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# **PARTIAL RELINQUISHMENT REPORT EPM 17453, ANDREWS**

For the Period

21 October 2010 to 26 September 2013

**Compiler:** John Downing

**Tenement Holder:** Mount Dockerell Mining Pty Ltd (MDM)  
(a wholly owned subsidiary of Santana Minerals Limited)

**Tenement Operator:** Hammer Metals Limited (Purchasing MDM)

**Date:** 21<sup>st</sup> November 2013

**Distribution List:** Queensland Department of Natural Resources and Mines  
Hammer Metals Limited  
Santana Minerals Limited

**Submitted by:** On behalf of Hammer Metals Limited by  
Hetherington Exploration and Mining Title Services Pty Ltd

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**INTRODUCTION**

EPM 17453 (Andrews) is situated within the Mount Isa province of north-west Queensland. Its 9 sub-blocks was granted to Mt Dockerell Mining Pty Ltd [MDM] on the 21st October 2010 for a period of five years. Mount Dockerell Mining Pty Ltd is a subsidiary of Santana Minerals Limited. The EPM was reduced by 2 sub-blocks on September 26<sup>th</sup> 2013, leaving a total of 3 active sub-blocks.

Syndicated Metals Limited assumed operation of EPM 17453 on 15 May, 2011 under the Kalman Project Joint venture agreement covering EPMs 13870, 14232, 14369, 14386, 14861, 15972, 16061, 16922, 16987, 17169, 17285, 17453, 17762, 18082, 18078, 18116, 18223, 18320, 18378, 18980 and 19008. This project area has been actively explored by the Joint Venture participants since 2005. In that time they have completed extensive ground reconnaissance work which led to the delineation of the Kalman molybdenum-rhenium-copper-gold resource (61 million tonnes grading 0.05% molybdenum, 1.19ppm rhenium, 0.32% copper and 0.15% g/t gold). Expenditure on the Mount Isa projects totals in excess of \$25 million since 2005.

Hammer Metals entered into an agreement with Santana for the purchase of MDM, and in March 2013 assumed responsibility for exploration management of MDM’s tenement portfolio including EPM 17453.

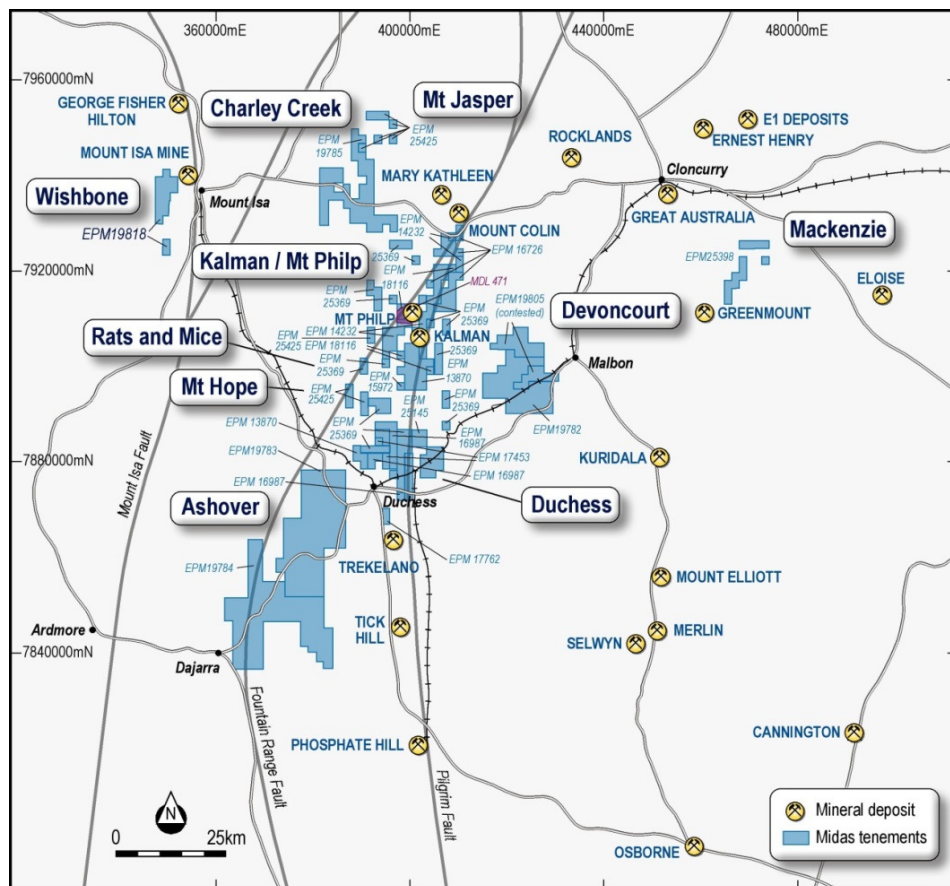


Figure 1. Tenements operated by Hammer Metals in the Mount Isa region, including EPM 17453.

