Partial Relinquishment Report
EL 24524

Version: 2.0
Replaces: N/A
Creation Date: 2 June 2014
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Brief Description: Partial Relinquishment report for EL24524.
EXECUTIVE SUMMARY

EL 24524 was granted on the 20 April 2009 under the Aboriginal Land Rights (NT) Act 1976 (ALRA). Two drilling campaigns and various ground reconnaissance programs have been conducted in order to search for sedimentary manganese mineralisation associated with condensed sections deposited within the late cretaceous sediments of the Yirrkala and Walker River Formations. Analogous deposits are found on Groote Eylandt 200km east in the Gulf of Carpentaria. During the lease tenure, 2 AirCore holes (62m) and 8 RC holes (403m) were drilled and drill cuttings were submitted for XRF analysis.

Regional studies in the area combined with historic occurrence data and information obtained from this and other exploration projects in the area have been used to develop a geological model for mineralisation for the region whereby manganese occurs as a matrix within the basal sediments of the Walker River Formation. Secondary alteration and tropical chemical weathering however has remobilised and removed much of the mineralisation replacing it with Fe oxides. The model and drilling suggests that the area flagged for relinquishment is too low in the stratigraphic profile and the likelihood of locating sufficient economic quantities of manganese is very low. GEMCO will therefore not seek to renew this portion of the lease.
BHP Billiton
Manganese CSG/GEMCO

<table>
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<tr>
<th>Titleholder</th>
<th>Groote Eylandt Mining Company Pty Ltd (GEMCO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operator (if different from above)</td>
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</tr>
<tr>
<td>Tenement Manager/Agent</td>
<td>Manganese Australia</td>
</tr>
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<td>BHP Billiton Manganese Australia</td>
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<tr>
<td>Company reference number</td>
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NT Government Department of Resources - 1 copy

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1.0 LOCATION AND TENURE

1.1 Tenements

EL 24524 was applied for by BHP Billiton (BHPB) Minerals Pty Ltd on 17 December 2004. The lease is located within Aboriginal Freehold Land and is consequently lodged under the Aboriginal Land Rights (NT) Act 1976 (ALRA). The licence lies 60 km southwest of Nhulunbuy and is accessed along the Central Arnhem Road via the Mata Mata track. Although the original application covered a much larger area, the Northern Land Council (NLC) gave consent only to only parts of the application. The partial lease was granted on the 20 April 2009. BHP Minerals Exploration (Minex) commenced exploration in the area in 2009, and additional exploration programmes have been conducted by Manganese Australia (Mn Australia) who took over operating the lease in 2012. A location map is shown in Figure 1.

![Location of Tenements](image)

**FIGURE 1: Location of Tenements**

EL 24524 expired on the 19 April 2015 and a partial renewal of 15 blocks was requested to be retained.
### 1.2 Land Status

All tenements held and operated by GEMCO on East Arnhem Land are located on Aboriginal Freehold Land managed by the Northern Land Council (NLC). Ongoing consultations with traditional owners has occurred for all works undertaken in the area, including pre-clearance surveys, post activity inspections, discussions of results and post rehabilitation signoffs. Annual work programs and on-country meetings were conducted prior to the work commencing and cultural monitors were employed from local communities during the work programs.

An inspection of the Register maintained by the NT Aboriginal Areas Protection Authority (AAPA) was made in December 2008 and there were no “Registered” or “Recorded” sites within the tenements. GEMCO has not received any correspondence since of any additional “Registered” or “Recorded” sites within its tenements (supplied with previous annual reports, available on request) and no further restrictions have been placed on access by the traditional owners.

### 1.3 Land Area Type

The area falls in the Arnhem Coast bio-region. It comprises of undifferentiated Cainozoic sand and residual soil, as well as laterite, lateritic soil, and ferruginous cemented detritus. The area is underlain by Cretaceous white and yellow sandy claystone, quartz sandstone, and ferruginous sandstone.

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<th>Grant Date</th>
<th>Expiry Date</th>
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<td>20-Apr-2009</td>
<td>19-Apr-2015</td>
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**TABLE 1 - Tenement details**
2.0 Exploration History

2.1 Geological Setting

The project area lies within the Karumba Basin Province onlapping onto the to the western margin of the Mesozoic Carpentaria Basin (Figure 2). Basement Proterozoic rocks outcrop to the west, and are dominated by quartz arenites, magmatic gneisses and granites. Early to Middle Cretaceous shallow marine sediments were deposited unconformably on the dissected and undulating Proterozoic basement surface. The Cretaceous sequence is up to 100 m thick and assigned to the Walker River and Yirrkala Formations, previously named the Mullaman Beds. K-Ar dating of glauconite from clays directly beneath the manganese ore horizons yielded a Late Albian to Early Cenomanian age of ~95 Ma, which is consistent with fossil dating. Overlying late Cretaceous to Tertiary conglomerates and claystones are present in places. The bulk of the area is overlain by Tertiary laterite and Quaternary sand/clay which cover extensive parts of the area forming plateaus to the east.

