

## Quarterly Report to 31 Dec 2013

# ASX Release

#### Metallica Minerals Ltd

An Australian scandium-cobalt-nickel & zircon-rutile resource development Company

#### ASX:MLM

ISSUED CAPITAL (31/12/13) See latest Appendix 5B for more detail (Lodged 8/1/2014)

SHAREHOLDERS (31/12/13) 2,136 shareholders

#### Top 20 shareholders hold 59.5%

#### LARGEST SHAREHOLDERS

Jien Mining Pty Ltd – 24.9% Victorian Ferries Pty Ltd – 10.8% Golden Breed Pty Ltd – 6.2% Bondline Ltd – 3%

#### DIRECTORS

David K. Barwick – Non Exec Chairman Andrew Gillies – Managing Director Barry Oasson – Non Exec Director Shu Wu – Non Exec Director

#### SENIOR MANAGEMENT

Stewart Hagan – GM Industrial Minerals Gavin Becker – Manager (consulting basis) SCONI Project

#### **CASH BALANCE**

As at 31/12/13, MLM's cash balance was approximately \$2.86 million. No Debt.

### Highlights

URQUHART POINT (NEAR WEIPA) AND CAPE YORK REGIONAL HEAVY MINERAL SANDS (HMS) PROJECT - 100% OWNED

#### URQUHART POINT

For further information see ASX Release 5 December 2013

- Mining Lease for Urquhart Point Heavy Mineral Sand (HMS) Project granted on 8 October 2013.
- Approval under Commonwealth Environmental Protection and Biodiversity Conservation (EPBC) Act granted in November 2013.
- The Urguhart Point Resource further upgraded and reported according to JORC Code 2012.
- Indicated Resource tonnage increased by approximately 19% to 3.22 million tonnes (Mt) at 6.47% Heavy Minerals (HM) – see Table 2 and 3. Refer to ASX Release dated 5 December 2013.
- The resource is high grade (averaging > 6% HM) HMS (heavy mineral sand) occurring from surface to an average depth of 2m to 3m. Further drilling and representative metallurgical sampling to better define the HM assemblage is currently underway.
- Company continuing to seek quotes for processing plant and equipment and to negotiate partnerships, funding and offtake agreements.

#### CAPE YORK REGIONAL HMS EXPLORATION – "DISCOVERY OF T16"

For further information see ASX Release 22 January 2014 & 26 November 2013

- Regional reconnaissance exploration drill program (comprising 36 shallow holes) discovers significant zircon rich HMS mineralisation on Target 16 (T16) – see Figures 4, 5 and 6.
- All 36 holes (average depth 3.7m) recorded significant HM mineralisation (average 1.7% HM) covering a 1.8km long by 800m wide area with mineralisation open in most directions.
- Zircon rich HM assemblage averaged 32.6% zircon, 5.9% rutile and 10.7% other titanium minerals comprising 49% of total HM – see Table 4 and Pie Chart page 8.
- Average drill hole composite grade of 0.45% zircon in the HMS.
- Of the 36 holes, 24 holes ended with samples recording over 1% HM.
- Only a small portion of the T16 prospect area has been drilled and T16 is only one of many regional exploration targets, suggesting significant potential for additional HM discoveries.
- Planning to resume regional exploration drilling activities on T16 in April 2014, subject to the outcomes of the draft Queensland Governments Cape York Regional Plan (CYRP).

## **Highlights**

#### SCONI PROJECT – 100% OWNED SCANDIUM, NICKEL AND COBALT PROJECT

Metallica is continuing with the following activities on a conservative and as required basis;

- In the October Quarter the SCONI Project Nickel (Ni) Cobalt (Co) and Scandium (Sc) Mineral Resources were upgraded and reported according to the guidelines of the JORC Code 2012 (see ASX Release dated 21 October 2013 and summarised in the September Quarterly Report dated 30 October 2013).
- Landowner compensation agreements have been signed with the landowners associated with the Lucknow and Bell Creek Mining Lease Applications (MLAs) see Figure 7 – expect both mining leases to be granted in the March Quarter.
- Progressing negotiations with interested parties and reviewing scandium development options with potential partners in the SCONI scandium project.

