# METALLICA MINERALS



# **SCONI Scandium Project**

**Emerging Scandium producer to the World** 

#### 20:20 RESOURCE INVESTOR

20:20 Resource Investor Series Radisson Blu Hotel Sydney – 9 April 2013



#### Disclaimer

Statements & material contained in this presentation, particularly those regarding possible or assumed future performance, production levels or rates, metal prices, metal markets, resources or potential growth of Metallica Minerals Ltd, industry growth or other trend projections are, or may be, <u>Forward Looking Statements</u>. Such statements relate to future events & expectations as such, involve known & unknown risks & uncertainties.

The SCONI Scandium-Cobalt-Nickel Project, the Weipa Heavy Mineral Sands projects are at the advanced evaluation & feasibility stage & although reasonable care has been taken to ensure that the facts stated in this presentation are accurate & or that the opinions expressed are fair & reasonable, no reliance can be placed for any purpose whatsoever on the information contained in this document or on its completeness.

Actual results & developments of projects and scandium market development may differ materially from those expressed or implied by these forward looking statements depending on a variety of factors.

At the date of this presentation Metallica Minerals holds approximately 30.8% of MetroCoal Limited which listed on the ASX on 4 December 2009, further information can be sourced from metrocoal.com.au

At the date of this presentation Metallica Minerals holds approximately 17% of Cape Alumina Ltd which listed on the ASX on 29 January 2009 & latest & more detailed information can be sourced from Cape Alumina & capealumina.com.au

Nothing in this presentation should be construed as either an offer to sell or a solicitation of an offer to buy or sell shares in any jurisdiction.

This material is used for a company summary presentation only, for more detailed information the reviewer should seek company information as provided in Metallica's ASX releases, Annual & Quarterly Reports.

Forward-looking statements are based on assumptions regarding Metallica Minerals Limited ("Metallica"), business strategies, plans and objectives of the Company for future operations and development and the environment in which the Metallica may operate.

Forward-looking statements are based on current views, expectations and beliefs as at the date they are expressed and which are subject to various risks and uncertainties. Actual results, performance or achievements of Metallica could be materially different from those expressed in, or implied by, these forward-looking statements. The forward-looking statements contained in this presentation are not guarantees or assurances of future performance and involve known and unknown risks, uncertainties and other factors, many of which are beyond the control of Metallica, which may cause the actual results, performance or achievements of Metallica to differ materially from those expressed or implied by the forward-looking statements. For example, the factors that are likely to affect the results of Metallica include general economic conditions in Australia and globally; ability for Metallica to funds its activities; exchange rates; production levels or rates; demand for Metallica's products, competition in the markets in which Metallica does and will operate; and the inherent regulatory risks in the businesses of Metallica. Given these uncertainties, readers are cautioned to not place undue reliance on such forward looking statements.

- The SCONI Project is at a medium to advanced evaluation and feasibility stage and reasonable care has been taken to ensure that the facts stated in this announcement are accurate and or that the opinions expressed are fair and reasonable. However, actual results may differ materially from those expressed or implied by these forward looking statements depending on a variety of factors.
- A key conclusion of the Pre feasibility Study (PFS) which is based on forward looking statements is that the SCONI Project is considered to have positive economic potential. Further detailed studies are required to increase the confidence in the project parameters, economics and scandium market

Technical information contained in this report has been compiled by Metallica Minerals Managing Director Mr Andrew Gillies B.Sc. & M. AUSIMM, who is a <u>competent person</u> & a member of the Australasian Institute of Mining & Metallurgy & have relevant experience to the mineralisation being reported on to qualify as Competent Persons as defined by the Australasian Code for Reporting of Minerals Resources & Reserves. Mr Gillies consents to the inclusion in this presentation of the matters based on the information in the form & context in which it appears.

