

**Title ID:** EL 30015

**Titleholder:** Orema Pty Ltd

**Project Operator:** Orema Pty Ltd

**Report Title:** EL 30015 "Bynoe Project" Annual Report

**Reporting period:** 04/03/2014 to 03/03/2015

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**Date:** 28/04/2015

**Target commodities:** Gold, Tin, Tantalum

**Mapsheets:** Bynoe 1:100,000 and Darwin 1:250,000

**Abstract**

EL 30015 Bynoe Project is held by Orema Pty Ltd. The tenement was granted on 4 March 2014. The tenement is located within the Bynoe area of the Northern Territory. EL 30015 has the Cox Peninsula Road passing through the north east of the tenement. EL 30015 hosts the historical Bynoe Mine and several quarries. Observation Hill is the main characteristic topographic feature. The main group of workings located within EL 30015 have been mined throughout the last century, mainly for tin and tantalum. 18 rock chip samples were collected and assayed during the reporting period. Further sampling programs to be conducted in the next reporting period.

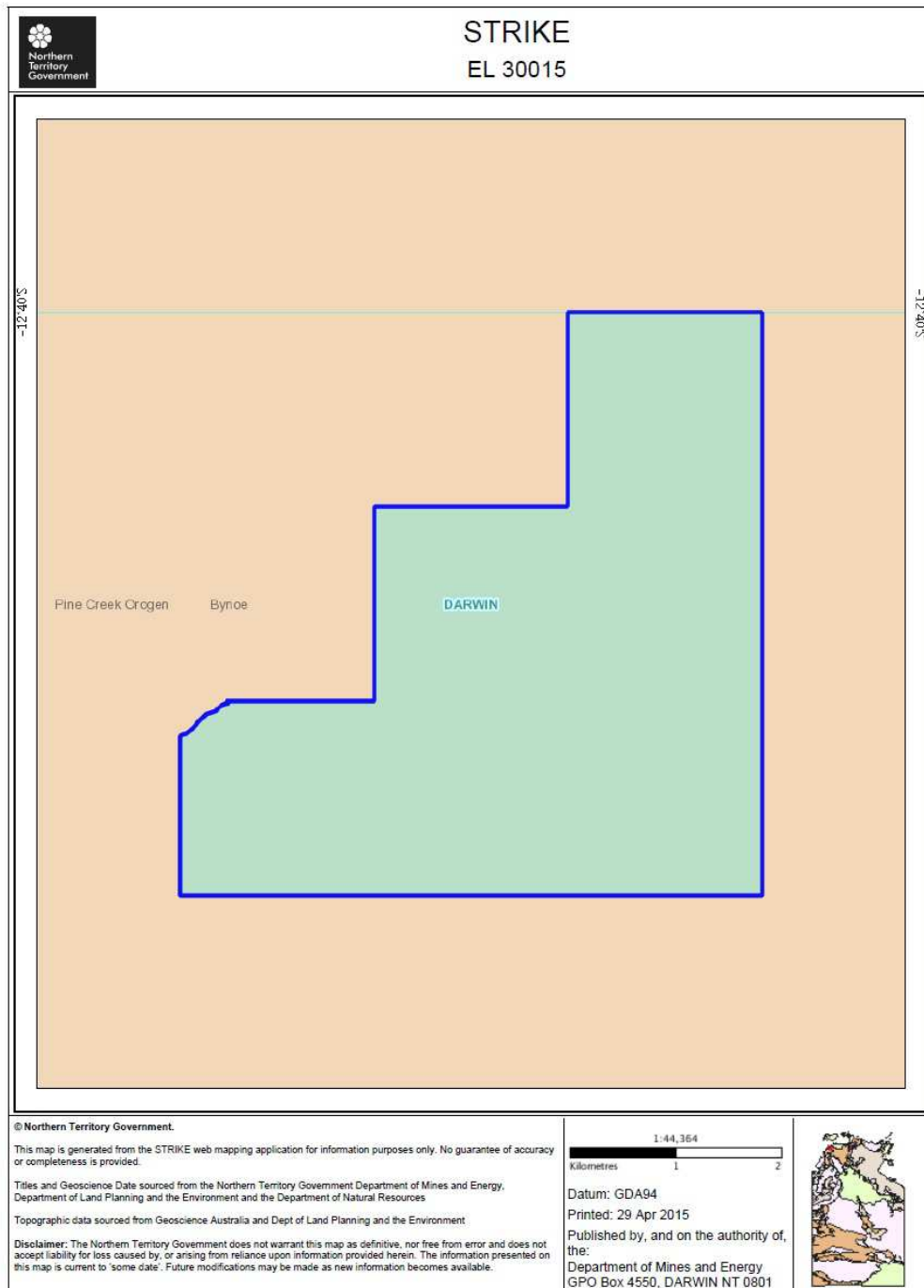
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## Location, title history, physiography and access

