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**ANNUAL  
REPORT**  
2019

# CORPORATE DIRECTORY

## Directors

Theo Psaros, Chairman  
Andrew Gillies, Non-Executive Director  
Scott Waddell, Executive Director &  
Interim Chief Executive Officer

## Chief Financial Officer & Company Secretary

Mr John Haley

## Principal Registered Office in Australia

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## Auditor

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## Legal

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## Stock Exchange Listing

ASX:MLM

## Australian Business Number

ABN 45 076 696 092

## Subsidiary companies

Lucky Break Operations Pty Ltd  
ACN 126 272 580

Oresome Australia Pty Ltd  
ACN 071 762 484

Oresome Bauxite Pty Ltd  
ACN 606 362 252

Phoenix Lime Pty Ltd  
ACN 096 355 761

Scandium Pty Ltd  
ACN 138 608 894

Touchstone Resources Pty Ltd  
ACN 126 306 018

Greenvale Operations Pty Ltd  
ACN 139 136 708  
(100% Subsidiary of NORNICO Pty Ltd)

NORNICO Pty Ltd  
(Administrators appointed)  
ACN 065 384 045

Metallica Minerals Limited an Australian resource development company, with interests in silica sands, bauxite, mineral sands, copper-gold and graphite.



MetallicaMin @Metallica\_Min metallica-minerals

Cover image: Helicopter exploration sampling of white sand dunes at Cape Flattery

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# LETTER TO SHAREHOLDERS

## Dear Metallica Shareholders,

We would like to take this opportunity to present Metallica's Annual Report for the financial year 2019, a year which has seen your company experience major Board and management change but bring to an end a period of significant underperformance in stated priorities and objectives.

On 1 February 2019, the Company saw the conclusion of a lengthy process whereby a group of conveying shareholders, unrelated to your Directors, called an Extraordinary General Meeting as a result of discontent as to the decision making and performance of the company over recent years. This action resulted in the appointment of a new Board of Directors, consisting of myself as Chairman, Mr Andrew Gillies and Mr Scott Waddell, who is also Interim Chief Executive Officer.

From the first day of our appointment we were compelled to understand what had taken place in previous years. We immediately undertook a full review of the company's administration, management and corporate costs. In particular, we needed to understand why there had been so many delays on the Urquhart Bauxite project. Our announcements detailing our review, while not positive reading for shareholders, at the very least provided an honest appraisal of the current position your company is in.

Since the appointment of your new Board, we have:

- Completed a full review of all company projects;
- Met with a number of key stakeholders, including joint venture partners, contractors, third party suppliers and potential suppliers to both determine the current status of the matters relevant to the company's operations and to commence a process of re-engagement with those stakeholders;
- Completed the sale of 16.81 million shares in Australian Mines Limited (ASX: AUZ) for consideration of \$549,000. The Company does not hold any AUZ shares at the date of this report;
- Completed a process to assess new infrastructure options for the Urquhart Bauxite project; and
- Commenced work on assessing the Cape Flattery Silica Sands project.

While our key focus is now on the Cape Flattery and Urquhart Bauxite projects, we also have been assessing potential new opportunities in the gold-copper, bauxite and energy sectors. The due diligence undertaken has not yet resulted in a conclusion that any of these opportunities are fully aligned to the Company's goal of achieving near term production.

You will also be well aware that one of our subsidiaries Normico Pty Ltd (administrators appointed), has been placed into administration. Your Board was totally blindsided by the fact that two royalty agreements were not assigned to the new owners of the Sconi Project that was sold in September 2017. This process continues and the Metallica Board is doing everything in its power to resolve this matter, including any residual effect on Metallica.

Metallica ended the year with \$3 million cash at bank, and no debt.

On behalf of my fellow directors I would like to thank you again for your continued support and patience while we have conducted a full and thorough review of your Company. We do not shy away from the challenge of improving the future prosperity of your Company.

Yours faithfully



THEO PSAROS  
Chairman



# REVIEW OF OPERATIONS



**1. CAPE FLATTERY**  
100% MLM  
Silica Sands

**2/3. CAPE YORK JOINT VENTURE**  
50% MLM

**2. URQUHART DIRECT SHIPPING  
BAUXITE PROJECT**

**3. URQUHART POINT  
HMS PROJECT**

**4. ESMERALDA**  
100% MLM  
Graphite, Gold & Base Metals

# CAPE FLATTERY SILICA SANDS

## MLM 100%

Through subsidiary  
Oresome Australia  
Pty Ltd

## Silica Sands

For bulk export shipping

## 55 km<sup>2</sup>

Exploration tenure

The Cape Flattery Silica Sands project is located approximately 200 km north of Cairns in North Queensland. The Cape Flattery Silica Sands project is adjacent to the world class Cape Flattery Silica Sands mining and shipping operation owned by Mitsubishi.