**LOCATION & ACCESS**

EPM 17453 forms two non-contiguous groups of sub-blocks located approximately 5 km NE and 10km SW of Duchess Siding. Access is via the Duchess-Cloncurry road, the Duchess railroad access track, and station tracks.

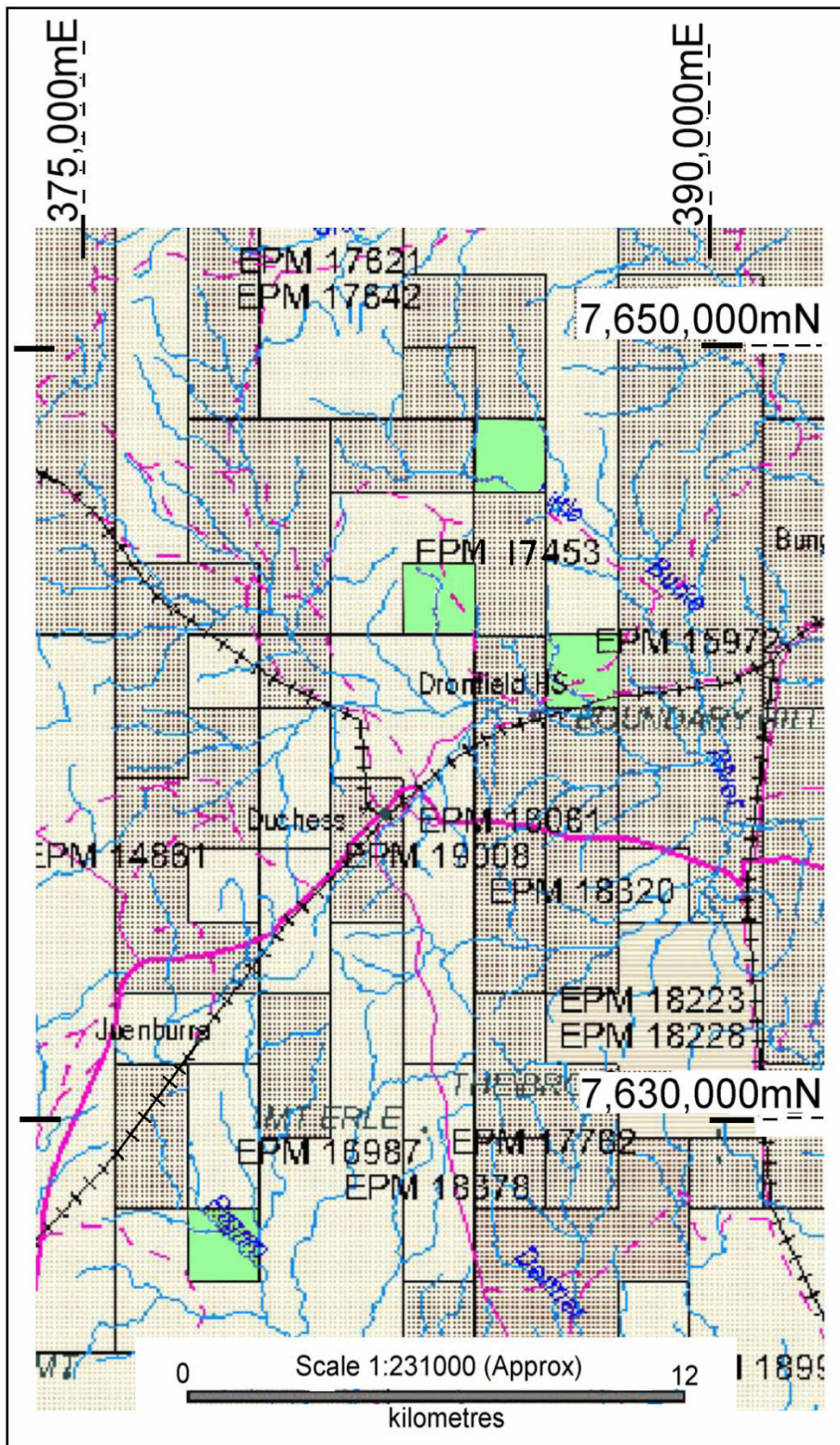


Figure 2. Relinquished sub-blocks of EPM 17453 (green shading)