#### ASX:MLM



### MLM Financial Overview

| Financial Information           |         |  |  |  |
|---------------------------------|---------|--|--|--|
| Share price (5 April 2013)      | 18c     |  |  |  |
| Shares on Issue                 | 145.8M  |  |  |  |
| Market Cap                      | \$26.2M |  |  |  |
| Cash Position (1 April 2013)    | \$3.6M  |  |  |  |
| ASX Investments (28 March 2013) | \$8.7M  |  |  |  |
| Cash & Listed Investments       | \$12.3M |  |  |  |

|  | MLM: | 12 | Month | Trading | Historv |
|--|------|----|-------|---------|---------|
|--|------|----|-------|---------|---------|



| Major Shareholders        |       |  |  |  |  |
|---------------------------|-------|--|--|--|--|
| Jien Mining Pty Ltd**     | 19.1% |  |  |  |  |
| Victorian Ferries Pty Ltd | 11.9% |  |  |  |  |
| Golden Breed Pty Ltd      | 6.7%  |  |  |  |  |
| Bondline Ltd              | 3.4%  |  |  |  |  |
| Top 20 shareholders       | 56%   |  |  |  |  |

\*\* Subsidiary of Jilin Nickel Co. Limited



### **Board of Directors (5) & CEO**

| Name                           | Position                           | Background                  | Experience |
|--------------------------------|------------------------------------|-----------------------------|------------|
| David Barwick                  | Non-Executive Chairman             | Financial / Corporate       | 40+ years  |
| Andrew Gillies                 | Managing Director                  | Geology / Mining / Corp Dev | 25+ years  |
| John Haley                     | CFO / Director / Company Secretary | Financial                   | 25+ years  |
| Barry Casson                   | Non-Executive Director             | Financial / Corporate       | 40+ years  |
| Wu Shu (Tao Li<br>– Alternate) | Non-Executive Director             | Engineering                 | 30+ years  |
| Gavin Becker                   | CEO                                | Metallurgy / Engineering    | 35+ years  |



(L-R): Tao Li, Shu Wu, Barry Casson, David Barwick Gavin Becker, Andrew Gillies & John Haley

Experienced, talented & dedicated Board & Management team Focussed on delivering value to shareholders



## 1. SCONI Scandium Project 100%

Scandium-Cobalt-Nickel – Greenvale, QLD

- ✓ Positive PFS at DFS Stage
- Emerging Major Scandium producer
- 2. Weipa Zircon Rutile Mineral Sands Project 100%
- Advanced permitting toward of grant of mining lease
- ✓ Targeting cashflow in mid 2014
- 3. Cash & Listed Investments (01/04/2013)

\$3.6M Cash & \$8.7M Listed Investments









### **Excellent Project Location**





#### Greenvale – Ideal location

 Historical Greenvale nickel operation - Mined 1974 – 92

produced 40Mt @ 1.56% Ni, 0.12% Co (containing 624,000t Ni & 48,000t Co)

- ✓ Low sovereign risk country
- Close proximity to industrial services & port in Townsville
- Low environmental impact & strong community support



### **Site Layout – infrastructure available**









- ✓ 100% owned SCONI project, PFS completed ready to start DFS
- Excellent project location & low sovereign risk
- Established Scandium-Cobalt-Nickel JORC resource (>5,000t contained Sc<sub>2</sub>O<sub>3</sub> & 467kt Ni & 50kt Co) – See Appendix Tables (SCONI South & North)
- Advanced permitting & no major technical hurdles
- Developed proprietary scandium recovery & purification technology
- Excellent metallurgical testwork results with proven flowsheet achieved >99.9% Sc<sub>2</sub>O<sub>3</sub> from pilot plant
- ✓ KBM Affilips produced aluminium Master Alloy with SCONI Scandium Oxide