In April 2018, a low-cost maiden sampling program identified three target areas with silica oxide (SiO<sub>2</sub>) percentages of greater than 99%. These target areas form the basis of an Exploration Target\* of 20-100 Mt of high purity silica sands, with the

insitu quality ranging between 96.9% and 99.6% SiO<sub>2</sub>.

During 2019, the Board of Directors undertook initial high-level options work, including planning works, to assess what is required to better understand the silica sand deposit size and quality, as well as options on how a silica sand mine could be developed.

Cape Flattery is located in a remote part of Queensland and initial investigations show that any development at Cape Flattery will require either new infrastructure to be built by Metallica or access

to the existing infrastructure owned by Ports North and Cape Flattery Silica Mines Pty Ltd (a subsidiary of Mitsubishi Corporation). Metallica will continue to investigate developing its own logistic options to export silica sand from the deposits.

The company has planned further scouting exploration to take place over the coming months on the tenement.

The project area has the benefit of being within the Cape Flattery Harbour and having access to an area outside of the Great Barrier Reef Marine Park.

According to industry research firm IMARC Group, high-purity silica sands are becoming more sought after, with the global market growing at a compound annual growth rate (CAGR) of around 6% between 2010 and 2017. In 2017, a total of 188 Mt of silica sand was produced globally.

This growth has been driven by silica sand's applications across a broad range of industries including glass-making, foundry casting, water filtration, chemicals and metals, hydraulic facturing and an increasing amount of hi-tech products, including solar panels. For example, in the global glass-making industry, one of the major consumers of high-purity silica has experienced significant growth recently in construction and automotive industries.

Forecasts have demand for silica sands increasing at CAGR of 7.2% through to 2022, with annual revenues reaching US\$9.6 billion.

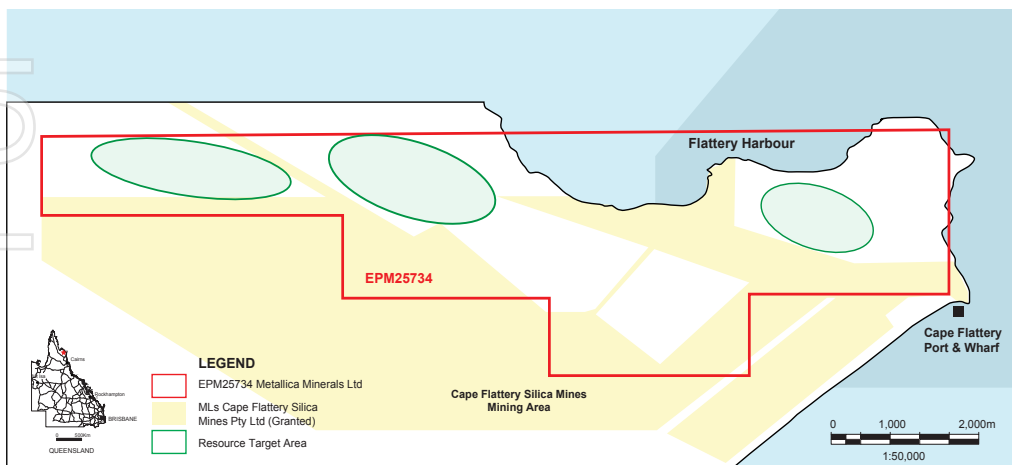


FIGURE 2: Cape Flattery Silica Sands project location

### \*Exploration Target

The potential quantity and grade of the Exploration Target is conceptual in nature and therefore is an approximation. There has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource. The Exploration Target has been prepared and reported in accordance with the 2012 edition of the JORC Code.

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Penin...  
by Me...  
wholly...  
Oresol...  
who is...  
Joint...  
remain...  
held b...  
invest...  
Pty Ltd...  
Cape...  
JV sig...

Since...  
JV, it i...

