
GEMCO

**Eastern Areas Exploration Report
Completion of Phase 2
December 02**

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2001 Drillhole logs, RC09603-RC09633

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. GEMCO concluded Phase 1 of the exploration program during the dry season of 2001, with sample preparation and assaying, data analysis and interpretation being completed during Phase 2 in December 2002.

The exploration program operated in accordance with the terms predetermined in the exploration agreement between GEMCO and the Anindilyakwa Land Council and paid particular attention to the cultural sensitivities of exploring on aboriginal land.

The exploration involved aerial photography, ground reconnaissance upgrading of access tracks, preparation of grid lines and reverse circulation drilling.

Phase one of the exploration program intersected between 0.5-4.5m of sub-economic siliceous and medium grade lump manganese in 16 of the 30 holes drilled. Using the same product grade assaying technique as used for the mining leases, grades ranged from 40-49%Mn, 10-25%SiO₂, yielding approximately 40%. Unfortunately, phosphorus content was high, >0.10, <0.23. There were numerous intersections of disseminated siliceous manganese and manganese clays with product grades of between 20-30%.

The Eastern Areas manganese occurrence cannot be interpreted as a “mineral resource”, until such times as further exploration substantiates thickness, continuity and grade of the mineralisation. The occurrence can be interpreted as “exploration potential”.

2 Objectives

The objectives of Phase 2 exploration on EL10115 and EL10108 were:

- 1) Complete the investigation into areas within the EL's having high potential manganese occurrence as identified from GEOTEM and from regional stratigraphic modelling;
- 2) Conclusively test the usefulness of GEOTEM as an exploration tool for Groote Eylandt manganese;
- 3) Determine characteristics and geometry of stratigraphic horizons to aid in geological modelling for manganese resource estimation and hydrogeological modelling;
- 4) Determine whether future exploration in the EL is warranted;
- 5) Carry out this project in a manner that causes minimum practicable disturbance to the natural environment.

3 General Overview

The Eastern Areas are located approximately 6km south-east of GEMCO mining operations in the area known as D quarry and approximately 16km by road and track

SSE of the Angurugu community. Access into EL10115 is by way of 4WD via Emerald River road to D Quarry, then east on a newly constructed 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. Refer to Figure 1: Location of Eastern Lease Exploration Areas (Eastern Areas) on page 5.

4 Environmental Issues

GEMCO ensured that environmental protection measures were applied in carrying out the exploration, including:

- a) Conserving and protecting the natural hydrological systems;
- b) Minimising the disturbance of soil and vegetation where possible;
- c) Minimising pollution;
- d) Use of best practicable technology; and
- e) Prevented the introduction of exotic fauna and noxious or exotic plants to the area.

Traditional owners requested GEMCO not to re-vegetate access tracks and grid lines so that the tracks could be used as access routes for traditional activities. GEMCO also require the use of these tracks for the next phases of exploration.

On completion of the 2001 exploration program, all drill holes were plugged and backfilled 1m below the surface to prevent the entrapment of native fauna.

4.1 Access

Ground disturbance activities completed during phase 1 of work program were designed to minimise the impact on the environment. Wherever possible existing roads and tracks were used. Where practicable, "blade-up" clearing was used when forming access tracks and drill pads. 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.

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

During earthworks, the amount of area disturbed was confined to the smallest area necessary to meet operational and safety requirements. One minor surveying work was undertaken in the field during Phase 2.