# Metallica's goal is to become a major, long-term, reliable supplier of scandium





Nickel Equivalent (NiEq) = Nickel % + 1.5 x Cobalt % + 0.01 x Scandium ppm



#### Scandium-Ni-Co Drill X/S

Scandium 🔺 Cobalt 🔺



### **SCONI** Phase 1 Simplified Process Sheet

(Producing Scandium Oxide only)









| Description                                     | Revised Phased Development            |
|---|---------------------------------------|
| Scandia Price & Long term forex rate            | US\$2,000/kg & A\$1:US\$0.85          |
| Processing Plant Throughput                     | 200,000tpa                            |
| Capital Cost (Forex rate A\$1 : US\$0.90)       | A\$247M (including 20% contingency)   |
| Annual Production                               | 50,000 - 65,000kg Scandium Oxide      |
| Annual average EBITDA                           | A\$59M                                |
| NPV (8% discount rate, 100% equity, real terms) | A\$273M (pre-tax), A\$155M (post tax) |
| IRR   | 20.6% (pre-tax), 15.9% (post tax)     |

- ✓ PFS showed a technically & economically viable project
- ✓ Capex includes high level of actual quotes >60% of mechanical equipment list
- ✓ Simplified Processing, initially no acid plant or power plant Scandium only
- ✓ Long life +20 years
- ✓ Phase 1 precursor to potential tri-metal Phase 2 Project (Sc Ni Co) 750Ktpa

For details see ASX announcement dated 28 March 2013





| Description                       |   |
|-----------------------------------|---|
| Processing Plant Throughput       | 750,000tpa                                |
| Capital Cost                      | ~A\$800M (possible brownfields expansion) |
| Average Annual Sc Production      | 75,000kg Scandium Oxide                   |
| Average Annual Ni & Co Production | 5,000tpa Ni, 700tpa Co                    |

- ✓ Full scale 750,000tpa processing plant would include nickel & cobalt co-products
- Acid plant & power plant located on site
- Decision to proceed on Phase 2 could be made after commissioning of Phase 1 subject to market conditions at the time (full scale PFS not yet optimised)
- Brownfields expansion phased approach means lower risk
- ✓ Would increase total Sc production capacity to meet the market
- Existing Greenvale, Lucknow, Kokomo Ni-Co-Sc 28.3Mt @ 0.6% Ni, 0.09% Co and 91g/t Sc (1.0% Nieq COG) JORC resource supports long life (>20 years) – <u>See Appendix 1</u>

# Introducing Scandium... Element 21 – "The Enhancer"



- Scandium: is one of the 17 Rare Earth Elements it has enhancing applications in aluminium alloys & fuel cells
- Scandium: is typically used as Scandium Oxide (Sc<sub>2</sub>O<sub>3</sub>)
- Sc<sub>2</sub>O<sub>3</sub> Price: MLM used \$2,000/kg long term price for Feasibility
- Current global annual supply of Sc<sub>2</sub>O<sub>3</sub> is only ~10 tonnes......

but why??





A constrained market with <u>no reliable supply</u>... Enormous opportunity for Metallica



# Two Major Markets for Scandium



## Solid Oxide Fuel Cells (SOFCs) Delivering efficient, cost effective & reliable green energy

## **Aluminium Alloys**

Aerospace application for next generation lighter-stronger aircraft & other transport frames such as cars



....and many more applications being researched

# Aluminium Alloys



- Scandium is the single most potent element that can be added to aluminium (AI) to enhance its properties "Spice Metal"
- Just by adding 0.2 0.8% Sc to aluminium will dramatically improve:
  - ✓ <u>Strength</u> significant improvement in strength
  - Weldability weld becomes as strong as the Al alloy due to potent grain refining of scandium & also inhibits "heat cracking" during welding
  - ✓ <u>Corrosion Resistance</u> one of the biggest problems in aerospace
  - Ease of manufacturing considerable cost savings

# Aluminium Alloys

### Aluminium



### Al-Sc Alloy (Grain refining)



![](_page_17_Picture_0.jpeg)

![](_page_17_Picture_1.jpeg)