EL 30015 is approximately 30km SSW of the port city of Darwin, in the Northern Territory, on the Cox Peninsula, with the tidal estuarine mangrove lined Bynoe Harbour to the west. Access is excellent via the Cox Peninsula Road, and then by various dirt tracks.

EL 30015 is 100% held by Orema Pty Ltd.



## **Geological setting, exploration/mining history and exploration rationale**

### *Regional Geology*

The Bynoe Project lies within the Pine Creek Orogen, also called the Pine Creek Geosyncline, and includes the early Proterozoic Burrell Creek Formation, a sequence of greenschist metamorphic grade sandstones and siltstones with occasional lenses of conglomerate. These rocks are intruded by a series of pegmatite dykes, collectively known as the Finniss River Pegmatite Swarm.

Lithologies of the Pine Creek Orogen include variably deformed and metamorphosed Palaeoproterozoic (2050- 1800Ma) metasedimentary and intrusive rocks forming part of the North Australian Craton. This overlies 2670-2500 Ma Archaean basement, which in turn is unconformably overlain by the McArthur, Birrindudu, Daly, Arafura and Money Shoal basins. Metamorphism is lower greenschist to granulite facies.

Sedimentary, metamorphic and igneous rock types are represented: greywacke, shale, siltstone, sandstone, dolostone, tuff, granite, felsic volcanic rocks, dolerite, basalt, micaceous schist, metapelite, calc-silicate rock, and quartzite.

The region has been actively explored for a wide range of commodities, particularly gold and uranium. It is host to a variety of mineral commodities including gold, uranium, base metals, PGE, iron ore, manganese, magnetite, phosphate, tin and tantalum.

The tin (Sn) / tantalum (Ta) mineralisation in the Bynoe district occurs in pegmatites and the Bynoe project area also has potential for rare earths, for metasomatite and intrusive type uranium deposits hosted in pegmatites, and hydrothermal vein lode gold.

### *Local Geology*

To the south and west of Bynoe Harbour, the Burrell Creek Formation is intruded by the Two Sisters Granite which underlies much of the Cox Peninsula. In the Bynoe Area, there is a progression from west to east, with decreasing metamorphic grades, from barren pegmatoidal granite to mineralised pegmatites, and thence to quartz veining, reflecting the general relationship of rare element pegmatites to low pressure metamorphic sequences of the upper greenschist to lower amphibolite facies. The local increase in pegmatite abundance is attributed to the presence of near-surface granitic stocks. While it is easy to attribute the mineralisation to the visible granite, it is more likely there are several more localised intrusions responsible.