- Seeking additional offtake agreements and/or alliances with end users of scandium.
- Progressing its intellectual property and patent applications for refining scandium ores to high purity scandium oxide (>99.9%).
- SCONI Environmental Impact Assessment (EIS) studies are well advanced but currently on hold.
- SCONI related exploration tenements have been rationalized, focus on existing resources secured within mining leases for future development.

#### CORPORATE

- The Company received a \$3.05M Research and Development (R&D) tax refund in October 2013.
- Significant cost reduction continued to conserve the Company's cash position, these included;
  - Ongoing review of all costs, including further planned redundancies and other reductions in staff and a move of staff from salaried positions to contracting or casual employment on an as required basis; and
  - Project and administrative costs further reduced during the quarter, until further funding can be secured.



Figure 1: Project locations

## **Financial**

#### SAFETY

There were no lost time injuries recorded during the December 2013 quarter.

#### FINANCIAL & INVESTMENTS POSITION

To be read in conjunction with **Appendix 5B lodged** with ASX on 8 January 2014.

Metallica's Minerals Ltd ("Metallica" or the "Company") had approximately \$2.86M in cash (effectively no debt) and \$2.44M in listed securities (MetroCoal Ltd and Cape Alumina Ltd) as at 31 December 2013, as indicated in Table 1 below. In late October, the Company's cash position was boosted with a \$3.05M R&D tax refund.

On the 22 November 2013, MetroCoal and Cape Alumina announced that they had agreed not to proceed with the proposed merger following the announcement by the Queensland Government (20 November 2013) that it would introduce legislation (under the proposed CYRP) which would have a major impact on the viability of Cape Alumina's flagship Pisolite Hills project on Western Cape York.

The Annual General Meeting (AGM) was held on 26 November 2013 and all four resolutions (Resolution 3 was withdrawn prior to the meeting) put to members at the AGM of shareholders were passed. Resolution 3 was for the re-election of Mr John Haley as an Executive Director. Metallica's Board is now reduced from five to four directors. Mr Haley remains the Company's Chief Financial Officer and Company Secretary.

## SIGNIFICANT COST REDUCTIONS IN THE QUARTER

The Company continued to significantly reduce project and administrative costs during the quarter to conserve Metallica's cash position due to current depressed capital market conditions and outlook, particularly in the junior resource and exploration sector. Metallica is continuing to pursue project funding, strategic partnerships, offtake arrangements and progress its SCONI and Weipa project mining leases (and applications) and environmental licences, on a low cost basis. The Board will revisit the reduced expenditure program once further funding is secured.

#### OUTLOOK FOR 2014

The 2013 year was an extremely difficult year for exploration and junior resource companies, due to generally lower commodity prices, difficult market and business conditions, falling share prices and sustained difficulties in raising additional equity funds at reasonable prices. The Company will continue seeking potential strategic investors in both our SCONI and Weipa Zircon-Rutile Projects. Expenditure on the Company's projects will continue at significantly reduced levels until such time as further funding is secured and market conditions substantially improve. A major positive for resource projects in Australia is the falling \$A (currently around \$US0.87 level) and the outlook is for it to fall further.

The Board and management will keep all options open for corporate transactions, which despite market conditions, could potentially deliver substantial value and future growth for our shareholders. It is our intention to be well prepared for the next upturn in the resources sector and equity markets. There will be continued emphasis to gain project partnerships for both our resource development projects – the SCONI Scandium project and the Urguhart Point HMS project.

The Company has committed to a \$200,000 drilling and metallurgical sampling program which commenced in late January and will continue to early February 2014 to better define the heavy mineral assemblage (zircon, rutile, ilmenite, other mineral contents) and continue to progress the Company's Urquhart Point Project towards its development. Following this program, and subject to project development funding and project economics including the upcoming drilling and metallurgical sample results, the Company intends to continue to progress the Urquhart Point Project toward development in the 2014 calendar year.

Subject to clarification of the Queensland Government's CYRP (and funding), the Company plans to continue regional HMS exploration, including a further drilling program on the T16 HMS discovery and on the Company's other Cape York regional tenements, where the Company has identified at least 10 regional exploration targets for evaluation.

