



Redbank Copper Limited

REDBANK COPPER LIMITED

NORTHERN TERRITORY

**MLN 631 to 636, 1108 ANNUAL EXPLORATION REPORT ENDING
31st DECEMBER 2011**

TO

THE NORTHERN TERRITORY

DEPARTMENT OF PRIMARY INDUSTRY FISHERIES AND MINES

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10th February 2012
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Title Page

Titles/Tenements	MLN 631 to 636, 1108
Titleholder/Operator	Redbank Mine Operations Pty Ltd
Tenement Manager	M&M Consulting, PO Box 8197 Subiaco WA 6008 (08938158660
Grant Date	(631 to 635)-12 th March 1973 and (1108)-1 st October, 1993
Area	(631 to 635)-16 blocks and (1108)-33 blocks respectively
Report Title	MLN 631 to 636, 1108 ANNUAL EXPLORATION REPORT ENDING 31 st DECEMBER 2011
Date of Report / Status	10 th February 2012,
Personal Authors	J Ceplecha
Corporate Authors	Redbank Copper Limited
Target Commodities	Cu, Pb, Zn, Au, Ag, Co,
Project Name	Redbank
Datum/Zone	GDA94, Zone 53
250,000 sheet	Calvert Hills
100,000 sheet	Calvert Hills(6363)
Expenditure Commit.	\$0
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Executive Summary

Redbank Copper Operations operates from a series of small mining leases (MLN631-636 and MLN1108), previously producing copper from a stockpile leach operation located within the mining leases surrounded by ERL94. Placed on care and maintenance in 2009, and the project has been undergoing an intensive review and exploration program. During this reporting period the exploration effort has:

- compilation of all data generated by the 2009 field season,
- stream sampling survey,
- soil sampling surveys,
- Laterite sampling survey,
- integration of geotechnical data,
- Drill testing targets identified.

In the twelve months to the end of December 2011 the company conducted a review of geological and previous drill data. New JORC compliant resource estimates are currently be calculated by independent consultants SRK Consulting Pty Ltd to add to the Cu resource inventory of 6,268000 tonnes @ 1.5% Copper / tonne containing 96,500 tonnes of copper, the company currently has identified.

The company has completed a mine and subsequent development study and is committed to mining oxide deposits at Redbank when statutory approvals have been obtained.

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1 BACKGROUND - REDBANK COPPER OPERATIONS

The Redbank Copper Mine is located in the north-east of the Northern Territory approximately 30 km from the Queensland border and 70 km from the coast of the Gulf of Carpentaria. It straddles the Savannah Way which connects the townships of Borrooloola in the Northern Territory and Burketown in Queensland. It is around 1,200 km south east of Darwin by sealed and unsealed road.

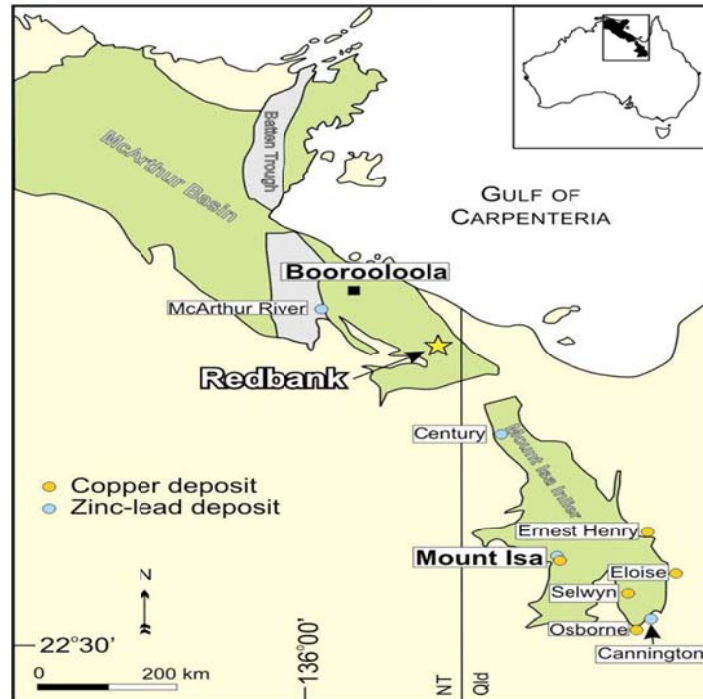


Figure 1: Location and regional setting of Redbank Copper Limited

The Redbank Copper field was discovered in 1916 and small scale mining was carried out until the early 1960's. Subsequently exploration was carried out during the late 1960's through to the 1990's by various groups, culminating in larger scale mining operations being undertaken in the mid 1990's when the Sandy Flat open pit was developed to supply oxide/sulphide ore to a 250,000 tpa flotation plant built on site. Some very high grade (>25% copper) ore was also direct shipped at this time. The operation ceased after less than 2 years because of declining copper prices. With the exception of the mill, the flotation plant and crushing circuit remain on site. Both are in reasonable condition and are planned to be refurbished to operating condition with a redevelopment of the Project.