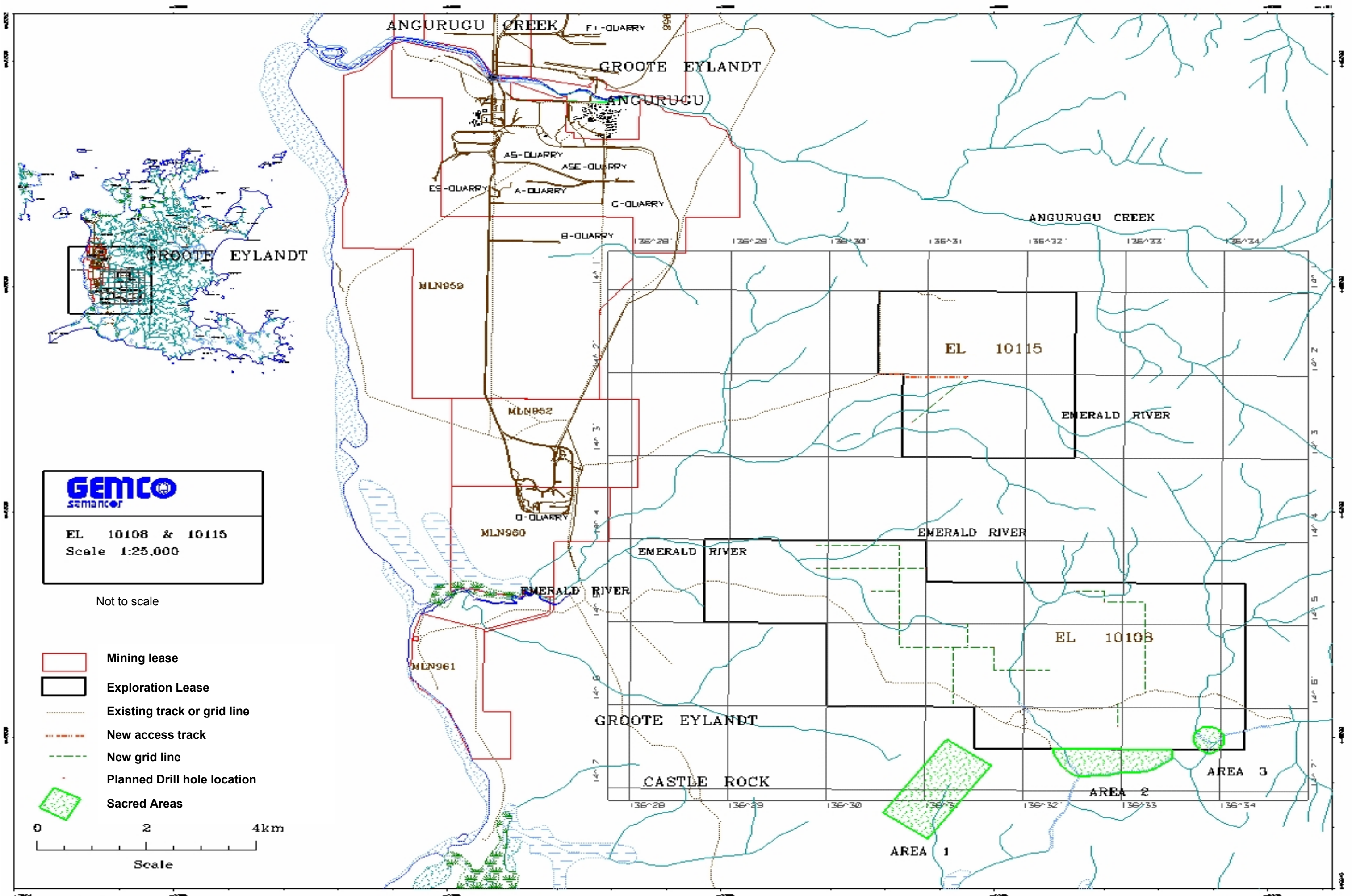


Figure 1: Location of Eastern Lease Exploration Areas (Eastern Areas)

5 Cultural Aspects

5.1 Liaison Committee

A “Liaison Committee” was formed comprising of representatives from the Anindilyakwa Land Council and representatives from GEMCO prior to groundwork commencing. The principal role of the Liaison Committee was advisory and as a liaison between the Anindilyakwa Land Council, the Groote Eylandt communities and exploration professionals employed by GEMCO.

