

**ARNHEM RESOURCES PTY LTD**

ABN 68 112 776 360

## **FINNISS RANGE TIN-TANTALUM PROJECT**

**EXPLORATION LICENCE - EL24639**

### ***PARTIAL RELINQUISHMENT REPORT FOR THE PERIOD ENDED DECEMBER 2008***

Tenement:	EL24639
Owner:	Arnhem Resources Pty Ltd (100%)
Operator:	Arnhem Resources Pty Ltd
Date:	April 2009
Distribution:	Arnhem Resources (1) NT Department of Primary Industry, Fisheries and Mines (1)

## **1.0 SUMMARY**

Tenement EL24639 (the “Tenement”) occurs within the Bynoe area of the Northern Territory on the Darwin (SD5204) 1:250,000 and Bynoe (5072) 1:100,000 map sheets. Arnhem Resources Pty Ltd (“Arnhem”) acquired the tenement through application as per the table below.

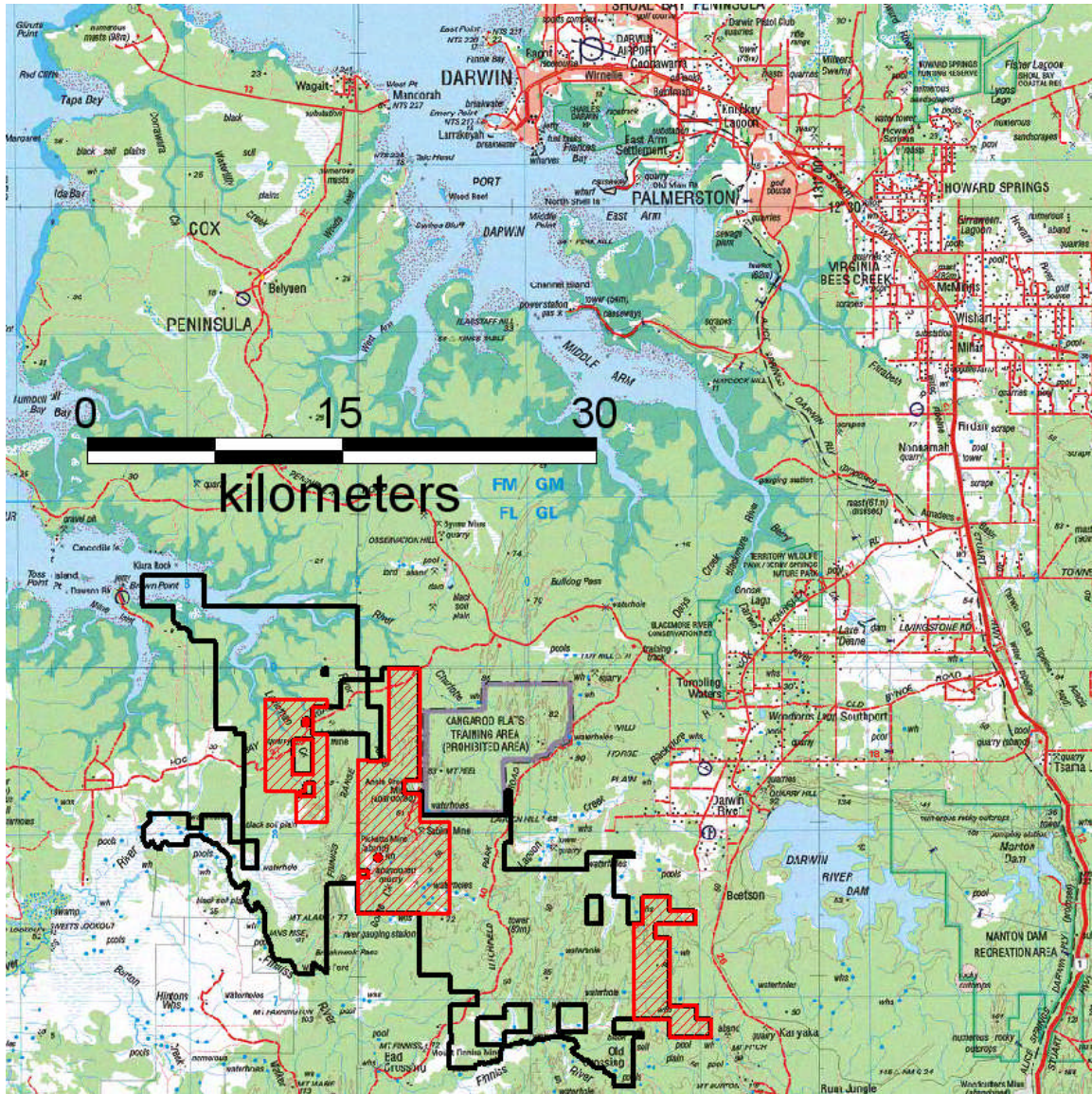
**Table 1: Tenement Schedule.**

<b>Permit</b>	<b>Area km<sup>2</sup></b>	<b>Application Date</b>	<b>Grant Date</b>	<b>Comments</b>
EL24639	361	23/03/2005	09/12/2005	100% Agricola (see below)

The permit was applied for as part of a Northern Territory tin-tantalum project. From December 2005 to December 2008 the permit was the subject of a joint venture option arrangement with Haddington Resources Limited (“Haddington”) through their wholly owned subsidiary Australian Tantalum Pty Ltd. Haddington elected not to exercise the option at the end of the third year of the permit and withdrew from the project. Arnhem therefore was responsible for the year three relinquishment (Haddington received an exemption at the end of year two). The permit was reduced from 139 to 34 blocks.

## 2.0 LOCATION and ACCESS

The tenement is located approximately 50 km south of Darwin; roughly 20 km southwest of Berry Springs/Tumbling Waters. Access is via the all-weather Litchfield National Park and Fog Bay Roads, and various dirt tracks.



**Figure 1:** Location Map for the Tenement. The original permit area is outlined in black. The three retained (non-contiguous) areas are indicated with red hashing

### **3.0 LOCAL GEOLOGY**

The project area consists primarily of the Early Proterozoic Burrell Creek Formation, an interbedded sequence of lutite, arenite and rudite. The sediments form undulating hills, low ridges and prominent strike ridges (where more resistant arenite predominates in outcrop). Sandstone units (often metamorphosed to quartzite) typically form blocky beds between 0.2 to 2.0 m thick, are strongly jointed and fractured, and often quartz veined. Much of the area is covered by ferricrete, which varies between massive and pisolitic.