The most recent processing was a copper leaching operation that began producing on an intermittent basis in 2004 and utilised oxide ore that had been stockpiled during the previous mining. The current owners have operated the site since 2005 and some of the remaining ore stockpiles from the previous mining venture in the 1990's have been processed.

In 2009, with new funding and management arrangements, Redbank undertook the following:

- Placed the site on care and maintenance and embarked on a program to improve environmental compliance, in particular to remedy discharges of contaminated water from the site.
- Carried out a review of the project to determine the future direction of its development, and generate a mine study outlining the path to redevelopment.
- Embarked on a well-funded exploration program that aims to discover new resources and to upgrade the status of the existing resources.

The study undertaken by Redbank examined options for future development of the project. Redbank identified that the future of the project is primarily in processing sulfide copper ores, which comprise more than 86% of the current resources, to make quality copper concentrates. In addition copper cathode can be made from the oxide ores. Further work is required to establish additional resources and better define operating parameters. In May 2011 the total resource was estimated by SRK Consultants as 6,268,000 tonnes at a grade of 1.5% copper containing 96,500 tonnes of copper metal.



Figure 2: Redbank Infrastructure on ERL94, July 2009

The operational area consists of an Exploration Retention License (ERL94) and seven Mineral Leases (ML631, ML632, ML633, ML634, ML635, ML636 and ML1108) contained within the ERL. The company has recently applied for a Mining Lease (MLA27385) to replace ERL94 ahead of a decision to mine in 2010. Redbank Mine Operations Pty Ltd, also has a number of exploration interests within the vicinity of the existing Redbank Mine site (EL24654, EL26758, EL26778, EL26779, EL26780, EL26781, EL26999, EL27240, EL27241, EL27329, ELA27737, ELA28003 and ELA28024). These are located mostly to the north and west of the mine site as shown below in Figure 3. The positions of the ML's are shown in Figure 4

2 REGIONAL GEOLOGICAL SETTING

Regionally the Redbank copper deposits lie within the Proterozoic sequences of the MacArthur River Basin (see Figure 1). The basin hosts a number of world class base metal deposits. The Redbank copper mineralisation is hosted by the Lower Proterozoic Gold Creek Volcanics, a sequence of predominantly intermediate sub volcanic intrusions, extrusions, breccia pipes, and intercalated sediments. The copper mineralisation identified to date has been principally interpreted as being contained in volcanic breccia pipes, of which 30 to 50 have been recognised by various explorers. Only a minority of the breccia pipes are mineralised and only some of those contain potentially economic concentrations of copper.

The Packsaddle Microgranites locally intrude the Gold Creek Volcanics and are present close to the known Redbank copper deposits. Gold Creek Volcanics are present in a significant portion of the regional tenements. Further east the Gold Creek Volcanics are obscured beneath surficial Cainozoic sequences. The Hobblechain Rhyolite, a member of the Masterton Formation overlies the Gold Creek volcanics to the west.