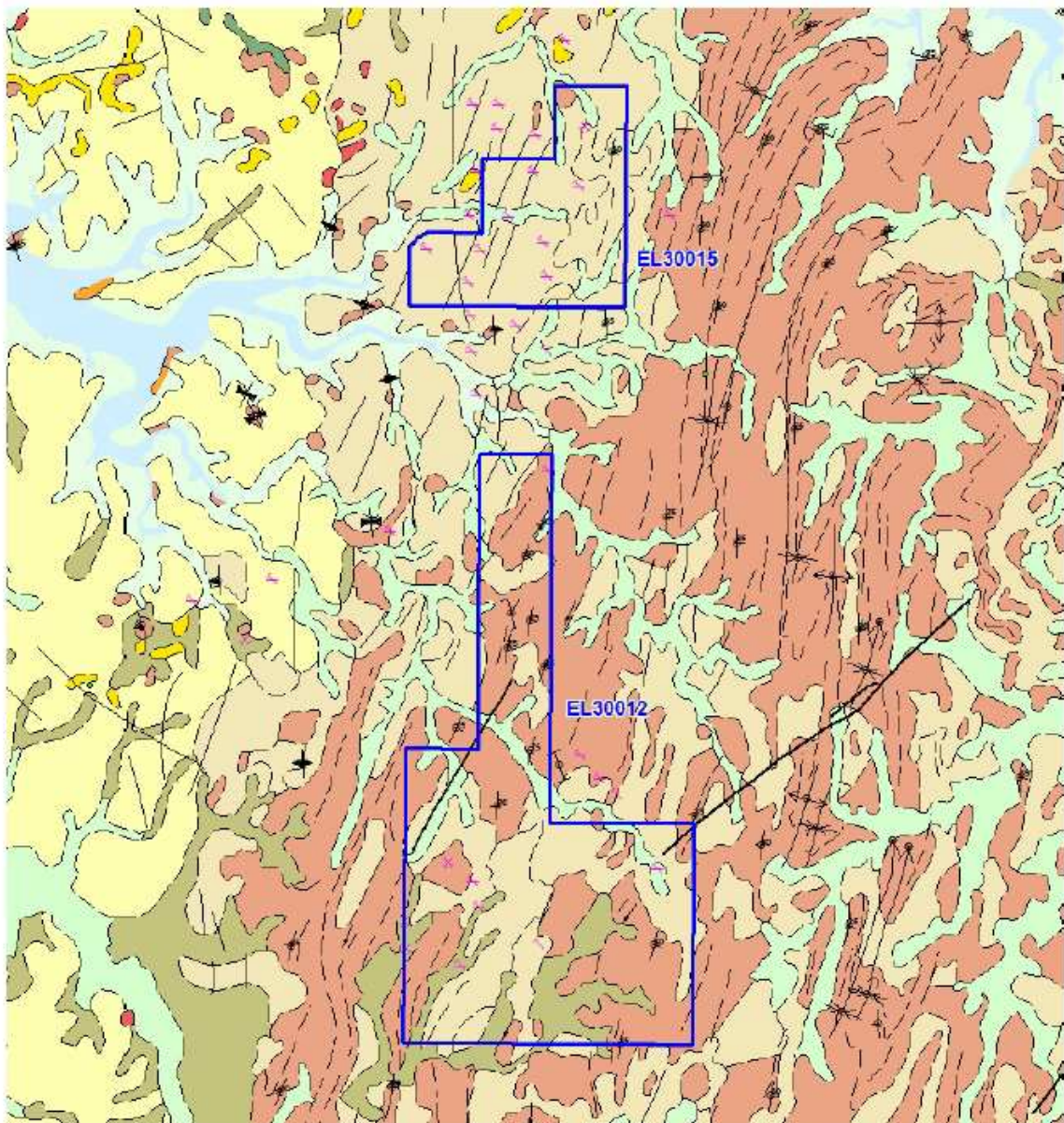
Investigations to date have not found a regular distribution of predominantly Sn or Ta rich pegmatite type on a regional scale. Indeed, both Sn enriched and Ta enriched pegmatites are frequently found in close proximity.