The formation conformably overlies the Mount Bonnie Formation, the contact being defined by the top of the uppermost unit of argillite, tuff, banded iron formation, or shale containing chert bands, lenses or nodules.

To the west, the Burrell Creek Formation is intruded and contact metamorphosed by the Two Sisters Granite (immediately southwest of the tenement). Metamorphic grade increases westward from sub-greenschist facies siltstone and sandstone in the east, to upper greenschist facies gneiss and schist in the west.

The Two Sisters Granite forms a discordant irregular batholith, and consists of moderately to non-foliated granite, adamellite, granodiorite and minor porphyritic granite.

The Archaean Rum Jungle Complex is located immediately east of EL24639, where it is exposed as scattered low pavements and boulder-strewn outcrops protruding through a thin veneer of Cainozoic sand.

Rare element pegmatites that crop out in the area form the Litchfield pegmatite belt. The Litchfield belt is divided into the more prominent Bynoe Pegmatite Field, and the less significant Wingate Mountains pegmatite district.

The Bynoe pegmatite field is 70 km in length and 15 km in width. All pegmatites are believed to have been derived from the Two Sisters Granite (Ahmad, 1995), which is considered to dip to the east under the Burrell Creek Formation, below the exposed pegmatites.

The pegmatites typically occur in clusters, and six pegmatite groups are recognised within the Bynoe field; The Kings Table, Observation Hill, Walkers Creek, Labelle, Leviathan, River Annie Group. The last two groups lie within the tenement.

The Leviathan and River Annie Group pegmatites occur within the Burrell Creek Formation. The pegmatites are irregularly distributed, concordant with the main metamorphic foliation, and interfinger in places mostly along bedding planes (Frater, 2005).