Manager of Joint  
Venture with Ozore  
Resources Pty Ltd  
holding remaining 50%

Bauxite and Zircon, Rutile, and Titanium metals

Mining leases and  
Mining lease applications

## Exploration tenure

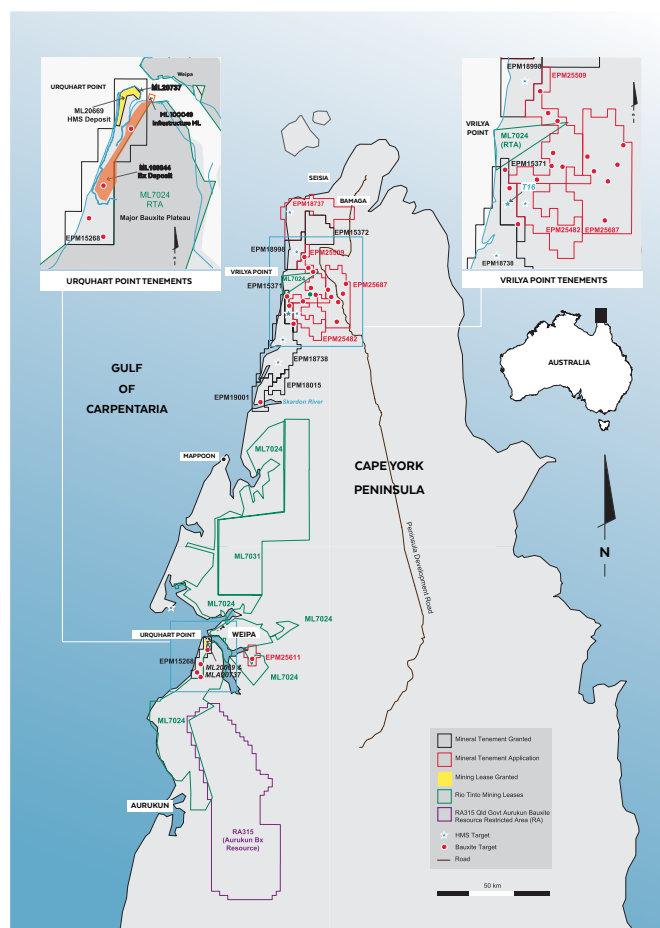
The Cape York Bauxite and HMS Project is located on the west coast of Queensland's Cape York Peninsula with 50% held by Metallica Minerals' wholly-owned subsidiary, Oresome Australia Pty Ltd, who is the manager of the Joint Venture (JV). The remaining 50% interest is held by a private Chinese investor, Ozore Resources Pty Ltd, pursuant to the Cape York Bauxite and HMS JV signed in August 2014.

Since the formation of the JV, it has been focused on

progressing development of the Urquhart Bauxite project as well as the design and fabrication of the Urquhart Point HMS processing plant, which is currently in storage.

The JV project has three separate components;

- Urquhart Bauxite project
- Urquhart Point HMS project
- Cape York regional Bauxite and HMS exploration



**FIGURE 3: Cape York Bauxite and HMS project location**





# URQUHART BAUXITE PROJECT

The Urquhart Bauxite project is located 5 km southwest of Weipa on the west coast of Queensland's Cape York Peninsula, a region renowned for its extensive deposits of high-quality pisolitic bauxite. The project consists of two bauxite plateaux, known as Area A and Area B which are wholly contained in the Mining Lease area.

In February 2019, the Board of Directors announced that it had commenced a review into the Urquhart Bauxite Project development options. The Board along the Joint Venture partner Ozore Resources continued investigations into access arrangements for the barge-loading facility including accessing third-party owned Hey Point transshipping facility.

The board completed the review in June 2019. The key findings of the review into the repeated and protracted delays into bringing the project into production were detailed in an ASX release dated 12 June 2019.

In October 2019, the JV announced that three alternatives sites for constructing infrastructure to ship bauxite had been identified following studies by Wave International ("Wave") and other consultants working for the JV.

Further regulatory approvals are required for all three alternatives, and these are planned to be advanced, subject to a positive outcome

from a Pre-Feasibility ("PFS") study which is targeted to be completed during the final quarter of 2019.

The three potential logistic options identified are as follows (see Figure 4 for details):

**Option 1:** A shiploader to be constructed adjacent to the Urquhart Heavy Mineral Sands ("HMS") Mining Lease ("ML") owned by the JV, with a conveyor crossing over Roberts Creek from the Urquhart Bauxite ML to the HMS ML.

**Option 2:** A shiploader to be constructed adjacent to the Urquhart HMS ML owned by the JV. A 17-kilometre haul road would also be constructed from the Urquhart Bauxite resources and tenement through the HMS ML area, leading to the shiploader.

**Option 3:** A barge-loading facility to be constructed, which requires a jetty (about 750 metres in length) to be located adjacent to the Urquhart Bauxite ML.