Two styles of pegmatite intrusion occur throughout the belt. The first and most common is as vein or dyke like intrusions, lenticular in surface outcrop and sometimes having pronounced pinch and swell characteristics. Dimensions of the dykes and veins show large variations in scale, from narrow fracture fillings several millimetres in width to massive bodies up to 50m in width and over 200m in length. The second category are tabular sill like bodies in which sub-horizontal jointing is thought to be the main control. They are less common than the vein type but are usually of greater average dimensions.

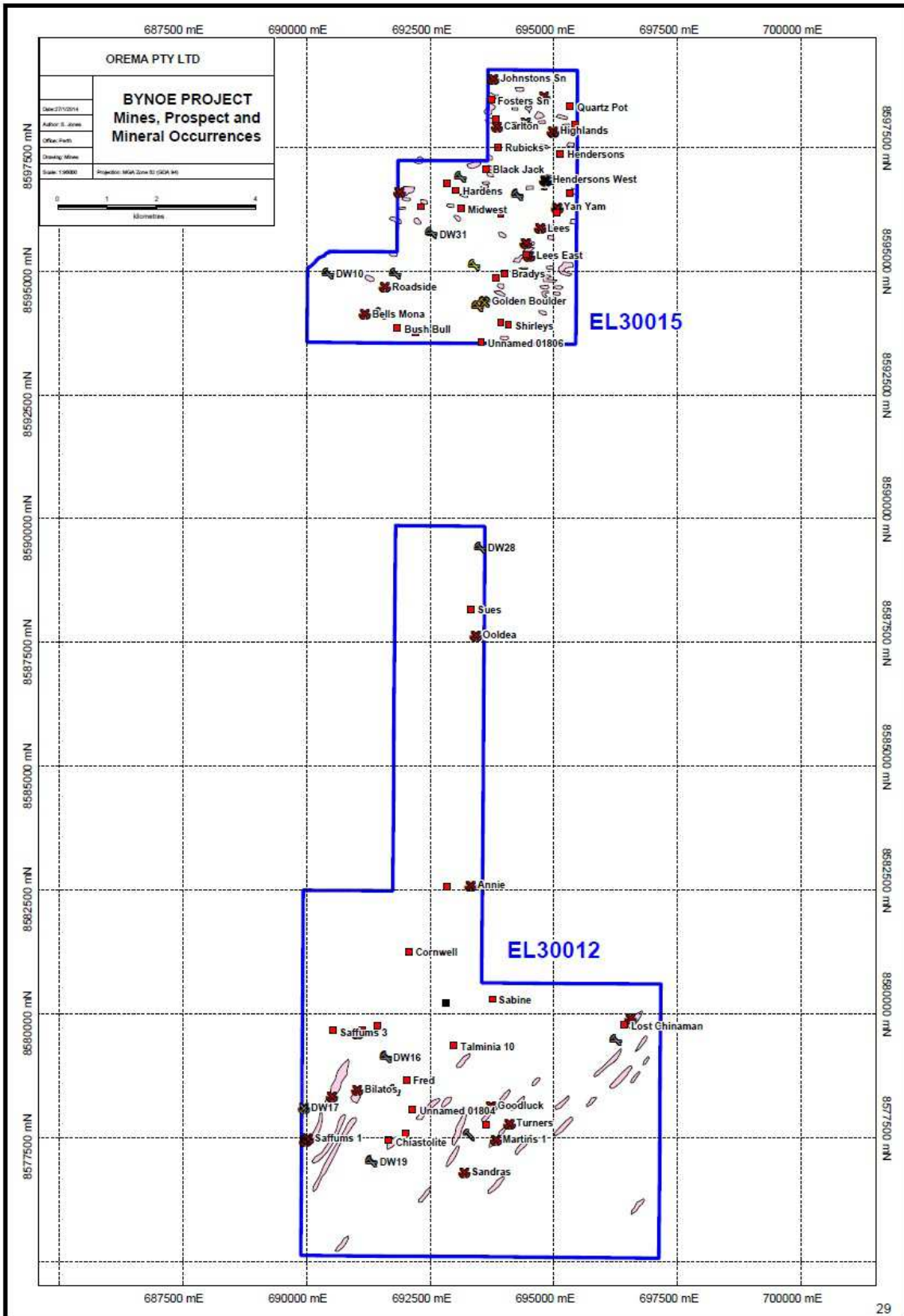
The pegmatites display evidence of both displacement and non-displacement intrusive mechanisms. Different emplacement mechanisms have operated at various stages of pegmatite development, the later mechanisms progressively overprinting the earlier stages.