#### **4.0 PREVIOUS EXPLORATION**

Previous exploration has centred on the Leviathan Group pegmatites (Leviathan Mine), and the area surrounding the Annie Mine.

The Leviathan mineralisation was discovered by C. Clarke in 1886, and a mine and battery were established shortly after. By 1890, three shafts had raised 406 t of ore to produce 2.03 t of Tin oxide (Frater, 2005). The tin mineralisation proved to be patchy and the leases were abandoned in 1909.

Following this initial discovery, numerous mineralised pegmatites were discovered and worked in the area by Chinese and European prospectors. Mining was short lived and virtually all leases were abandoned by 1910, with no record of location or production.

The Leviathan area was explored by Greenex (a division of Greenbushes Ltd – later Sons of Gwalia) between 1983 and 1990. By 1987, using ground reconnaissance and aerial photographs, Greenex had rediscovered over 20 of the pegmatites that had been worked at the turn of the century.

Leases covering the Leviathan pegmatites passed to Corporate Development and in 2000, Julia Corporation Ltd (Julia) negotiated an option to explore the Leviathan ground. They carried out an RC drilling program, targeting several of the larger Leviathan pegmatites. In total, over thirty pegmatites have been discovered in the Leviathan area.

Greenex mapped the Annie area in 1984. Sampling of the Annie pegmatite showed it to be tin-rich. Outcrop was restricted to prominent quartz ridges and old workings.

According to Frater (2005), one 25 m section of pegmatite averaged approximately 666 g/t Ta<sub>2</sub>O<sub>5</sub>, the highest individual sample assaying 2360 g/t.

Further exploration work including auger drilling and trenching, and pegmatite was intersected over a strike length of 325 m and a width of up to 35 m. Auger drilling indicated a resource in the order of 0.098 Mt at 156 g/t SnO<sub>2</sub>. Exploration continued until 1988, when Corporate Developments acquired the Annie lease. Softwood Plantations Pty Ltd, acting for Corporate Development, mined the Annie pegmatite in the period 1995 to 1999. 11 t of tantalite and 28 t of tin were produced between 1995 and 1997, and a further 69 t of combined tantalum-tin concentrate was parcelled in 1997-1999.

#### **4.0 CURRENT EXPLORATION**

Haddington, as operator of the tenement, carried out extensive programs of soil sampling, rock chipping and RAB drilling. These programs were designed to explore both for extensions of previously known as well new pegmatite bodies which would be prospective for tin and tantalum. These programs were generally successful in generating targets and in discovering new pegmatite bodies but were overall disappointing in that the concentrations of tin and tantalum were relatively low considering the small size of the potential mining targets. Most of this work was carried out within the two western parts of the retained area.

Geoscience Australia acquired an airborne electromagnetic survey over the eastern part of the retained area on the western flank of the Rum Jungle Complex. This data will be available in mid-2009 and will determine Arnhem's future strategy for the tenement. As the data release for this relinquishment report, Arnhem makes available all of the acquired data included in the 2006, 2007 and 2008 annual reports.

#### **5.0 REFERENCES**

Ahmad, M., 1995, Genesis of tin and tantalum mineralisation in pegmatites from the Bynoe area, Pine Creek Geosyncline, Northern Territory. *Economic Geology* 42, 519-534.

Bluck, R. G., 1993, EL7079, Supplementary Annual Report for period ending 28 Feb 1993, Corporate Developments Pty Ltd.

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Chrisp, G.M., and Earthrowl, J.A., 1992. Finniss range project, Northern Territory. Annual and supplementary annual reports, SEL7439. Corporate Developments Pty Ltd. *Northern Territory Geological Survey, Open File Company Report CR1993-0533.*

*Frater, K.M., 2005, Tin-tantalum pegmatite mineralisation in the Northern Territory. Northern Territory Geological Survey, Report 16.*

Schultz, K., 1979, Report on exploration at Mount Peel, N.T., EL1596, 24.05.78 – 23.05.79, Nord Resources (Pacific) Pty Ltd.