The involvement of Traditional Owners was extremely useful due to their knowledge of the area, particularly in terms of location and construction of access tracks.

5.2 Sacred Sites and Aboriginal Places

Under consultation and accompaniment by the Anindilyakwa Land Council and the liaison committee, the location of sacred sites were surveyed and entered into the GEMCO planning system. Maps highlighting these areas were issued to all personnel working on the project. Sacred Sites were designated ‘no go’ zones during Phases 1 and 2, and future exploration activities.

Regular dialogue with Traditional Owners (represented by the Angurugu based Anindilyakwa Land Council) ensured the process for protection of significant areas.

5.3 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 Cost of Phase 2

Activities contributing to the cost of Phase 2 included sample preparation and assaying, data analysis and interpretation and surveying. The total cost for the phase is \$91,984.

Table 6.1: Phase 2 Exploration Costs

EL10115

Activity	Cost
Sample Preparation (0 samples)	\$ -
Chemical Analysis	\$ -
Laboratory Supervising	\$ -
Geologist	\$21,250
Surveying	\$ 283
Consultation with Traditional Owners	\$ 7,500
Lease Administration	\$ 2,500
Total EL10115	\$31,533

EL10108

Activity	Cost
Sample Preparation (182 Samples)	\$ 9,796
Chemical Analysis	\$ 2,871
Laboratory Supervising	\$ 7,917
Geologist	\$21,250
Surveying	\$ 8,217
Consultation with Traditional Owners	\$ 7,500
Lease Administration	\$ 2,500
Total EL10108	\$60,051

7 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.

8 Drillhole Location

Drillhole locations were positioned in order to test GEOTEM conductors and to investigate the flanks of the E-W trending paleo valley of the Emerald and Amagula River systems which exhibited a similar paleo-basement topography as the mining leases.

The setout was designed to appraise the extent of the anomalous zones relative to a potential edge of mineralisation, with the intention of using electromagnetic conductivity to define the boundary of an Inferred Resource. Gridlines and drillhole locations were strategically positioned 500m within and outside the anomalous areas, which in theory, would have provided clear definition of the resource edge and allow grade estimation within. Refer to Figures 2, 3 and 4 on pages 8, 9 and 10 respectively.

Rotary drilling coordinates were unavailable when the 2001 program was executed.

9 Airborne Electromagnetics (GEOTEM)

A GEOTEM, airborne electromagnetic (AEM) survey was flown over the Groote Eylandt manganese mine in May 1991 to characterise the conductivity and magnetic properties of the manganese ore and host rocks, in order to assess if Airborne Electromagnetics was viable in exploration for such a deposit type. Strong EM responses correlated with most of the known manganese ore zones. Subsequent drill hole EM surveys confirmed the conductive nature of most of the different types of ore.

The airborne and drill hole EM surveys have demonstrated that the manganese ores at Groote Eylandt are significantly conductive and all the known mineralised areas produced significant responses. These responses were clearly defined because of the resistive nature of the host rocks and the sandstone basement, except where seawater incursions are present (though to be present in the GEOTEM in GEMCO's mainland Arnhemland leases and south of Emerald River on Groote Eylandt).

It was though that these results demonstrated GEOTEM as a cost-effective method of reconnaissance exploration for Groote Eylandt style manganese, providing the host rocks are comparatively resistive.

From the 1991 data, conductors in the Eastern Areas were interpreted as new manganese deposits, which had not been explored since the 1960's because of tenement issues. Early drilling which was undertaken in the 1960's, intersected thin layers of sub-economic disseminated manganese.

Figures 3 and 4, on pages 9 and 10 respectively, plot the GEOTEM anomalies in relation to drillhole location, paleo depositional valleys and basement outcrops.

