1 within the current tenement area (Dunster et. al., 2007).

The NTGS re-evaluated the area as part of the southern Georgina Basin Geology and Resource Potential Report in 2007 and concluded that the Marqua area remains prospective for base metals since the lithostratigraphy of the area was not fully understood until recently (Dunster et. al., 2007).

More recently Uramet explored the region for phosphate, engaging in field mapping, a VTEM survey, surface sampling and aircore drilling (CR20070662, CR20070663 CR20080424, CR20080427, CR20090583, CR20100057). VTEM (Versatile Time Domain Electromagnetic) was used to detect conductivity highs associated with the Thortonian black shale. The Uramet mapping improved the accuracy of the existing maps, and confirmed known prospective Thorntonia and Red Heart Dolostone localities, as well as defining new prospects that were favourable drilling targets for phosphate. Uramet drilled 77 aircore holes for a total of 1,962 metres within the prospective Thorntonian unit. Uramet also re-sampled some of the previous drill cuttings of Saracen (CR20080872).
5.2 Rox Resources

During 2011 & 2012 Rox undertook a programme of soil sampling and RC drilling on EL28275, as reported elsewhere (e.g. Mulholland et. al, 2012, Mulholland, 2013). In addition a compilation of regional geophysics was also undertaken.

Rox visited the area of EL28611 and undertook some reconnaissance geological mapping and soil and rock outcrop prospecting with a portable Niton XRF analyser. No anomalous phosphorus values were detected in the soils or rocks on EL28611 (although it is noted that the high detection for phosphorous on the instrument is about 800ppm). Given these negative results it was felt that the area was not prospective for any substantial tonnage of high grade phosphate material close to the surface.

5.2.1 Regional Geophysics Compilation

A compilation of regional geophysics showed that the magnetics do not show much relation to surface geology (Figure 3), however the radiometrics plot of Total Count maps out the main faults and prospective phosphate horizon quite well on EL28275 (Figure 4). The geophysics does not really elucidate anything on EL28611 that is not already known from the geology.

![Figure 3: Regional Magnetics with Faults and Phosphate Horizon Shown](image-url)
Figure 4: Total Count Radiometrics with Faults and Phosphate Horizon Shown
6 CONCLUSIONS AND RECOMMENDATIONS

Work completed by Rox over the last 2 years has been successful in identifying a semi-continuous phosphate-bearing rock horizon of over 30km strike length on EL28275 however no high grade phosphate has been located on EL28611.

Phosphate economics are largely involved with infrastructure (distance to market) and marketing of product. The ideal corporate configuration would be a vertically integrated company that owned and mined phosphate to deliver it to its own market (i.e. a fertiliser company).

Rox has tried unsuccessfully to attract a joint venture partner to Marqua, speaking with several Chinese and Indian parties to no avail. The biggest issue for the Marqua phosphate deposits is their distance from transport and market. It is over 350km by unsealed and poorly maintained road to the north-south Adelaide-Darwin railway line to the west, and 330km by a similar standard unsealed and poorly maintained road to the rail head at Phosphate Hill in Queensland.
7 REFERENCES


Mulholland, I.R., 2013: Amalgamated Technical Report for the period 30 March 2012 to 29 March 2013 (EL28275) and the period 1 September 2011 to 29 March 2013 (EL28611), Report to the Northern Territory Department of Resources.