#### Table 1: Metallica's ASX Listed Investments as at 31 December 2013

ASX Code Company	Commodity	MLM % Number Shares MLM hold		Price per share (31 Dec 2013)	Market Value	
<b>MTE</b> MetroCoal Limited	Coal	30.8%	64,300,000	2.4 cents	1.54M	
<b>CBX</b> Cape Alumina Limited	Bauxite	12.3%	29,954,405	3.0 cents	0.90M	

## Urquhart Point and Regional Cape York Heavy Mineral Sands Project

100% OWNED

#### URQUHART POINT PROJECT 100% MLM

The Urquhart Point project (EPM 15268 and Mining Lease 20669) covers a large, low lying sand mass located 3km southwest of Weipa on the western coast of Cape York Peninsula, Queensland (Figure 2 and Figure 3).

The Company's 366ha Mining Lease over the Urquhart Point Project ("the Project") was granted on 8 October 2013 and is a major milestone for the development of the project.

The Company has so far defined a modest sized 3 to 4 year mine life project for the Urquhart Point HMS deposit.

Metallica commissioned independent consultants, Coxsrocks Pty Ltd, to update the previous resource using the additional 83 drill holes completed in October 2013 and to prepare a revised Mineral Resource estimate for Urquhart Point according to the guidelines of the JORC Code 2012. This upgraded Urquhart Point Mineral Sand Resource is classified as Indicated and is stated in Table 2 and 3 (using a range of COGs). For further information on the Urquhart Point Resource Estimate, see ASX Release dated 5 December 2013.

#### Table 2: Urquhart Point Mineral Resource estimate

INDICATED RESOURCE							
Tonnes HM %		Oversize %	Slimes %	COG			
3,221,440	6.47	11.18	1.18	2.0%			

#### Notes:

- A small part of this resource (~42,560 tonnes at 23.8% HM) is situated outside the ML boundary and (see Figure 3) a separate MLA has been prepared to incorporate this portion.
- 3. The possible application of internal environmental buffer zones within the ML (see Figure 3) has the potential to make portions of this resource unavailable for mining. Allowance for these proposed buffers will be required for the mine planning which is work in progress.
- 4. For further information including Table 1 (JORC Code, 2012 Edition Section 1 Sampling Techniques and Data, Section 2 Reporting of Exploration Results and Section 3 Estimation and Reporting of Mineral Resources) see ASX Release dated 5 December 2013.

The HM consists of a variable suite of targeted zircon, rutile and ilmenite minerals and approximately half predominantly iron oxide sands. The heavy minerals are located within a shallow mineral sand deposit (with very low clay content) on a base of partly cemented shelly limestone (coquina).

The latest drilling (October 2013) and subsequent modelling work used to estimate this Mineral Resource has highlighted the requirement for additional mineral assemblage information from further drilling and representative metallurgical sampling to better define the HM assemblage.



Cut-off Grade HM%							
COG	Tonnes	Density	HM %	Oversize %	Slimes %		
10.0	288,640		16.91	3.54	0.95		
8.0	588,480		12.79	5.68	1.01		
6.0	1,305,600		9.59	7.68	0.97		
5.0	1,855,680	1.00	8.37	9.19	1.00		
4.0	2,474,880	1.00	7.40	10.66	1.15		
3.0	3,092,800		6.63	11.14	1.13		
2.0	3,221,440		6.47	11.18	1.12		
0.0	3,231,360		6.46	11.19	1.12		

Table 3: The Urquhart Point Mineral Resource estimated using a range of HM% COGs  $% \left( {{{\rm{COGS}}} \right) = 0.025} \right)$ 

This will provide a breakdown of the proportion of zircon, rutile, ilmenite, iron oxide and other minor heavy minerals. This work has commenced and will continue into early February 2014.

The resource is entirely within EPM 15268 (does not allow for ML or potential environmental buffer boundary influences).



#### PROPOSED URQUHART POINT DEVELOPMENT PLANNING

Metallica is planning to develop a simple dry mining (<3m depth) and wet processing procedure using standard gravity (using spirals) HMS separation and concentration operation. The mineral processing essentially involves the separation of the heavy minerals (>4 specific gravity (SG) density) including zircon-titanium minerals and iron oxide minerals of the sand which averages approximately 6-8% of the HMS from the lighter (<3 SG) quartz and calcareous sands (i.e normally >90% HMS). No chemicals are required for HMS processing or HM concentration.