## SHIPLOADER OPTION ANALYSIS

Using a shiploader, as proposed in options 1 and 2, has the following major benefits:

- The ability to load bauxite directly onto an Ultramax vessel or potentially, a Panamax vessel (>70,000 tonnes

per shipment), subject to marine studies confirming that the suitability of tides and other marine factors make the site suitable for a shiploader

- Low estimated operating costs for the shiploader fixed infrastructure (estimated by Wave as being several dollars per tonne shipped), as no transshipment is required. However, the capital cost ("CAPEX") is higher for these options compared to Option 3
- Very simple bauxite production and transportation system, with only a mine stockpile, a proven conveyor structure with minimal transfer chutes, plus low labour and operating costs
- The low operating costs improve the economic attractiveness of Area B in the Urquhart Bauxite project, which contains lower grade bauxite
- The low-cost shiploader facility may also make selling the overburden sand on the ML an attractive option to explore. This is subject to sampling and quality assessment of this sand, regulatory approvals and an economic analysis.

The infrastructure construction CAPEX for the options at present is preliminary and is estimated to range from a low of A\$13-16m to a high of A\$27m, depending on the

option selected (excluding mining fleet, environmental bonds, contingency, and associated costs).

## SUMMARY SHIPLOADER FINDING

The most attractive potential option for further investigation at this stage appears to be Option 1 – the shiploader conveyor combination. See Figure 5, a diagram of the proposed shiploader configuration.

However, as noted above, further studies are still underway, and Metallica will work to finalise the solution and release an updated PFS by about the end of December 2019.

A key component of the shiploader options analysis will be obtaining funding and various Government and stakeholder approvals and agreements for the substantial CAPEX required for construction. Options to be explored to fund the shiploader CAPEX include the following:

- Northern Australian Infrastructure Fund ("NAIF");
- Design, Construct and Operate partner funding, with a \$/tonne payment by the JV;
- Offtake partners; or
- Debt and equity.