FIGURE 2: Regional Geology
2.2 Historic Exploration

Previous exploration over this area is described in Report 13 of the Northern Territory Geological Survey (Ferenczi, 2001).

During the mid 1960’s, BHPB (then BHP Ltd) explored parts of the eastern Arnhem Land area for sedimentary-diagenetic manganese after the discovery of the Groote Eylandt deposit. A variety of exploration campaigns were completed by BHPB in the 1960’s, including helicopter reconnaissance work, regional mapping, pitting and regional drilling at some prospects (e.g. Caledon Bay, Peter John River, Lake Evella).

In 1965, a total of 33 exploration pits were completed in the area (the Peter John Prospect). Subsequently 11 holes were also drilled to various depths to test manganese potential. However, no significant mineralisation was identified in the area and exploration was not pursued further.

2.3 Recent Work Programs

2.3.1 Mapping and Photo Interpretation

In 2007, Minex commissioned a photogeological mapping exercise covering Groote Eylandt and the greater East Arnhem target area (Figure 3 and Plate 1). The exercise used 1:100,000 scale stereoscopic Landsat 7/SRTM (Shuttle Radar) satellite imagery to map Mesozoic and Cainozoic stratigraphy, structure and geomorphology in East Arnhem Land and Groote Eylandt, with particular emphasis on delineation of potential areas of sedimentary manganese mineralisation of the Groote Eylandt type. The mainland study region covered an area of some 20,000 km², and the Groote Eylandt study an additional 2,400 km².
The primary objective of the Arnhem Land study was to map landforms related to weathering of thin Cretaceous transgressive marginal-marine and terrestrial units developed on an irregular basement terrain formed on resistant Precambrian sediments. The Cretaceous strata are often covered by remnants of a regional laterite profile that forms a distinctive flat, dark plateau surface with underlying white saprolitic material. The data from this survey has been submitted in previous reports.

2.3.2 AEM Survey

Between the 29 May 2009 and the 7 June 2009, Fugro Airborne Surveys Pty. Ltd. (FAS) undertook an airborne TEMPEST electromagnetic and magnetic survey for BHP Billiton Minerals Pty Ltd, over the East Arnhem Land Project area in the Northern Territory. The survey consisted of one area. Total coverage of the survey area amounted to 1145 line kilometres flown in 8 flights (Figure 3). All data from the AEM survey has been submitted in previous reports.
2.3.3 Drilling

Two drilling campaigns were carried out on the PJR prospect in 2009 and 2013. Within the surrendered area, 10 shallow Reverse Circulation (RC) holes totalling 455 m were drilled which required the establishment of ~4.5 km of access tracks (Figure 5).
Rehabilitation of all tracks and pads were completed post the drilling campaign, excluding those tracks requested to be left open by the traditional owners.

Drilling data for the surrendered portion is attached in Appendix A.

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<th>Hole Type</th>
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<tr>
<td>RC</td>
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**TABLE 2: Hole Summary**
3.0 RESULTS AND INTERPRETATION

Historic interpretation of early work conducted in the area was based on analogies to the Groote Eylandt manganese deposit. Discontinuous massive manganese discovered in the area in the early 1960’s returned grades of ~48% and were interpreted to be contiguous to the massive supergene cap on Groote Eylandt.

The Groote Eylandt mineralisation model (after Canon and Force) was used in initial targeting where paleo embayments were identified which were overlain with favourable Cretaceous stratigraphy. Drilling only showed traces of manganese (Figure 6). Most higher grade intercepts were close to surface and represent discontinuous secondary remobilised manganese. The drilling results also showed that the conductive targets identified in the TEMPEST survey were associated with thick reduced clay intervals underlying the sandstone units.

Geological modelling supported by stratigraphic diamond drilling and biostratigraphic age dating in adjacent leases was conducted in 2013. Results show that the manganese mineralisation event is associated with manganiferous sandstones which are stratigraphically higher in the sequence in these areas.

[FIGURE 6: Drill Results]
4.0 CONCLUSIONS

Based on historical descriptions and recent exploration campaigns, manganese mineralisation on EL24524 is characterised as being part of the broader area of mineralised sandstones found in the region. Drillhole intercepts and ground traversing however did not intersect the mineralised horizon in this portion of the lease. It is interpreted to be lower in the stratigraphy and therefore the potential for manganese in this area is thought to be low.

Drillhole results for the surrendered area are included as a digital appendix. All other associated data for work conducted on the lease has been supplied in previous annual reports.