The HMS processing rate is proposed to be 200 to 300 tonnes per hour (approx. 500,000 to 700,000 tonnes per year) to produce HM concentrate over a 3-4 year mining and processing life.

Metallica is looking at the option of either producing a mixed HM concentrate (valuable Heavy Mineral (VHM) and iron oxide sands) or a non-magnetic VHM only concentrate (i.e. predominately zircon and rutile) and is investigating options to most effectively reduce capital expenditure costs.

During the quarter, Metallica has continued to actively explore appropriate project funding and offtake options to enable planned development of the Project. Metallica's intention is to maintain control of the project while bringing in potential funding partners at the project level in order to maximise returns for shareholders.

#### HMS EXPLORATION ON REGIONAL CAPE YORK TENEMENTS – 100% MLM

In addition to Urquhart Point, Oresome holds approximately a further 2,000km<sup>2</sup> of exploration tenements in the Western Cape York region prospective for HMS (see Figure 4).

On 26 November 2013, Metallica announced it had discovered significant new zircon rich HMS mineralisation on its regional exploration target called T16, located approximately 160km north of the Urguhart Point Zircon Rutile Project.

In January 2014, (see ASX Release dated 22 January 2014) the Company announced it had received HM and HM assemblage analysis results from its maiden drilling of T16. All 36 holes recorded significant HM mineralisation confirming the Company's late 2013 zircon-rich HMS mineralisation discovery.

The discovery was made during Metallica's first regional reconnaissance drilling program on EPM 15371. This is the first regional tenement to be explored and is just one of the 15 tenements held 100% by Metallica through its wholly-owned subsidiary Oresome Australia Pty Ltd (Oresome). For more information, see ASX Releases dated 26 November 2013 and 22 January 2014.

First pass auger drilling on T16 was aimed at defining the surface



mineralisation identified previously by Metallica from a helicopter reconnaissance surface sample which recorded (from laboratory analysis) 2.9% HM, comprising 54% zircon and 35% titanium minerals.

This T16 drill program consisted of 36 shallow auger holes drilled to an average depth of approximately 3.7m and a maximum depth of 6m (limit of drill capability), covering an approximately 1.8km long by 0.8km wide area along the south-eastern edge of a large regional Exploration Target\* area called T16 (see Figures 4, 5 and 6). A cross section through the central drill traverse is shown in Figure 5. T16 is a low-lying vegetated sand dune with a length of approximately 14km in a north-south orientation and over 800m wide, situated approximately 3km inland from the shoreline.

The drilling and sampling supervision and the estimation of the HMS content of each sample was conducted by experienced mineral exploration geologist, Mr Brett Duck. The HM mineralisation encountered to date is at or close to surface with an average thickness of approximately 3.5m and an average estimated in-situ HM content of approximately 1.7% HM.

The T16 drill program was constrained to 36 holes out of an originally planned 200 drill hole schedule, when heavy rain set in hampering operations in a remote location that had limited and rudimentary access. It was therefore prudently decided to cut short the program. As a result, 6 widely spaced reconnaissance drill holes (C37–C42) were drilled on the access track outside the T16 target area on leaving the project site. In all but one of these holes (C37), low grade to trace HMS mineralisation was observed.

A total of 152 samples were submitted to the R.J. Robbins laboratory in Brisbane for HM grade analysis. A subset of these samples (124) was selected for HM assemblage analysis based

#### URQUHART POINT AND REGIONAL CAPE YORK HMS PROJECT



on location and down-hole grade continuity. The samples were composited for each hole (for 35 holes) to obtain a breakdown of VHM (zircon, rutile, other titanium minerals (Ilmenite, anatase, leucoxene)) and other heavy minerals consisting mostly of iron oxide and aluminosilicate mineral sands. Table 4 is a summary of the results obtained from the mineral analysis.

Metallica plans to continue exploration of its extensive regional tenements along the 300km coastline between Weipa and the tip of Cape York Peninsula, subject to funding and clarification of the impact of the Queensland Government's Cape York Regional Plan (CYRP).