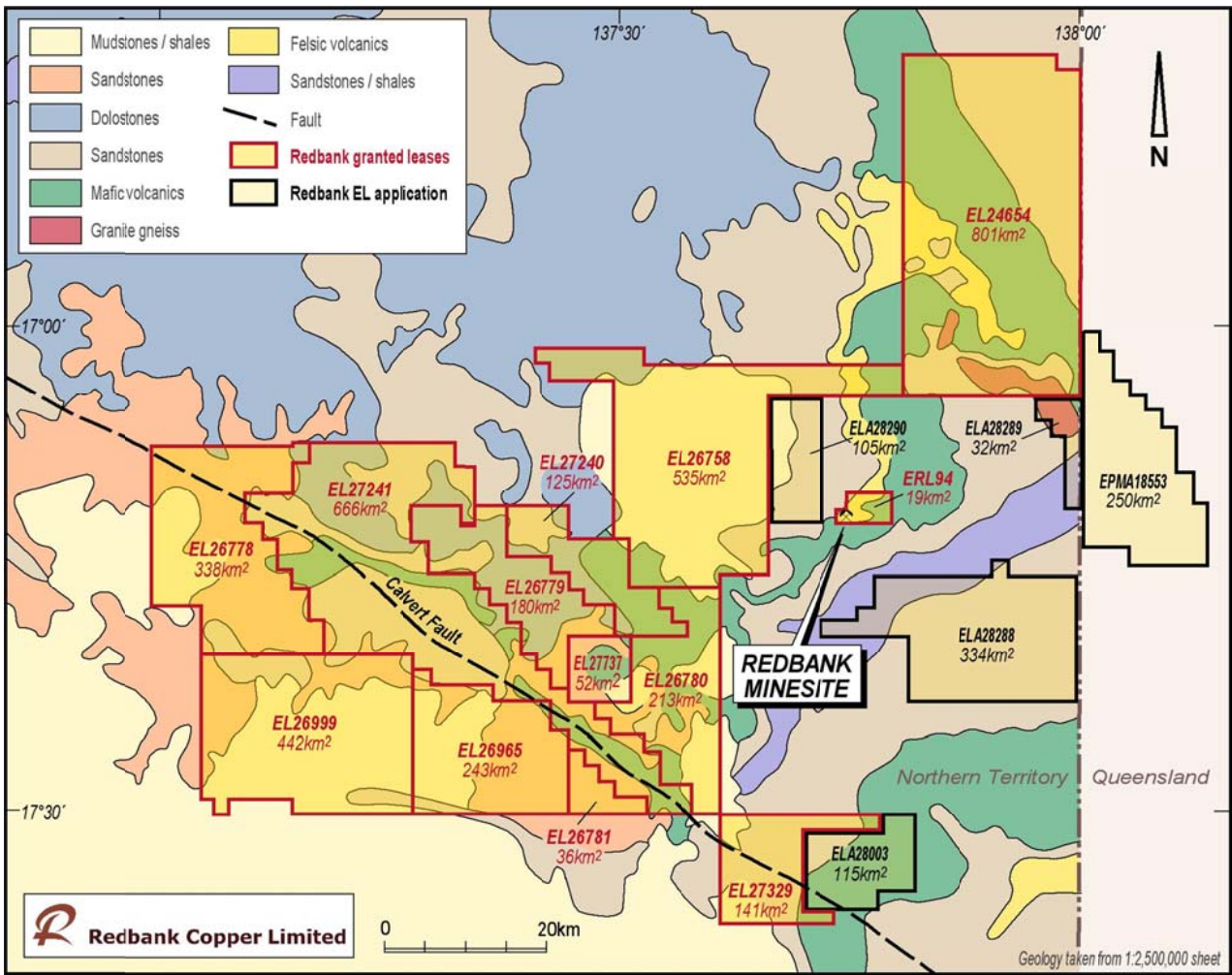


Figure 3: Tenement Holding of Redbank Copper Limited

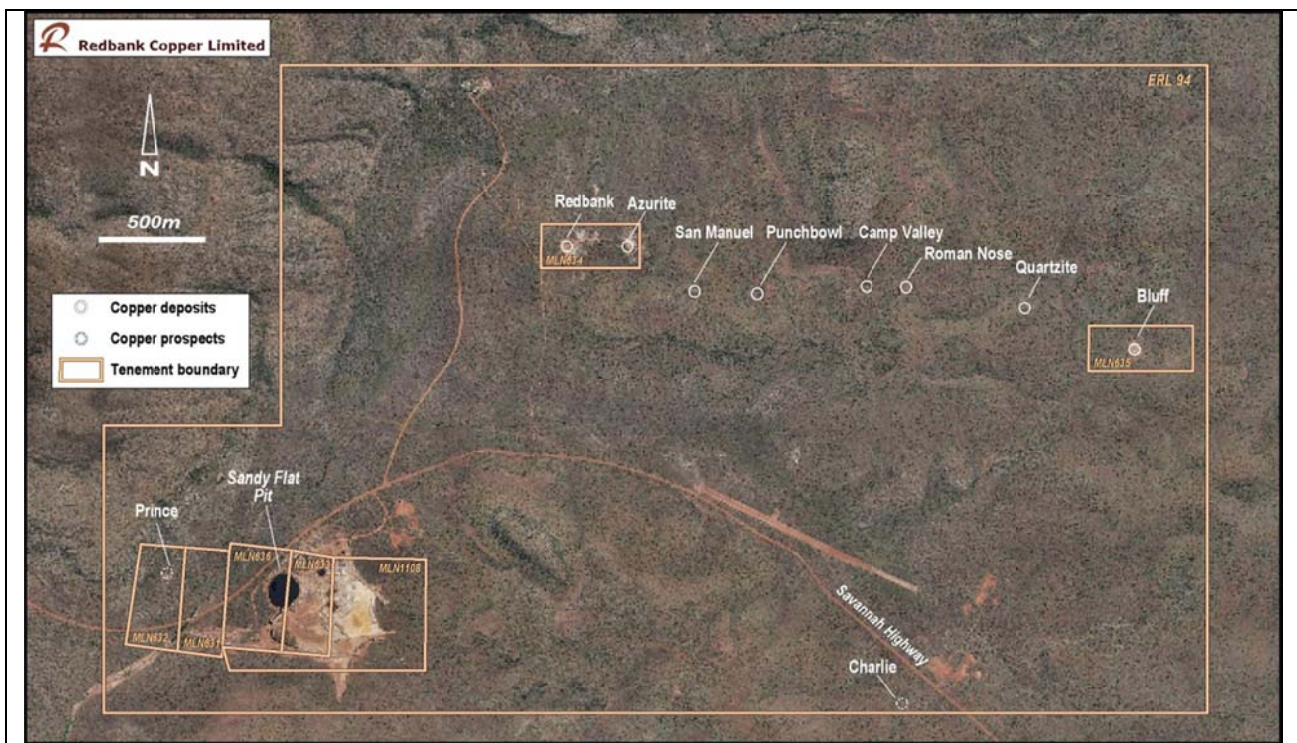


Figure 4: Location of MLN's and Advanced Prospects, Redbank Project

3 TENEMENT GEOLOGY

Within the ML's exposure is good and the topography remnants of Cainozoic surficial deposits, predominantly lateritic (pisolitic and nodular) duricrust with skeletal sandy soils and ferruginous cemented detritus developed above. A well developed deep lateritic weathering profile is evident in areas with deep creek incisions into the landscape.

Other lithologic units observed but with limited outcrop include:

- (i) Masterton Sandstone – Proterozoic McArthur Basin Sequence, McArthur Group sandstone, med to coarse pebbly in upper unit; minor beds of clast supported conglomerate; locally micaceous siltstone and breccia at the base.
- (ii) Hobblechain volcanics – early Cambrian shallow marine fluvial sediments, typically feldspathic sandstones, quartz sandstones and pebble to cobble conglomerates.
- (iii) Gold Creek Volcanics – Proterozoic McArthur Basin Sequence, Tawallah Group Trachyte and latite flows, tuff, tuffaceous and lithic sandstone, siltstone.
- (iv) Wollogorang Formation – Proterozoic McArthur Basin Sequence, Tawallah Group Dolomitic and quartz sandstones, ferruginous in parts, feldspathic; dolomitic siltstones; stromatolitic dolomite, oolitic dolomite.