Mineralisation is associated with mineralogical assemblages within zoned pegmatites. Cassiterite and tantalite is associated with the muscovite-quartz unit surrounding the quartz core and where this unit occurs on the contact margins. Enrichment of cassiterite and columbo-tantalite (coltan) also occurs in the kaolin-muscovite-quartz unit which was probably an albite-muscovite-quartz assemblage prior to weathering. Rarely does mineralisation occur in the quartz core. The Ta content of the columbo-tantalite varies between pegmatites and within individual pegmatites. Bulk sampling and mining has indicated a range of 35 to 55 wt.% contained Ta<sub>2</sub>O<sub>5</sub>.

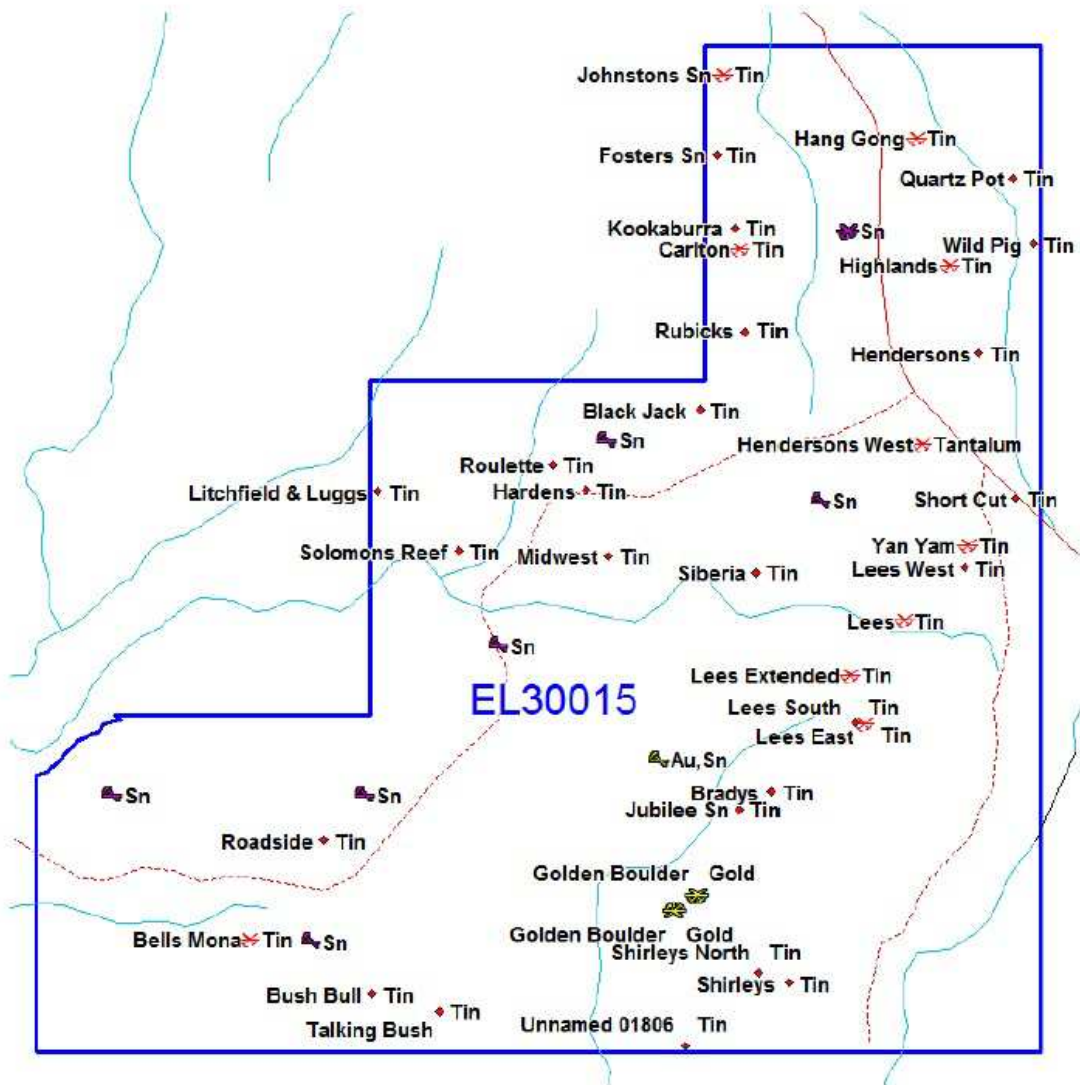
Pegmatite outcrop is generally poor, in many cases visible only by a gentle rise in the surrounding country. Shallow auger drilling by Greenbushes Ltd has shown severe weathering to extend to 25m. Mineralisation is enriched in the near-surface eluvium.