Exploration work will focus on the recently discovered zircon rich T16 HMS target, and initial evaluations will also continue on at least 10 untested radiometric targets already identified within strandlines, sand dunes and inland sand formations. These features are not known to have been previously investigated for HMS accumulations.

Urquhart Point is a very small part of the extensive exploration permits and applications covering approximately 2,000km<sup>2</sup> of mostly contiguous ground prospective for mineral sands on east coastal areas of Cape York Peninsular. There is very good potential to host significant additional HM accumulations as evidenced by the discovery of the T16 target (see Figures 4 and 6) in the Company's first exploration drill program outside of the Urquhart Point HMS Project.



#### QUEENSLAND GOVERNMENT DRAFT CAPE YORK REGIONAL PLAN (CYRP)

On 20 November 2013, the Queensland Government released for consultation the latest draft of the CYRP. Under the draft plan, which is open for consultation until March 2014, the T16 target is included in areas under which mining activities may be significantly restricted. Metallica is yet to fully understand the influence and effect on any possible future mineral project development plans of the draft CYRP.

Further assessment will be undertaken and we will update the market in due course on how this draft CYRP may have any effect on the T16 target area (and the majority of other exploration tenements held by Oresome). However, in light of this highly significant discovery and subsequent confirmation of zircon-rich HMS, Metallica is liaising with the Queensland Government and is planning to lodge a formal submission on the CYRP during the consultation period.

The Company hopes to resume exploration drilling activities on T16 in April 2014, after the end of the pending wet season and subject to the outcomes of the draft CYRP.



Figure 5: Cross Section (W-E) Interpreted HM% Mineralisation

#### Table 4: Summary of the HM Assemblage Analysis of Composited Samples of 35 drill holes

No. of Samples		Composite Sample Proportional HM Mineralogy						Zircon	
	HM (%)	Zircon (%)	Rutile (%)	Ilmenite (%)	Leucoxene (%)	Anatase (%)	Al Silicates (%)	Other HM (mostly iron sands) (%)	grade in HMS (%)
124	1.43	32.6	5.9	4.3	4.2	2.2	15.4	35.4	0.45



#### Exploration Target statement\*

It needs to be emphasised that the exploration results being reported on above are based on preliminary drill hole analysis of the extent of the HMS mineralisation recorded from the initial 36 shallow exploration holes and therefore the estimation of the HM content or grade and extent or tonnage of the mineralisation within the target area is still conceptual in nature and therefore is insufficient information for the estimation of a HMS Resource. Hence it is uncertain if further exploration will be sufficient to convert this Exploration Target's mineralisation to a Resource or if the mineralisation identified from the initial drilling will extend further within the Exploration Target area (i.e. T16 Target). See Table 1 (JORC Code, 2012 Edition Section 1 Sampling Techniques and Data and Section 2 Reporting of Exploration Results, included in ASX Release dated 22 January 2014).

## **SCONI (Scandium-Cobalt-Nickel) Project**

The Company completed a pre-feasibility study (PFS) for SCONI Stage 1 (scandium only) in early 2013 for the capacity to produce an average of over 50tpa high purity scandium oxide for 20 years. The PFS demonstrated SCONI Phase 1 to be technically and operationally viable. Financial analysis displayed positive economics at a long term scandium oxide price of US\$2,000kg and foreign exchange rate of A\$1:US\$0.85, indicating a net present value of \$273M and internal rate of return at 20.6% on a pre-tax, 8% real terms discount rate, 100% equity basis (see ASX Release dated 28 March 2013).

It was Metallica's plan to move into the Definitive Feasibility Study (DFS) stage (final study ahead of any proposed development), subject to sufficient additional funding and or a strategic partnership being obtained. Unfortunately, appropriate funding sources have not yet been identified and given the current difficult market conditions; the proposed SCONI DFS commencement has been deferred until it can be fully funded. Meanwhile the SCONI project team have been transferred to contract or casual employment on an as required basis to conserve the Company's cash position.

In October 2013 the SCONI Project's Nickel, Cobalt and Scandium Mineral Resources were upgraded and reported according to the guidelines of the JORC Code 2012 (see ASX Release dated 21 October 2013 and summarised in the September Quarterly Report dated 30 October 2013).