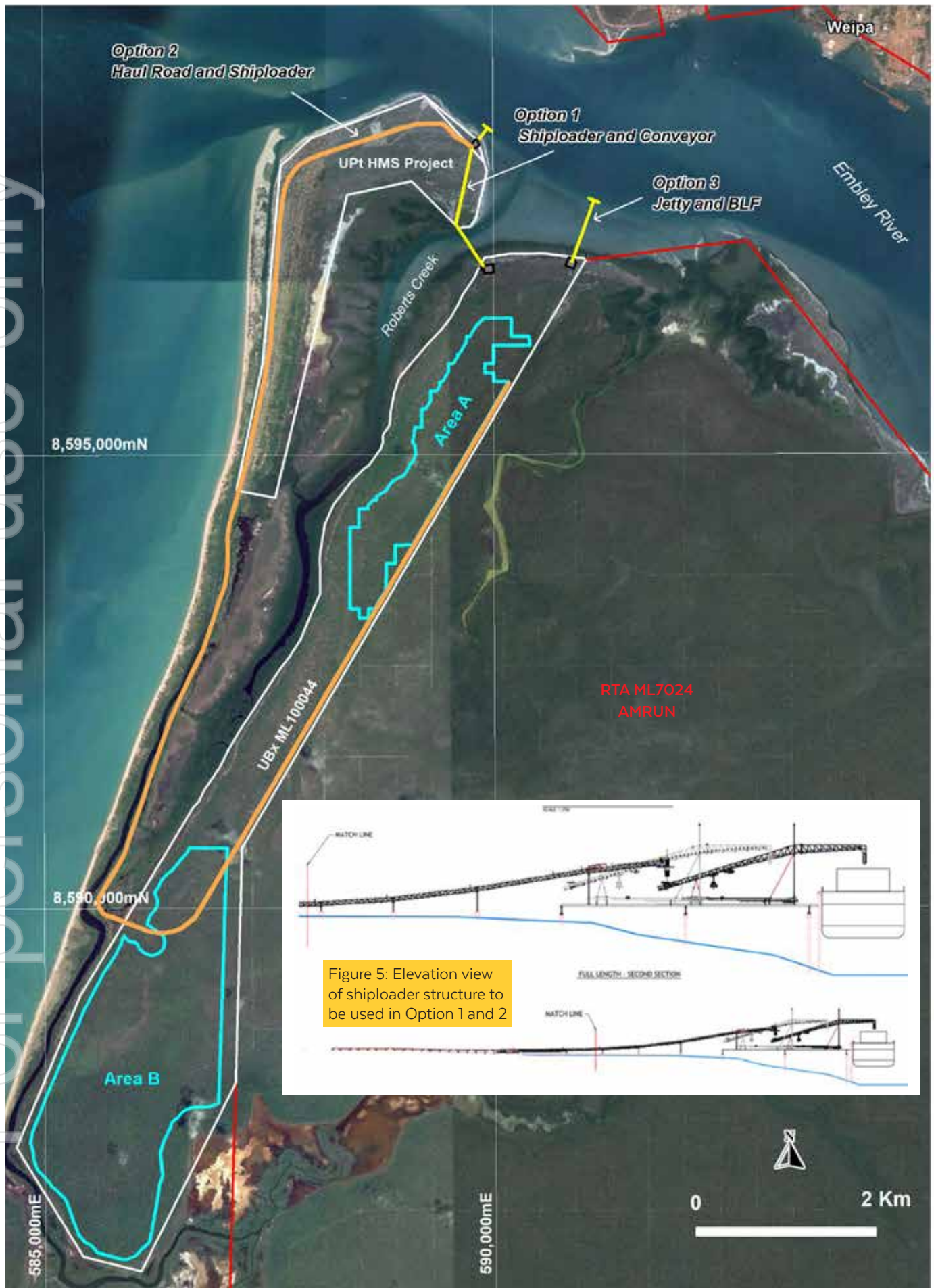


FIGURE 4: Three logistic options for Metallica bauxite JV under evaluation





# URQUHART POINT HMS PROJECT

The Urquhart Point HMS project is located 3 km southwest of Weipa. There has been no significant work undertaken on the project this year due to the continued focus on the Urquhart Bauxite project.

The project was envisaged to be a simple dry mining (<3m depth) and wet processing operation using standard gravity (spiral concentrators)

HMS separation to produce a zircon-rutile heavy mineral concentrate (HMC).

In recent years the zircon and rutile market prices have been at low levels, which is part of the reason why the project has remained on hold. There is evidence that the prices are strengthening and the company continues to monitor the zircon and rutile

markets and is open to third party approaches for the Urquhart Point HMS project and its modularised plant.

The company has conducted an inspection of the containers which are located outside of Brisbane and can report that they are secure and remain in good condition.

## CAPE YORK REGIONAL EXPLORATION

The Joint Venture holds extensive regional tenements along the 200 km coastal belt between Weipa and Northern Cape York Peninsula that are prospective for bauxite and HMS.

During the March Quarter the JV applied for two new

exploration tenements EPMA 27243 and EMPA 27244. EPMA 27243 is located on the north side of Skardon River and could potentially be a strategic barge loading facility location to access the bauxite and HMS in a number of JV tenements. EPM 27244 is located immediately south

and adjoins the Urquhart Bauxite tenement, the tenement areas of mapped bauxite plateau adjacent to and immediately outside of the extensive bauxite mining lease are held by a prominent third party bauxite producer.

The JV has undertaken limited work on the regional Bauxite and HMS project this year, however planning has commenced to test a number of exploration targets before the wet season commences.



# ESMERALDA GRAPHITE, GOLD AND BASE METALS PROJECT

## MLM 100%

Through subsidiary  
Touchstone  
Resources Pty Ltd

## Graphite

Large scale “graphite  
in granite”- targeting  
high purity graphite,  
gold and base metals

## 979 km<sup>2</sup>

Exploration tenure  
and applications

The Esmeralda project, located near Croydon in North Queensland covers a combined area of more than 979km<sup>2</sup>.

During the year the Company undertook a review of all available geophysical data for both the Esmeralda project area and the area due north which includes the Croydon Goldfields. The most useful geophysical datasets are the airborne magnetic surveys completed for Minplex and Golden

Plateau collected in the 1980's at 250m line spacing, and the gravity data collected in the mid 1990's by WMC.

The combination of the magnetic and gravity data is quite useful in interpreting possible intrusives and structural components. Beyond the coverage of the detailed magnetic survey, the interpretation relies on the GSQ regional data. The intrusives are interpreted generally as magnetic highs with a circular form often with

a busy magnetic signature, and most with coincident gravity highs. Some of the more magnetic of these features could also be interpreted as direct iron-oxide, copper, gold (IOCG) targets. The large circular feature defined by what are labelled “intrusive margins” has magnetic margins, generally low magnetic interior, and a significant associated gravity high.

# DIRECTOR & MANAGEMENT PROFILES



**THEO PSAROS**  
**CHAIRMAN**

Mr Psaros is an experienced Company Director and Executive. He has over 30 years of diverse global and local commercial experience in a number of business sectors and industries within multi-million dollar public listed company, private companies and government departments. Mr Psaros resource industry experience included a number of years as CFO and COO of MetroCoal Limited, Chairman of the Surat Basin Coal Alliance and a member of the industry group that assisted the Queensland Government Department of Natural Resources and Mines to prepare the 30 year strategic plan for the resources industry in Queensland (ResourcesQ).