Industry leading partners in both sectors

# **Aluminium Alloys**

SOFCs

![](_page_17_Picture_5.jpeg)

Bloomenergy

See ASX Release 3 Oct 2012

See ASX Release 2 Oct 2012 First base load customer

# Solid Oxide Fuel Cells (SOFCs)

![](_page_18_Picture_1.jpeg)

 Delivers reliable, efficient & cleaner energy by converting gas into electricity & useable heat (up to 85% efficiency)

![](_page_18_Picture_3.jpeg)

Safe, on-site location, NO COMBUSTION

# Solid Oxide Fuel Cells

Electrochemical reaction

Air  $(O_2)$  + Gas  $(CH_4)$ 

![](_page_19_Picture_3.jpeg)

Electricity + Water + CO<sub>2</sub>

- Electrolytes containing scandium offer the best performance for SOFC's
- Huge potential on the back of world wide growth in gas distribution

#### A new way to generate clean electricity

Bloom Energy's three-layer solid oxide fuel cell produces clean and potentially affordable power by an electrochemical process. How it works:

![](_page_19_Figure_9.jpeg)

#### How much power?

Fuel cells are arranged in stacks, modules and servers to deliver more power.

![](_page_19_Picture_12.jpeg)

# Why SOFCs? Current System

![](_page_20_Picture_1.jpeg)

![](_page_20_Picture_2.jpeg)

![](_page_20_Picture_3.jpeg)

### "The Future"

![](_page_20_Picture_5.jpeg)

![](_page_20_Picture_6.jpeg)

Independent mini power station Cleaner, greener, reliable & cheaper "It's already happening"

### The Missing Pieces of the Puzzle... Production of high grade scandium or Sc-Co-Ni generating high margin

### >99.9% purity from Pilot Plant

candiu

100% owned Australian project (low sovereign risk)

Scandium 
Cobalt 
Nicke

Established Sc-Co-Ni Resource Base

Proven process

Scandium

**Rising demand** 

**SOFC & Alloys** 

# Who is using Bloom's SOFCs?

![](_page_22_Picture_1.jpeg)

Adobe

Walmart 🔀

![](_page_22_Picture_2.jpeg)

The Oca Cola Company

![](_page_22_Picture_4.jpeg)

ebay<sup>\*</sup>

![](_page_22_Picture_5.jpeg)

![](_page_22_Picture_6.jpeg)

And many more ...!

### Breaking the nexus Solving the Chicken & Egg A market waiting to Major re

happen...

"The Opportunity"

Major reliable Sc supplier

![](_page_23_Picture_4.jpeg)

Greater market confidence, demand & end users Application growth – Al alloys, SOFCs & more

### Metallica can create the Sc market & grow with it

![](_page_24_Picture_0.jpeg)

![](_page_24_Picture_2.jpeg)

#### **Short Term**

Pre Feasibility Study (PFS) completed / Definitive Feasibility Study (DFS) completion end CY 2013 ~ A\$10M funding requirements for the DFS

#### **Funding Options**

- Project equity participation
- Direct equity position
- Rights issue

#### Long Term

- Advanced negotiations now possible
- JV & offtake flexibility
- Targeted first production early 2016

![](_page_25_Picture_0.jpeg)

![](_page_25_Picture_2.jpeg)

- New and advanced materials & technology, generating new more efficient products & applications – next generation technologies (increased energy efficiency – improved aerospace Alloys, 3D printing – next industrial revolution)
- Increasing demand from green technologies SOFC (Efficient Energy Conversion) & Sc-Al Alloys (High performance, strength-weight ratio & energy savings)
- ✓ SCONI can produce long-term reliable supply of Scandia (20 years)
- ✓ Metallica early mover in exciting niche market (~ early Niobium market)

![](_page_26_Picture_0.jpeg)

![](_page_26_Picture_2.jpeg)