## TENURE

EPM 17453 (Andrews) containing 9 sub-blocks was granted to Mt Dockerell Mining Pty Ltd [MDM] on the 21st October 2010 for a period of five years. Mount Dockerell Mining Pty Ltd is a subsidiary of Santana Minerals Limited. Syndicated Metals Limited assumed operation of EPM 17453 on 15 May, 2011 under the Kalman Project Joint Venture agreement. Hammer Metals assumed tenement management in March 2013 under an agreement with Santana for the purchase of MDM.

EPM 17453 was reduced by 4 sub-blocks in 2012 and 2 sub-blocks on September 26<sup>th</sup> 2013, leaving a total of 3 active sub-blocks.

Table 1. EPM 17453 sub-blocks, granted 21/10/2010

BIM	BLOCK	SUB-BLOCK
CLON	1103	C, J, O, S, T, Z
CLON	1246	D, J, P

Table 2. EPM 17453 sub-blocks relinquished

BIM	BLOCK	SUB-BLOCK
CLON	1103	J, S, Z
CLON	1246	D, J, P

## NATIVE TITLE

A Native title Agreement was signed with the Yulluna People in 2010.

## GEOLOGY & MINERALISATION

EPM 17453 is situated within the eastern portion of the Mount Isa Block, (known as the Eastern Succession) which hosts several world class copper-gold mining operations such as Ernest Henry, Osborne and Selwyn. The high-grade Tick Hill gold deposit mined by MIM in the late 1980's to early 1990's occurs to the south of the application area and represents a unique style of gold only mineralization that has not been found elsewhere in the region. MDM's nearby Kalman deposit represents a unique style of gold-copper-molybdenum-rhenium mineralization.

The tenement lies to the west of the boundary between the Wonga Sub Province and Quamby-Malbon Sub Province, which is represented by the Pilgrim fault, a significant strike-slip fault.

The Plum Mountain Gneiss is regarded as local basement. It is described as a coarse to medium grained quartzofeldspathic gneiss of Palaeo-proterozoic age and outcrops in the southwest of the tenement area.

The project area is principally underlain by the Corella Formation which is described as a sequence of mixed siliciclastic/carbonate rocks comprised of calcareous siltstone, limestone,

calcareous scapolitic granofels, quartzite, amphibolite and shale. It is dated as Palaeoproterozoic.

Intruding the Corella Formation in the centre of the Project area is the Overlander Granite and Revenue Granite, medium to coarse grained leucogranites of Mesoproterozoic age.

The Bushy Park Gneiss and Mt Erle Igneous Complex also intrude the Corella Formation in the tenement area. They are described as intermediate and felsic intrusives of Mesoproterozoic age. The Bushy Park Gneiss is comprised of medium to coarse granitic gneiss, augen gneiss, and foliated to gneissic granite whilst the Mt Earle Igneous Complex is described as leucogranite, dolerite and hybrid rocks.

The dominant structure within the project area is the Pilgrim Fault. This fault extends for over a 100 kilometers from north to south and separates the Wonga and Quamby-Malbon Sub-provinces. To the east of the Project Area it is mapped at the junction of the Corella Formation and the Late Cambrian Members of the Burke River Structural Belt, but actually occupies a 500-1000m wide zone and consists of sub-parallel quartz breccia and quartz-manganese veins within variably sheared metamorphics.