Mr Psaros is a Chartered Accountant having previously worked for PwC and has worked in the regulatory industry in London. He is a Graduate of the AICD and has significant experience with capital raising and infrastructure development.

Theo joined the board of Metallica Minerals as Non-Executive Chairman on 1 February 2019.



**ANDREW GILLIES**  
**NON-EXECUTIVE DIRECTOR**

Mr Gillies is a highly experienced geologist with over 30 years' experience and as a company director of ASX junior resource companies with strong resource and mineral exploration, company management, project feasibility, project development, mining, governance and corporate background. He is currently a director of Prophet Resources Pty Ltd and his private geological consulting and investment company Golden Breed Pty Ltd.

Mr Gillies was a founding director of Metallica Minerals Limited in 1997, listing the company on the ASX in 2004. He retired from the managing director role in July 2015 and then retired as a director on 2 June 2017.

Mr Gillies has extensive experience across a range of minerals and resource projects, much of this experience gained throughout Queensland. Mr Gillies successfully listed subsidiaries Cape Alumina Limited and MetroCoal Limited on the ASX in 2009 (these companies have since merged to become MetroMining Limited, a successful bauxite producer).

Mr Gillies was also a director of Orion Metals Limited, Planet Metals Limited and he was previously a director of Queensland Resources Council (QRC).

Andrew joined the board of Metallica Minerals as Non-Executive Director on 1 February 2019.





**SCOTT WADDELL**  
**EXECUTIVE DIRECTOR & INTERIM CEO**

Mr Waddell has over 25 years of resources company experience gained through various senior resource positions.

This included eight (8) years with Metro Mining Limited and Cape Alumina Limited, nine (9) years with Anglo Coal and eight (8) years with Rio Tinto Alcan (RTA). Direct mine site experience was 4.5 years with RTA Weipa Bauxite and 3.5 years at Callide coal mine. Roles included Interim CEO at Cape Alumina, CFO and Company Secretary for Metro Mining Limited and Cape Alumina Limited, Head of Finance for the Monash Energy project in Victoria's La Trobe Valley, as well as being a director of the CO2CRC Otway Pilot Project and chairman of the audit committee, Business Development Manager as well as a number of finance and corporate roles.

Mr Waddell holds a Bachelor of Business, is a Fellow of the Certified Practising Accountants and an Associate Member of the Governance Institute of Australia. Mr Waddell has completed post graduate courses including a Graduate Diploma in Applied Corporate Governance, Post Graduate Diploma of Purchasing and Materials Management and completed the Company Directors Course with the Australian Institute of Company Directors (ACID).

Scott joined the board of Metallica Minerals as Non-Executive Director on 1 February 2019 and was appointed as Interim CEO on 7 February 2019.



**JOHN HALEY**  
**COMPANY SECRETARY & CFO**

Mr Haley has more than 35 years of senior corporate experience in Australia and Canada.

John has a strong accounting background that has seen him hold a number of senior positions spanning a range of industries including mineral exploration. He has assisted in the start-up of various mineral exploration companies and is a Director of the Queensland Resources Council.

John has previously worked with Coopers & Lybrand and Arthur Andersen & Co., and with listed and unlisted companies in general management, financial reporting and company secretarial positions.





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# **TENEMENTS, RESOURCES AND RESERVES**

# TENEMENT TABLES

## CAPE YORK BAUXITE & HMS JOINT VENTURE

### 50% ORESOME AUSTRALIA & 50% OZORE RESOURCES PTY LTD

Tenement	Project name	Holder	STATUS	HA	S/B
EPM15268	Urquhart Point	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Granted	0	16
EPM15371	Doughboy	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Granted	0	13
EPM15372	Jardine	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Granted	0	20
EPM18015	Jackson River #2	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Granted	0	2
EPM18737	Sandman #3	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Granted	0	34
EPM18738	Sandman #2	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Granted	0	47
EPM18998	Sandman #5	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Granted	0	24
EPM19001	Sandman #6	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Granted	0	20
EPM25482	Sandman #10	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Granted	0	19
EPM25509	Sandman #11	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Granted	0	41
EPM25611	Upper Embley	Oresome Australia Pty Ltd	Granted	0	13
EPM25687	Vriya East	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Granted	0	78
EPM27243	Skardon River North	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Application	0	1
EPM27244	Urquhart South Bauxite	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Application	0	10
ML20669	Urquhart Point	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Granted	366.0739	0
ML20737	Mbung Urquhart Point Extension	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Granted	5.4074	0
ML100044	Urquhart Bauxite	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Granted	1360	0
ML100049	Urquhart Bauxite 2	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Application	40.5	0
ML100226	UBX	Oresome Bauxite Pty Ltd & Ozore Resources Pty Ltd	Application	85.97	0