- **Opportunity for major growth from scandium** 
  - Highly strategic usage in environmentally friendly applications
  - Scandium supply trails growing market demand
  - Metallica is an early mover, ready & focussed
- **Strong downstream partnerships already established** 
  - KBM Affilips & Bloom Energy have chosen Metallica for a reason
- Significant de-risking already achieved
  - Established Measured & Indicated Sc & Sc-Co-Ni resource
  - Proven Metallurgy & Process
  - Developed proprietary technology to produce high purity Sc<sub>2</sub>O<sub>3</sub>
  - Binding Scandium Offtake Agreement
  - Very experienced technical team
  - Permitting advanced & nearly all field/ground work completed
- Low sovereign risk country critical for reliable & secure supply

# METALLICA MINERALS

# THANK YOU

#### METALLICA SUBSIDIARIES

NORNICO PTY LTD | 100% MLM GREENVALE OPERATIONS PTY LTD | MLM 100% LUCKY BREAK OPERATIONS PTY LTD | MLM 100% SCANDIUM PTY LTD | MLM 100% PHOENIX LIME PTY LTD | MLM 100% ORESOME AUSTRALIA PTY LTD | MLM 100%

![](_page_28_Picture_0.jpeg)

#### Appendix 1 Lucknow Scandium Resource for Phase 1

![](_page_28_Picture_2.jpeg)

#### **Competent Person's Statement**

The SCONI Scandium-Cobalt-Nickel project Mineral Resource estimate(s) is based upon & accurately reflects data compiled, validated or supervised by Mr John Horton, Principal Geologist FAusIMM (CP) who is a full time employee of Golder Associates Pty Ltd. Mr Horton has sufficient experience that is relevant to the style of mineralisation and the type of deposit under consideration and to the activity which he has undertaken to qualify as a Competent Person as defined in the 2004 edition of the 'Australasian Code for the Reporting of Exploration Results, Mineral Resources & Ore Reserves'. Mr. Horton consents to the inclusion of this information in the form and context in which it appears in this document.