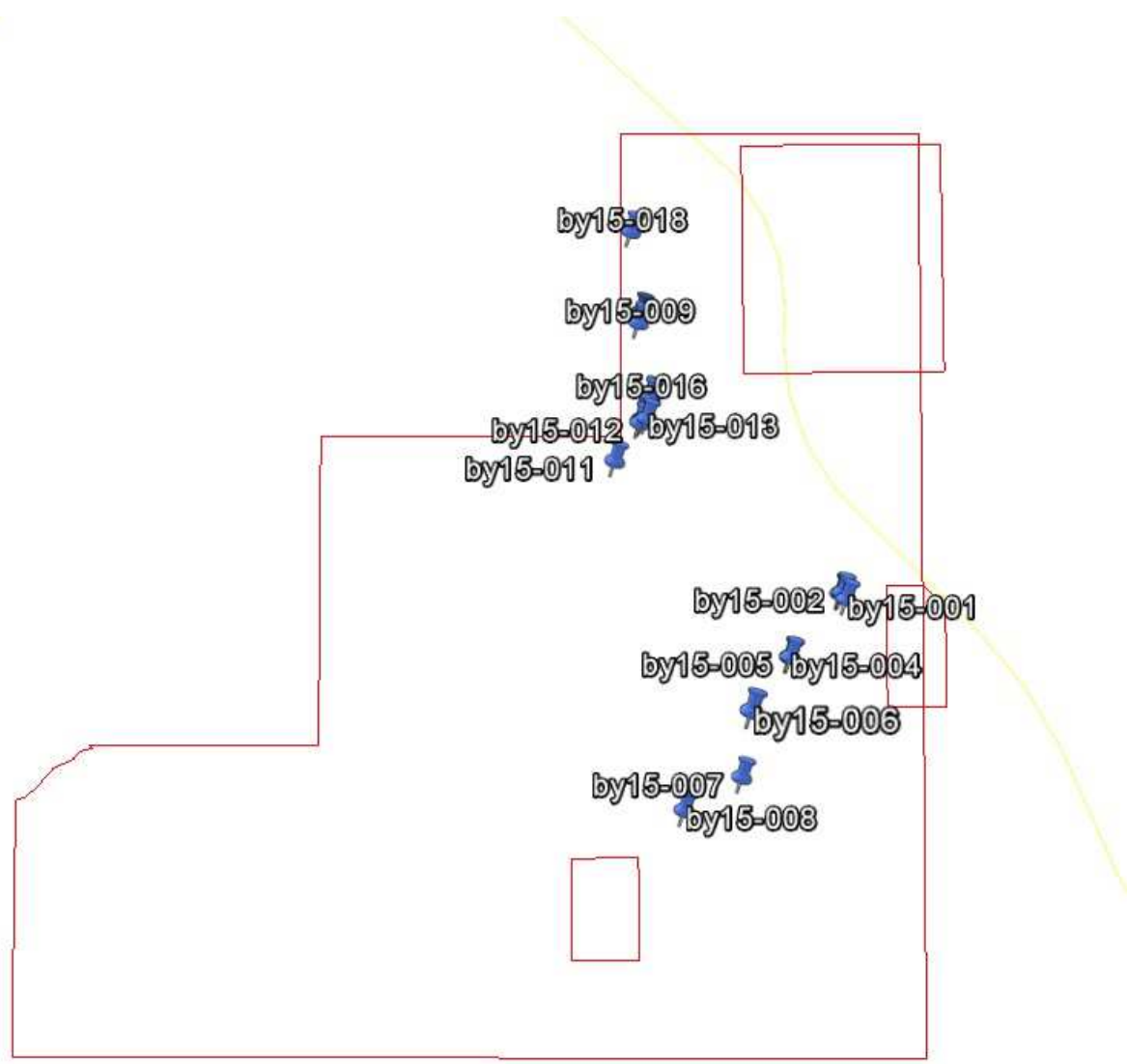
Available NTGS Darwin (SD52-04) 1:250,000 mapsheet surficial geology