## CAPE YORK BAUXITE AND HMS JOINT VENTURE

### 100% ORESOME BAUXITE PTY LTD

Tenement	Project name	Holder	STATUS	HA	S/B
ML100199	Urquhart	Oresome Bauxite Pty Ltd	Application	20.89	0



# TENEMENT TABLES

## 100% METALLICA MINERAL'S OWNED SUBSIDIARIES

### CAPE FLATTERY SILICA SANDS PROJECT

Tenement	Project name	Holder	STATUS	HA	S/B
EPM25734	Cape Flattery	Oresome Australia Pty Ltd	Granted	0	17

### PHOENIX LIMESTONE PROJECTS

Tenement	Project name	Holder	STATUS	HA	S/B
EPM25728	Fairview	Phoenix Lime Pty Ltd	Granted	0	5
EPM25756	Fairview #1	Phoenix Lime Pty Ltd	Granted	0	1

### ESMERALDA GRAPHITE PROJECT

Tenement	Project name	Holder	STATUS	HA	S/B
EPM25779	Warrior	Touchstone Resources Pty Ltd	Granted	0	19
EPM25806	Esmeralda West	Touchstone Resources Pty Ltd	Granted	0	50
EPM25807	Esmeralda East	Touchstone Resources Pty Ltd	Granted	0	48
EPM27210	Clara	Touchstone Resources Pty Ltd	Granted	0	100
EPM27290	Momba	Touchstone Resources Pty Ltd	Application	0	89

### LUCKY BREAK OPERATIONS

Tenement	Project name	Holder	STATUS	HA	S/B
E04/2632	Montalivet	Lucky Break Operations Pty Ltd	Application	0	9
E04/2633	Montesquieu	Lucky Break Operations Pty Ltd	Application	0	25
E04/2634	Cassini	Lucky Break Operations Pty Ltd	Application	0	6
E80/5349	Oombrai Hill	Lucky Break Operations Pty Ltd	Application	0	94
E80/5350	Mt Connor	Lucky Break Operations Pty Ltd	Application	0	16
E80/5351	Kalumburu East	Lucky Break Operations Pty Ltd	Application	0	44

## NOTES

All tenements are 100% owned unless expressed otherwise  
EPM - Exploration Permit for Minerals

ML - Mining Lease  
S/B - Sub blocks  
Ha - Hectares

# BAUXITE RESOURCES & RESERVES

## CAPE YORK BAUXITE AND HMS JOINT VENTURE

### URQUHART BAUXITE PROJECT RESERVES

	Area	Direct Shipping Bauxite (Low Temp)	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	THA	Low Temp RSi
		Dry kt	%	%	%	%
Proved	A	2,964	53.7	12.3	42.3	5.4
Probable	A	3,568	51.9	14.2	39.1	5.9
Ore Reserve	A	6,532	52.7	13.3	40.6	5.7

#### NOTES

1. THA = Trihydrate Alumina
2. THA = AAI @ 150°C

## URQUHART BAUXITE PROJECT DSB MINERAL RESOURCE

### AT AN EFFECTIVE CUT-OFF OF 48% Al<sub>2</sub>O<sub>3</sub>

Classification	Area	Mt	Al <sub>2</sub> O <sub>3</sub> %	SiO <sub>2</sub> %	AAI%	RSi%
Measured	A	3.0	54.4	11.8	43.2	5.0
Indicated	A	3.9	53.3	13.1	40.8	5.2
Inferred	A	0.3	54.2	11.3	42.0	4.7
	B	2.3	49.9	17.4	37.2	6.0
	Subtotal	2.6	50.3	16.8	37.6	5.9
Total		9.5	52.8	13.7	40.7	5.3

#### NOTES

3. AAI = Available alumina Al<sub>2</sub>O<sub>3</sub>
4. RSi = Reactive Silica SiO<sub>2</sub>

The information in the table above is summarised from the JORC 2012 Mineral Resource in the ASX Release dated 11 May 2015