The Redbank Mining Centre contains 21 breccia “pipes” or diatremes and shear zones/veins most of which contain copper mineralization. These structures are mainly hosted by the Hobblechain Rhyolite, the Gold Creek Volcanics and the Wollogorang Formation; however, diatremes have also been recorded in the Settlement Creek Volcanics and the Seigal Volcanics. Host rocks are brecciated and altered passing out into less altered shallow-dipping host rocks. The volcanic breccias from the Redbank Mining centre appear to be located within an east-trending structural corridor although mineralized breccia veins are aligned north-east with a steep northerly plunge to the shoots. A conjugate fault system with dextral movement would tend to produce dilation zones aligned along an easterly trend.

The localizing structures are probably faults or fault intersections plunging through the Tawallah Group into basement containing granite. The copper deposits occur in clusters, exceed 300 m in depth and have near circular to irregular outlines from 50 m to 150 m across.

Primary mineralization consists of disseminations and veins with chalcopyrite and bornite in breccia. Gangue minerals are dolomite, barite, chlorite, potassium-feldspar, quartz, pyrite, hematite, apatite and pyrobitumen. Clasts of overlying units are evidence for collapse during breccia formation. In the oxide zone from surface to 30 m depth, grades approach 6% copper, the main minerals being malachite, azurite, chalcocite and chrysocolla.

Breccia and wall rocks are associated with intense potassic alteration consisting of carbonate-chlorite-potassium feldspar-quartz, pyrite, hematite and pyrobitumen.

Past production was 19 600 tonnes grading 5% copper and currently indicated resources from two deposits are 2.0 million tonnes grading 1.66% copper at Bluff, and 1.5 million tonnes grading 2% copper at Sandy Flat.