Scandium . Cobalt

# HALL/C

# Southern Deposits Sc & Ni-Co Resource Statement SCON

|                         |                                  | Southe    | ern Deposits  – Co | OG NiEq (Ni + 1 | .5Co + 0.01Sc) = | 0.7%             |                 |                            |
|-------------------------|----------------------------------|-----------|--------------------|-----------------|------------------|------------------|-----------------|----------------------------|
| Description             | Tonnes<br>(Mt)                   | Ni<br>(%) | Co<br>(%)          | Sc<br>(g/t)     | Ni Metal<br>(kt) | Co Metal<br>(kt) | Sc Metal<br>(t) | Equivalent Sc<br>Oxide (t) |
| Kokomo                  |                                  |           |                    |                 |                  |                  |                 |                            |
| Measured                | 2.2                              | 0.57      | 0.11               | 80              | 12.2             | 2.5              | 173             | 260                        |
| Indicated               | 17.2                             | 0.56      | 0.09               | 49              | 95.8             | 15.5             | 843             | 1,264                      |
| Inferred                | 10.2                             | 0.36      | 0.04               | 59              | 36.7             | 4.5              | 603             | 905                        |
| Totals                  | 29.5                             | 0.49      | 0.08               | 55              | 144.7            | 22.5             | 1,619           | 2,429                      |
| Greenvale               |                                  |           |                    |                 |                  |                  |                 |                            |
| Measured                | 4.8                              | 0.78      | 0.06               | 38              | 37.8             | 3.0              | 186             | 279                        |
| Indicated               | 9.5                              | 0.71      | 0.05               | 38              | 67.0             | 4.9              | 360             | 541                        |
| Inferred                | 1.9                              | 0.71      | 0.05               | 34              | 13.3             | 0.9              | 65              | 97                         |
| Totals                  | 16.2                             | 0.73      | 0.05               | 38              | 118.1            | 8.8              | 611             | 917                        |
| Lucknow                 |                                  |           |                    |                 |                  |                  |                 |                            |
| Measured                | 1.7                              | 0.45      | 0.10               | 103             | 7.9              | 1.8              | 180             | 271                        |
| Indicated               | 10.6                             | 0.27      | 0.07               | 128             | 28.5             | 7.2              | 1,357           | 2,035                      |
| Inferred                | 1.5                              | 0.40      | 0.07               | 41              | 5.8              | 1.0              | 60              | 90                         |
| Totals                  | 13.8                             | 0.31      | 0.07               | 116             | 42.2             | 10.0             | 1,597           | 2,396                      |
| <b>Combined Souther</b> | n Deposits (COG 0.7 <sup>v</sup> | %)        |                    |                 |                  |                  |                 |                            |
| Measured                | 8.7                              | 0.66      | 0.08               | 62              | 57.9             | 7.2              | 539             | 809                        |
| Indicated               | 37.3                             | 0.51      | 0.07               | 69              | 191.3            | 27.6             | 2,560           | 3,840                      |
| Inferred                | 13.5                             | 0.41      | 0.05               | 54              | 55.9             | 6.4              | 728             | 1,092                      |
| Totals                  | 59.5                             | 0.51      | 0.07               | 64              | 305.1            | 41.1             | 3,827           | 5,741                      |
|                         |                                  |           | Southern De        | posits – COG N  | iEq = 1.0%       |                  |                 |                            |
| Description             | Tonnes<br>(Mt)                   | Ni<br>(%) | Co<br>(%)          | Sc<br>(g/t)     | Ni Metal<br>(kt) | Co Metal<br>(kt) | Sc Metal<br>(t) | Equivalent Sc<br>Oxide (t) |
| <b>Combined Souther</b> | n Deposits (COG 1.0              | %)        |                    |                 |                  |                  |                 |                            |
| Measured                | 5.9                              | 0.78      | 0.10               | 75              | 45.8             | 5.9              | 440             | 659                        |
| Indicated               | 22.4                             | 0.55      | 0.09               | 95              | 123.4            | 19.1             | 2,126           | 3,189                      |
| Inferred                | 5.1                              | 0.51      | 0.06               | 72              | 26.0             | 3.1              | 365             | 548                        |
| Totals                  | 33.4                             | 0.59      | 0.08               | 88              | 195.2            | 28.2             | 2,931           | 4,396                      |
| X : M L M               |                                  |           |                    |                 |                  |                  |                 |                            |

![](_page_30_Picture_0.jpeg)

![](_page_30_Picture_2.jpeg)

| Northern Deposits – COG NiEq (Ni + 1.5Co) = 0.7% |                |           |           |                  |                  |  |  |
|--|----------------|-----------|-----------|------------------|------------------|--|--|
| Description                                      | Tonnes<br>(Mt) | Ni<br>(%) | Co<br>(%) | Ni Metal<br>(kt) | Co Metal<br>(kt) |  |  |
| Bell Creek Sou                                   | ıth            |           |           |                  |                  |  |  |
| Measured   | 7.8            | 0.96      | 0.07      | 75.5             | 5.1              |  |  |
| Indicated  | 0.1            | 0.81      | 0.05      | 1.2              | 0.1              |  |  |
| Totals   | 8.0            | 0.96      | 0.07      | 76.7             | 5.2              |  |  |
| Bell Creek Nor                                   | th             |           |           |                  |                  |  |  |
| Indicated  | 2.0            | 0.86      | 0.03      | 16.8             | 0.5              |  |  |
| Totals   | 2.0            | 0.86      | 0.03      | 16.8             | 0.5              |  |  |
| Bell Creek Nor                                   | thwest         |           |           |                  |                  |  |  |
| Indicated  | 2.5            | 0.81      | 0.05      | 20.1             | 1.2              |  |  |
| Totals   | 2.5            | 0.81      | 0.05      | 20.1             | 1.2              |  |  |
| The Neck   |                |           |           |                  |                  |  |  |
| Indicated  | 0.4            | 0.84      | 0.03      | 3.5              | 0.1              |  |  |
| Totals   | 0.4            | 0.84      | 0.03      | 3.5              | 0.1              |  |  |
| Minnamoolka                                      | 1              |           |           |                  |                  |  |  |
| Indicated  | 4.7            | 0.82      | 0.05      | 38.3             | 2.1              |  |  |
| Inferred   | 0.9            | 0.78      | 0.04      | 6.7              | 0.3              |  |  |
| Totals   | 5.5            | 0.82      | 0.04      | 45.0             | 2.4              |  |  |
| Combined No                                      | orthern De     | posits    |           |                  |                  |  |  |
| Measured   | 7.8            | 0.96      | 0.07      | 75.5             | 5.1              |  |  |
| Indicated  | 9.7            | 0.83      | 0.04      | 79.9             | 4.0              |  |  |
| Inferred   | 0.9            | 0.78      | 0.04      | 6.7              | 0.3              |  |  |
| Totals   | 18.4           | 0.88      | 0.05      | 162.1            | 9.4              |  |  |

