Eastern Areas Exploration Annual Report
EL10115 / EL10108

13 October 2004 – 13 October 2005
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1 Executive Summary

Exploration licences were granted to GEMCO for EL 10115 and EL 10108 on the 13 October 2000 in the region of Groote Eylandt known as the Eastern Areas.

In the first year, an exploration program was undertaken to collect raw data on the potential deposit. This involved aerial photography, ground reconnaissance, upgrading of access tracks, preparation of grid lines and reverse circulation drilling. The drill program intersected between 0.5-4.5m of sub-economic siliceous and medium grade lump manganese in 16 of the 30 holes drilled. From October 2001 to October 2002, the activities focussed on sample preparation and analysis of the samples generated from the RC drilling program in Year One, enabling preliminary data analysis and interpretation of the eastern areas.

During 2003, a broad-based review of all available data was conducted and maps required for target generation were digitised into Vulcan. Investigation commenced on a replacement database and accompanying management system for improved validation and interpretation on the Eastern Area drilling information.

In the fourth year, between October 2003 and October 2004, drill hole data in the GDHS database was converted to a new GBIS database, an outcrop mapping and sampling program was undertaken to assist in identifying potential drill targets and the 1991 GEOTEM data was re-analysed and modelled by BHBP Geophysicists in Brisbane, indicating weak to moderate conductivity of manganese ores and clays. In addition, different EM survey techniques were investigated to differentiate manganese ores from clays.

The latest stage of exploration activity, from October 2004 to October 2005, involved compilation of all historical exploration data for review, delineation and target generation, planning of a reverse circulation drilling program, gridline clearing and drill pad preparation to provide access for the drilling rig, and site visits with the traditional land owners to define areas of sacred significance.

GEMCO plan to complete approximately 200 RC and 5 diamond drill holes between May and July 2006. This will be followed by preparation and analysis of the samples, geostatistics and domaining, geological modelling, block modelling and resource and reserve estimation. A geophysical logging program is also planned for the dry season of 2006.

2 Location

The Eastern Areas are located approximately 6km SE of GEMCO’s southern most mining operation (D Quarry), and approximately 16km SSE of the Angurugu community.

Access into EL10115 is obtained via Emerald River road to D Quarry and then east on a sandy access track. Access into EL10108 is via Emerald River road south to Emerald River, then east onto the King’s Crossing Track approximately 1km south of Emerald River. There is one track connecting the two leases.

Refer to Figure 1 below: Location of Eastern Lease Exploration Areas (Eastern Areas).
3 Regional Geology

The geology of the region, including the exploration leases, consist of the Mullaman beds which unconformably overlays a "basement" of Middle Proterozoic quartz sandstones up to 600 m in thickness named the Groote Eylandt beds.

Within the mining leases (located 16km NNW of EL10108 and 6km NW of EL10115), manganese ores, which are either exposed or at shallow depth, were deposited in several sedimentary environments in early Cretaceous. The ore occupies a series of WNW trending, joint controlled, partly in filled depressions between elongate inliers of the Groote Eylandt beds (F3, AS, B & D Quarries). Elsewhere within the mining leases, ore lies directly on broad terraces cut into the basement quartzite (C and F1 Quarries). The westerly part of the orebody form a mostly continuous sheet-like body (ES, ICI, C-West and Pole 80 areas) which has been deposited in a beach environment lapping onto paleo-basement highs or island structures.

In the mining leases, the concentration of manganese within the stratum varies from massive oxides, through mixtures of oxides with kaolinitic clays and quartz sands, to disseminated oxides in a sandy clay matrix. The manganese ore minerals are chiefly pyrolusite and cryptomelane, with minor amounts of manganite. Lateritisation, probably of Tertiary age, has
altered most of the surface sediments. Where lateritisation has truncated the ore horizon, a variety of supergene rock types is common, including manganiferous spherulites, concretions and dendrites, and massive layers of secondary manganese oxides.

Refer to Figure 2 below: Groote Eylandt regional geology.

![Figure 2 – Groote Eylandt regional geology.](image-url)
4 Exploration Activities

4.1 Delineation and Target Generation

Literature research was carried out over the application area to ensure all available historical, geological, geophysical and geochemical data was collated and evaluated prior to undertaking the fieldwork program. Compilation of all historical reports, papers, manuscripts, memos, maps, and datasets enabled a review of the geological interpretation in the eastern areas.

The 2001 drilling campaign was essentially a broad spaced drilling campaign designed to test GEOTEM conductors and to investigate the flanks of the E-W trending paleo valley of the Emerald and Amagula River systems, which exhibit similar paleo-basement topography as the mining leases.

Refer to Figure 3 & 4: GEOTEM anomalies over exploration leases in the eastern areas.

Drill hole locations designed for the next phase of drilling (2005), were positioned by correlating the remodelled GEOTEM data with the 2001 drilling results, along with mapping and outcrop sampling results. A grid spacing of 500m x 250m was designed to infill previously intersected economic mineralisation in the 2001 drilling campaign. A total of 55 holes were planned in EL 10115 and 145 holes in EL 10108. For drill hole collar locations, refer to Figure 5.