EL30015: Identified mines, prospects and mineral occurrences:



# Exploration index map





## Geological activities and office studies

During the reporting year data reviews were conducted of previous company reports (list provided in References section).

Previous exploration has delineated multiple eluvial, alluvial and lode resources of tin and tantalum. Due to the patchy recording of production details, exact figures on mined and remaining resources is fragmented and incomplete.

A review of geological mapping and rock-chip sampling better defined the pegmatite geometry, grade distribution within the sheets, and concluded that mining potential exists for moderate tonnage, medium grade resources in multiple deposits.

## Surface geochemistry

The geochemical activities during the reporting period consisted of 18 rock chip samples. The samples were assayed for 18 elements by North Australian Laboratories in Pine Creek. The rock chips were collected from around and near known occurrences. Assayed elements as follows;

Au  
Cu  
Pb  
Zn  
Ag  
As  
S  
Ni  
Co  
Fe  
Mn  
Ti  
Bi  
Sn  
Ta  
W  
Mo

The assaying was completed using fire assay gold and acid digest with either a ICP-OES or ICP-MS analytical technique.

### *Surface geochemistry record*

Sample		Location		Survey Sample Statistics			
Sample Type	Sample Number	GDA94 Zone 52 East	GDA94 Zone 52 North	No. of samples	Peak Value Sn (ppm)	Mean Sn (ppm)	Median Sn (ppm)
Rock Chip	BY15-006	694440	8595580	18	228.88	60.85	37.25

## **Conclusion and recommendations**

EL 30015 displays potential to discover a medium grade resource in multiple satellite deposits. The area has a long history with extensive work done and numerous identified prospects/occurrences. Further studies are recommended along with additional sampling programs.

## **References**

CR2013-0674 EL28956 First and final report, 16 April 2012 to 23 May 2013  
CR1987-0081 EL 2193 Annual Report on Cox Peninsula, period 27-3-86 to 26-3-87  
CR1987-0124 EL2193 Final Report on EL 2193 Cox Peninsula.  
CR1986-0160 EL2193 Annual Report, Cox Peninsula.  
CR1985-0123 EL2193 Annual report to April 1985 Cox Peninsula  
CR1985-0107 EL2193, EL2155, EL4082, EL4183, EL4456, EL2088 1984 Exploration Program, Bynoe Harbour  
CR1984-0100 EL2193 Annual Report for the year ending 27.3.84  
CR1983-0097 EL2193 Annual report for year ending 27-03-1983  
CR1982-0197 EL2193 Annual report for exploration licence

Photographs