The presence of pyrobitumen of organic origin precludes a purely volcanic origin for the breccia and may support a low pressure, low temperature epithermal source. Several theories have been advanced to explain the origin of the diatremes which are produced by over-pressured fluids. There is no direct evidence for magmatic fluids and the fluids might be produced by mixing of sulphate and copper-rich basinal brines, derived from above and lateral to the deposits, with rising, reduced, hydrocarbon-bearing fluid sourced in the underlying Wollogorang Formation. The significance of a conceptual model based on the mixing of reduced and oxidized fluids is that it

increases the potential of the area for more extensive copper deposits in a structural setting that permits oxidized brines to mix with reduced fluids from other formations in the Tawallah Group.

4 EXPLORATION MODELS

The consensus of most of the modern era (post-1970) explorers in the Redbank area is that the mineralisation is contained in the approximately circular volcanic breccia pipes as the result of fluid circulation in the breccia. The breccia pipes development has also been interpreted as involving largely autochthonous brecciation of the trachyandesite host rock, with little displacement.

There have been some suggestion that there has been post volcanic slumping in some pipes causing minor (<10m) vertical displacement of sediments overlying the Gold Creek volcanics into the pipes. Minor normal faults and jointing have been interpreted as exerting a control on the location and form of the pipes. A peculiarity of the more comprehensively mineralised pipes is the association of the mineralisation with pyrobitumen. The origin of the pyrobitumen has been variously speculated as resulting from intense reduction of carbonate to a high temperature derivative of an organic precursor.

RC and diamond core drilling by Redbank on deposits in the area during 2006 to 2009, has indicated that the mineralisation does not display all the characteristics that could be expected solely from the circulation of mineralised fluids through the prepared breccia pathways. While there are clearly veins of sulphidic copper mineralisation contained within the breccia they are typically fragmented. Also much of the primary mineralisation consists of chalcopyrite and chalcocite grains disseminated through the host trachyandesite. The oxide mineralisation retains the characteristics of the primary mineralisation structures and fabrics with cuprite largely replacing the disseminated chalcocite and chalcopyrite, with a minor amount of azurite and malachite vein formation following ground water migration along open weathering fractures.

More detailed studies of petrogenesis and ore formation are planned but the initial indications are that there may be a precursor disseminated style of mineralisation emplaced in the breccia pipes. The source of the precursor mineralisation could represent a major target for large scale disseminated copper mineralisation. As a corollary exploration should not only focus on finding mineralised breccia pipes but should also be trying to discover the source of the precursor disseminated mineralisation which has the potential to be a much larger target.

Conceptually, the possibility exists for 'Manto' style stratabound deposits forming at depth below the limit of breccia formation, as a primary mineralisation focus over structural décollements from fluid travelling laterally from major through-going lineaments, such as the Calvert Hills fault immediately north of the EL26965.

A stromatolitic dolomite bed in the McDermott Formation immediately below the Sly Creek sandstone, reports consistently elevated copper and cobalt levels over a few km south of the Calvert Hills homestead.

Packsaddle Microgranite (or rhyolitic) intrusions occur in close association with the Redbank copper Mineralisation. It is not yet apparent if there is any paragenetic significance in this spatial association. The Packsaddle Microgranites have interpreted as associated with a regional 1,725Ma felsic intrusive event in the Macarthur River Basin (Page *et al*, 2000).

5: PREVIOUS EXPLORATION ON REGIONAL TENEMENTS

Review of the available historic data indicated that it was disjointed and compilation into a modern GIS system was required. Principal explorers were Carpentaria, Rio Tinto, and then later CRA, mainly exploring for base metals, uranium and diamonds in the general area. Several generations of work starting in the 1960's can be grouped according to commodity as follows:

- (i) 1956 to 1960 – predominantly uranium exploration,
- (ii) 1965 to 1971 – again mainly uranium with another focus on copper, particularly at Redbank,
- (iii) 1978 to present – uranium, diamonds, gold and base metal, manganese and industrial minerals (phosphates)

Apparently no broad approach to the current land package has been effectively applied, and with no application of new generation of geophysics and deep sensing geochemical methods..

6 EXPLORATION FOR THE PERIOD 31st December 2010 TO 30th December, 2011

Work undertaken during the period consisted of:

- (i) Regional compilation of open file and other available company data from all known sources by an external consultant directed by the company's exploration manager.
- (ii) Indexing and geo-referencing of all data accumulated with point extraction of data where required,
- (iii) Production of relevant maps for interpretation and ground survey planning,
- (iv) Site investigations of different prospects for access preparations and future drilling.

7 PROPOSED EXPLORATION FOR THE NEXT 12 MONTHS

The company intends to fly close spaced heli-TEM across the ERL94, which is inclusive of the mining tenements.

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