![Figure 3 – GEOTEM anomalies over EL 10115 in eastern areas.](image-url)
The first step in planning the drilling program was to identify the requirements of the intended work. The size and extent of the program was estimated by calculating individual hole depths using geological cross-sections generated in Vulcan. A total of 1760m of drilling in EL10115 and 4640m of drilling in EL10108 were calculated, with an average hole depth of 32m.

Once the extent and size of the program was identified, the following was conducted:

- Scope of Work and tender documents were prepared and distributed to prospective drilling contractors. The successful contractor was Ryan Drilling Services from Townsville.
- Workpac provided the labour hire of a field geologist, a field assistant, and five laboratory personnel to assist with sample preparation. Flights, accommodation, inductions, and training were organised.
- All consumables were ordered prior to commencing the work.

The RC drilling on the GEMCO ML’s commenced in August 2005, however the program was stopped prior to entering the eastern areas due to a number of safety issues with the contract.
drilling company on the ML’s. GEMCO chose to terminate the contract with the drilling contractor, as their safety performance was unacceptable, as was their willingness to adopt and implement appropriate safety standards.

Due to seasonal constraints and the lack of drilling contractor availability, the drilling planned for 2005 has been re-scheduled for commencement in May 2006. The tender has been circulated and is to be awarded in December 2005.

4.3 Gridline Clearing

Prior to the clearing of gridlines, which commenced in June 2005, all routes were reviewed for environmental and cultural sensitivity by the GEMCO Rehabilitation and Mine Services Co-ordinator and the Community and Aboriginal Affairs Superintendent as part of the GEMCO Permit to Clear procedure.

The main environmental issues identified were:

- Minimising disturbance to natural hydrological systems.
- Preventing blockages of creeks and drainage lines.
- Minimising the disturbance of topsoil to maximise re-growth of vegetation.
- Restrict access into areas of sacred significance.

During land clearing, the area disturbed was confined to the smallest area necessary to meet the above environmental requirements. Wherever possible drill holes were moved onto existing gridlines, roads and tracks to minimise land disturbance. Alterations to the natural landform or drainage patterns were avoided where possible. All intermittent and perennial creek crossings were constructed using culverts to avoid any changes to the drainage patterns.

In EL10115, a total of 9.7ha was cleared and 13.8ha in EL10108 using a D85E ‘Kahuna’ Komatsu dozer. Gridlines were cleared to approximately 5m wide and 200 drill pads were cleared to an area of approximately 18 x 10m, ensuring any overhead branches were removed. Where practicable, “blade-up” clearing was used when forming access tracks and drill pads to minimise topsoil disturbance. To avoid over clearing or the potential of an environmental incident, a surveyor was assigned to the project to supervise the dozer and provide tighter control whilst clearing. No environmental incidents occurred.

Effective hygiene measures were employed to minimise the risk associated with the introduction of foreign plants or organisms into the exploration area. All trucks, equipment and light vehicles that accessed the exploration areas were washed thoroughly prior to entering the leases. Operators ensured that mud and other debris that harbour weed, seed or vegetative material was removed during the wash-down process.
5 Cultural Aspects

5.1 Areas of Sacred Significance

Under consultation and accompaniment by members of the Anindyliakwa Land Council and the traditional land owners, a significant site was located on the SE corner of EL10108. The area was surveyed, signage was erected and a public light vehicle access road was re-routed around the buffer zone to define the area and prevent access to the general public. Maps highlighting these areas were issued to all personnel working on the project.

5.2 Instruction in Aboriginal Culture

As per clause 20.1 and Annexure G of the exploration agreement, GEMCO ensured that all employees, contractors and consultants engaged in the work program, were given appropriate instruction in Aboriginal traditions and culture. Prior to entering the Eastern Areas, personnel were given cross-cultural instruction, which included the following:

- Permit requirements for off-lease areas;
- Alcohol restrictions and policy;
- Conduct whilst on Aboriginal land;
- Basic understanding of Aboriginal culture;
- Significance of Aboriginal sacred sites;
- Listing of Aboriginal organisations and community structures.

6 Expenditure

Many of the costs associated with exploration on the eastern lease areas were shared costs with exploration and infill drilling within GEMCO’s mining leases. The total cost for the period between 13 October 2005 and 13 October 2006 is shown in the Appendix.

7 Future Exploration Activities

The next stage of exploration will focus on proving up a resource in the eastern areas through:

- RC drilling of approximately 200 holes on cleared gridlines. The program is scheduled to start at the beginning of May 2006 and completed by July 2006.
- Preparation and analysis of drill hole samples, expected to be completed by August 2006.
- Conducting a geophysical logging program to obtain dry bulk density data, scheduled to start in October 2006.
- Drilling of approximately 5 diamond holes to calibrate the logging tool in the geophysical survey.
- Geological interpretation, including domaining and geostatistical analysis.
- Resource modelling and generation of reserve estimates.
- Further test work and analysis to determine if areas can be handed back to the Traditional Owners.

Planned expenditure for future exploration activities for the 2006 period is $200,000 in EL10115 and $410,000 in EL10108.
Appendix A – Expenditure Report for EL10115
Appendix B – Expenditure Report for EL10108