Land owner discussions in relation to the Lucknow and Bell Creek Mining Lease (ML) Applications were progressed into signed compensation agreements and lodged with the Mining Registrar pending grant of the ML's which is expected during the March quarter.

SCONI Environmental Impact Assessment (EIS) studies are well advanced but currently on hold. SCONI related exploration tenements have been rationalized, focus on existing resources secured within mining leases for future development.

The SCONI project is a unique project that requires strategic partners to fully implement a new and exciting critical metals market – scandium. This takes time and business confidence.

The Company seeks to enhance shareholder value through continued efforts to complete necessary permitting and to develop important relationships with interested parties for offtake and project participation.

#### SCANDIUM MARKETING

Metallica has also invested significantly in scandium marketing and firmly believes that the size and growth of the potential global scandium market cannot be underestimated. The two key focus sectors of our scandium marketing have been Solid Oxide Fuel Cells (SOFCs) and Aluminium Alloy industries.

Your Company is focused on entering into additional binding offtake agreements and/or strategic alliances with world leaders in SOFC and aluminium alloy developers and end users (most particularly the aerospace and motor vehicle industries)



Figure 7: SCONI Project deposits location



## **About Scandium (Sc)**

Scandium (Element 21 of the periodic table) is considered one of the 17 rare earth elements (REEs) and one of the most useful and valuable. High-grade, large tonnage, easily mineable scandium deposits with favourable metallurgy and location are scarce, making it a commodity that is difficult to obtain in commercial quantities.

Among other benefits, scandium has unique properties that can enhance the world's technological future. Scandium is one of the most potent strengthening elements that can be alloyed with aluminium to create stronger master alloys with applications in;

- aerospace (and possibly in automobiles and transport generally) – seeking better range and fuel efficiency without compromising performance;
- high performance sporting equipment; and
- additive layer manufacturing (3D printing) of complex metal shapes.

Scandium-strengthened aluminium alloys produce lighterweight, higher-strength components and structures with superior weldability, better thermal and corrosion resistance and greater durability.

Scandium is also used in the production of SOFCs by companies such as Bloom Energy. As the western world transitions towards

green energy, SOFCs will become more widely used, providing clean and efficient energy that is driven by the massive worldwide expansion of natural gas usage and distribution infrastructure.

Scandium is used in SOFCs to enhance the efficiency of the zirconia electrolyte for generating electricity and recoverable heat through an electro-chemical process that converts fuel (typically natural gas, methane) and air (oxygen 20%) into electricity and heat without combustion, noise or moving parts. Scandium stabilised zirconia electrolyte provides very high ionic conductivity and efficiency which is not readily achievable with other elements.

The use of scandium has been limited by its scarcity and lack of reliable supply. The current total world supply of scandium is estimated to be around ten tonnes of scandium oxide per annum, all of which is sourced as a by-product from other metals and industrial processes. High purity scandium oxide currently sells at prices in excess of US\$2,000/kg depending on product quantity and purity. However, as evidenced by the Company's Heads of Agreement with Bloom Energy, the potential market for scandium is poised for a step change in demand.

To learn more about the SCONI project and scandium, see the 4 page summary – 'A New Spice Metal to Enhance Industry & Life' on the Metallica website.



#### **Competent Persons Statements**

The Technical information contained in this report has been compiled and/or supervised by Mr Andrew Gillies B.Sc (Geology) M.AusIMM (Managing Director of Metallica Minerals Ltd) who is a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy (M.AusIMM). Mr Gillies has relevant experience in the mineralisation, exploration results and targets being reported on to qualify as Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Gillies consents to the inclusion of this information in the form and context in which it appears in this release.



# Metallica Minerals Limited

An Australian scandium–cobalt–nickel & zircon–rutile resource development Company

#### ASX:MLM

Subsidiary companies: NORNICO Pty Ltd ACN 065 384 045 Oresome Australia Pty Ltd ACN 071 762 484 Lucky Break Operations Pty Ltd ACN 126 272 580 Phoenix Lime Pty Ltd ACN 096 355 761 Greenvale Operations Pty Ltd ACN 139 136 708 Scandium Pty Ltd ACN 138 608 894