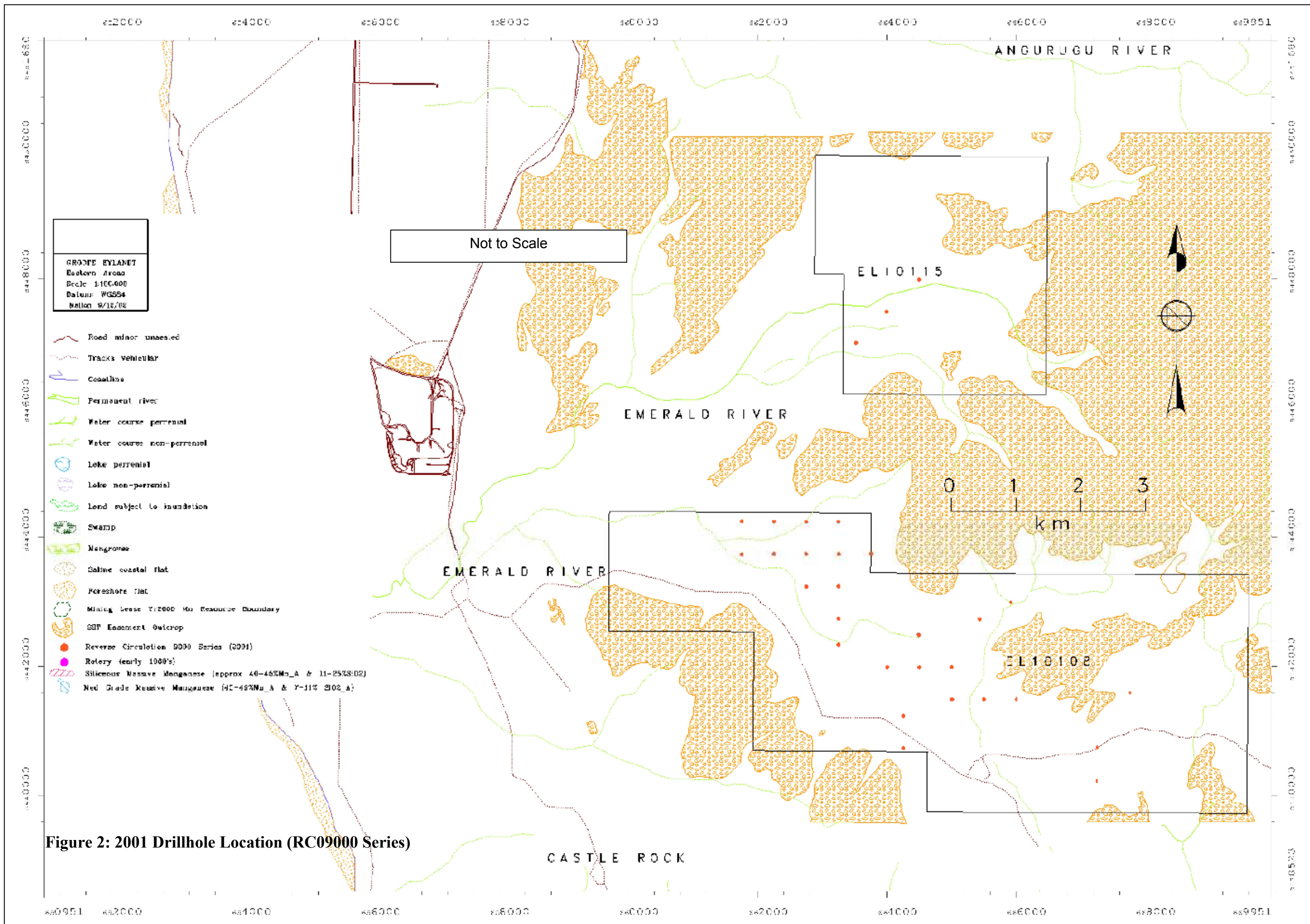


Figure 2: 2001 Drillhole Location (RC09000 Series)