#### Notes to Resource Statements

- 1. Scandium is typically sold as an oxide product. Hence the equivalent scandium oxide has been calculated at 1.5 times contained scandium.
- 2. The resources for the Southern Deposits of Lucknow, Greenvale and Kokomo are reported at a cut-off grade (COG) of NiEq 0.7% (Ni + 1.5Co + 0.01Sc). This NiEq COG formula has been calculated using commodity prices of US\$10/lb nickel, US\$15/lb cobalt and US\$1,500/kg scandium oxide, and recoveries of 90% for all three metals. Metallica indicates that the metallurgical testwork to date provides reasonable potential for the nickel, cobalt and scandium to be recovered at similar recoveries to those achieved in the testwork.
- 3. The Mineral Resources for the Northern Deposits of Bell Creek South, Bell Creek North, Bell Creek Northwest, Minnamoolka and The Neck are reported at a COG of NiEq 0.7% (Ni + 1.5Co). This NiEq COG formula has been calculated using commodity prices of US\$10/lb nickel and US\$15/lb cobalt, and recoveries of 90% for both nickel and cobalt.
- No scandium content was estimated in the Northern deposits as Sc assays are generally not available. From limited data there is good indication the Northern deposits are relatively low in Sc (generally <20ppm Sc).</li>
- 5. Variations in total may be present due to rounding factors.
- 6. For further details on the SCONI scandium and nickel cobalt scandium resource see Metallica ASX release SCONI Scandium Project 28 March 2013

**Technical information and exploration results** contained in this report have been compiled by Metallica Minerals Ltd full time employee Andrew Gillies B.Sc MAusIMM in the position of Managing Director. Mr Gillies has sufficient experience that is relevant to the style of mineralisation being reported on to qualify as a Competent Person as defined in the 2004 edition of the Australasian Code for Reporting of Minerals Resources & Ore Reserves. Mr Gillies consents to the inclusion in this report of the matters based on the information in the form and context in which it appears

The **SCONI Scandium-Cobalt-Nickel project Mineral Resource estimate(s)** is based upon & accurately reflects data compiled, validated or supervised by Mr John Horton, Principal Geologist FAusIMM (CP) and is a full time employee of Golder Associates Pty Ltd. Mr Horton has sufficient experience that is relevant to the style of mineralisation and the type of deposit under consideration and to the activity which he has undertaken to qualify as a Competent Person as defined in the 2004 edition of the 'Australasian Code for the Reporting of Exploration Results, Mineral Resources & Ore Reserves'. Mr Horton consents to the inclusion of this information in the form and context in which it appears in this document.

![](_page_31_Picture_0.jpeg)

### Lucknow Block Model Cross Sections\*

![](_page_31_Picture_2.jpeg)

![](_page_31_Figure_3.jpeg)