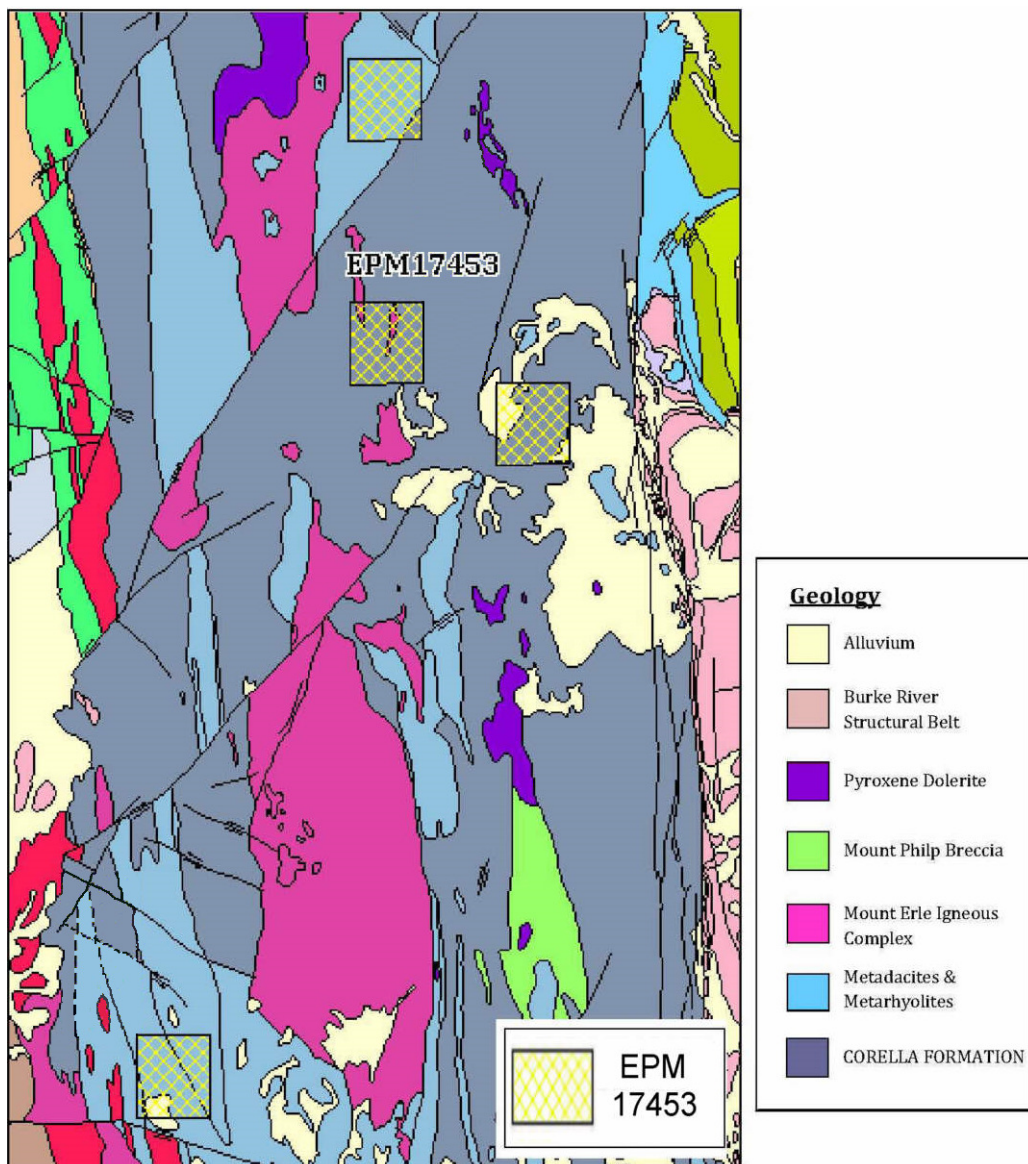


Figure 3. EPM 17453relinquished sub-blocks over Regional Geology

**PREVIOUS EXPLORATION**

Although the region as a whole has been explored by numerous companies since the 1950’s, little previous exploration has been identified over EPM 17453.

There are no known historic mineral occurrences within the tenement boundaries.

Table 3. Previous Exploration of EPM 17453

DECADE	EPM	CRN	COMPANY	DESCRIPTION
50's	84		RioTinto	Airborne EM
60's	441		Australian Selection	regional radiometrics
	566		Texins Development	regional radiometrics, stream sediment follow-up
70's	1310		Aquitaine Australia	
	1348		Marathon	exploration of The Brothers
	1690		Carpentaria Exploration	
	1942			
80's	2352		Esso Exploration	
	2558		CRA Exploration PTY	
	3267		CRA Exploration PTY	
	3963		WMC	
	4533		Mount Isa Mines	
90's	7223			Reports confidential
	7325		Queensland Minex	
	9083	35315, 51097, 62615	Arimco, Delta	work on HB Prospect, Sundance, Petticoat Tank, High Noon
	9704		MIM Exploration	
00's	11990			Classified

### WORK UNDERTAKEN

Work completed on the relinquished sub-blocks consisted of analysis of regional geophysical, hyperspectral and geochemical exploration datasets. Hyperspectral Data shows that the Pilgrim Fault has regional potential for Kalman style mineralization. Aeromagnetic and geochemical data analysis did not reveal any significant anomalies on the relinquished ground.