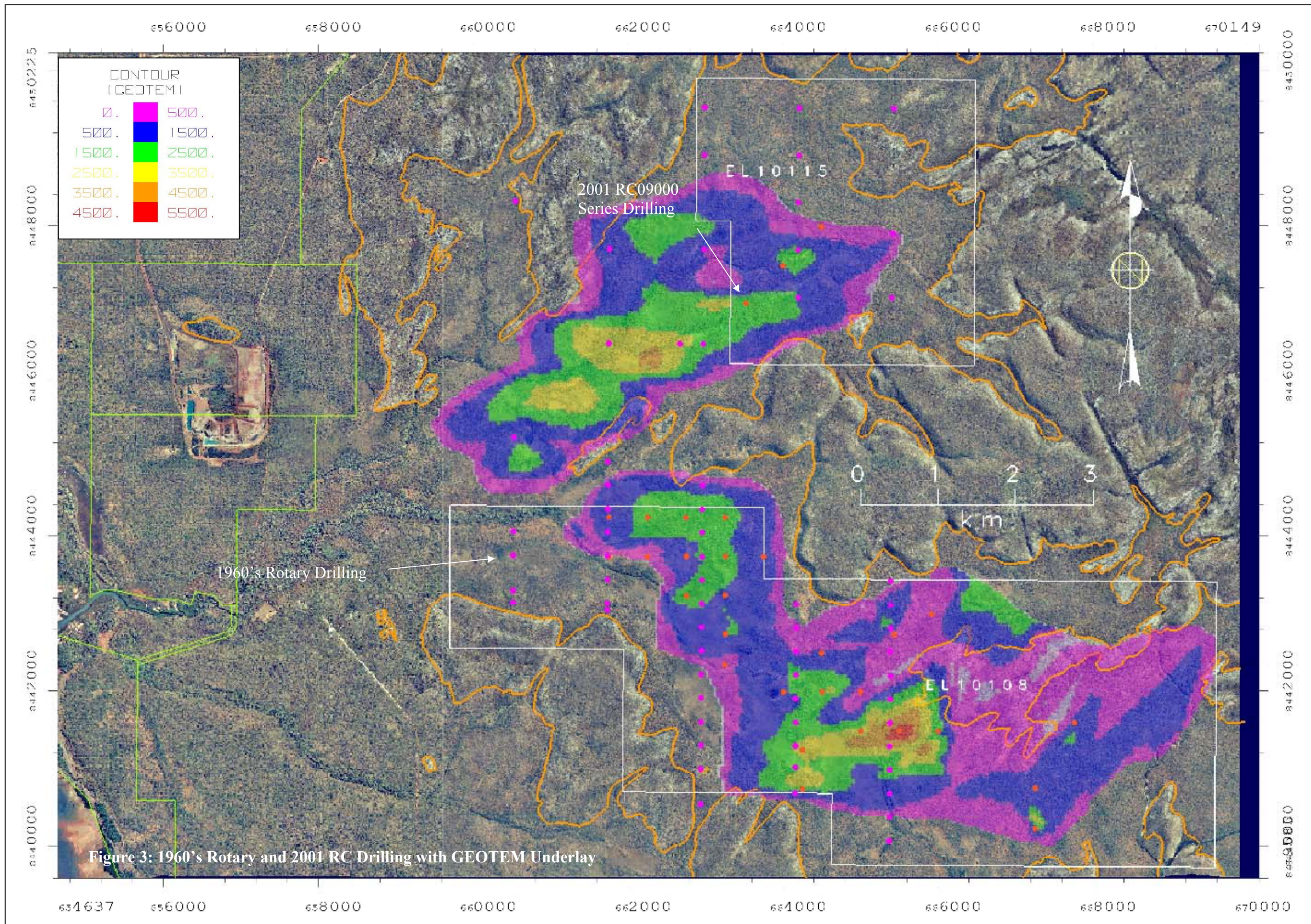


Figure 4: 3D Oblique of GEOTEM Anomalies

View looking NE showing GEOTEM anomalies and drillhole locations in relationship to paleo valleys and SST basement outcrops. SST outcrops digitised in orange.