## REGIONAL BAUXITE EXPLORATION TARGETS

Project	Permit	Discrete Targets	Insitu mineralisation tonnage range Mt <sup>2</sup>	Total Al <sub>2</sub> O <sub>3</sub> % <sup>3</sup>	Total SiO <sub>2</sub> % <sup>3</sup>
Vrilya	EPM 15371	3	2 to 6	40-47	insufficient data <sup>1</sup>
Vrilya	EPM 25509	7	12 to 36	40-48	10-19 <sup>1</sup>
Vrilya East	EPM 25687	3	28 to 86	40-43	insufficient data <sup>1</sup>
TOTALS		13	42 to 128		

# BAUXITE RESOURCES & RESERVES

## \*EXPLORATION TARGET

The potential quantity and grade of the bauxite deposits are conceptual in nature. There is insufficient information at this time to define a mineral resource and there is no certainty that further exploration will result in the determination of a mineral resource in these areas.

1. previous exploration reports SiO<sub>2</sub> data incomplete
2. range based on measured areas of target plateaus, minimum thickness of >0.5 m bauxite, estimated average thickness of 1.5 m from previous exploration data and bulk density value of 1.5
3. based on screened sample assay results

The information in the table above is summarised from the JORC 2012 Mineral Resource in the ASX Release dated 11 July 2014.

## COMPETENT PERSON'S STATEMENT

The information in this report that relates to Exploration Results and Exploration Targets is based on information compiled by John Cameron (a geologist of more than 25 years' experience), and a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy and a contract consultant to Metallica Minerals Ltd. Mr Cameron has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken 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 Cameron consents to the inclusion of this information in the form and context in which it appears in this report.

# HMS RESOURCES

## URQUHART POINT HMS RESOURCE ESTIMATE

### GLOBAL MINERAL RESOURCE - 0% HM CUT OFF GRADE (COG)

Resource Category	Tonnes t	HM %	HM tonnes	OS %	Slimes %	Zircon %	Rutile %	Ilmenite %
Measured	1,945,360	6.92	134,529	13.83	1.07	10.2	12.5	12.5
Indicated	1,365,440	4.60	62,746	15.33	1.15	11.4	10.9	13.2
<b>Totals</b>	<b>3,310,800</b>	<b>5.96</b>	<b>197,275</b>	<b>14.45</b>	<b>1.11</b>	<b>10.6</b>	<b>12.0</b>	<b>12.7</b>

### MINERAL RESOURCE CONSTRAINED BY MINING LEASE & ENVIRONMENTAL BUFFERS - 0% HM COG

Resource Category	Tonnes t	HM %	HM tonnes	OS %	Slimes %	Zircon %	Rutile %	Ilmenite %
Measured	1,882,960	6.57	123,716	14.17	1.07	9.7	12.0	12.4
Indicated	1,345,840	4.60	61,930	15.41	1.16	11.4	10.9	13.2
<b>Totals</b>	<b>3,228,800</b>	<b>5.75</b>	<b>185,646</b>	<b>14.68</b>	<b>1.11</b>	<b>10.3</b>	<b>11.6</b>	<b>12.7</b>

### MINERAL RESOURCE CONSTRAINED BY MINING LEASE & ENVIRONMENTAL BUFFERS - 2% HM COG

Resource Category	Tonnes t	HM %	HM tonnes	OS %	Slimes %	Zircon %	Rutile %	Ilmenite %
Measured	1,781,360	6.85	122,090	12.46	1.03	9.8	12.0	12.4
Indicated	1,305,680	4.70	61,335	14.44	1.15	11.4	10.9	13.2
<b>Totals</b>	<b>3,087,040</b>	<b>5.94</b>	<b>183,425</b>	<b>13.30</b>	<b>1.08</b>	<b>10.3</b>	<b>11.6</b>	<b>12.7</b>

The information in the table above is summarised from the JORC 2012 Mineral Resource in the ASX Release dated 24 June 2014.



# HMS RESOURCES

## URQUHART POINT HMS RESERVE ESTIMATE

### ORE RESERVE ESTIMATE - 0.90% (Zr + 0.8 Rt + 0.31 Il) COG

Ore Resource Category	Tonnes kt	Head Grade						HM Tonnage & Mineral Assemblage			
		HM %	OS %	Slimes %	Zr %	Rt %	Il %	HM kt	Zr % of HM	Rt % of HM	Il % of HM
Proved	967	10.6	8.1	1.0	1.2	1.4	1.4	102	11.1	13.7	12.9
Provable	210	4.8	6.7	1.2	0.9	0.6	0.7	10	17.7	13.2	14.4
<b>Totals</b>	<b>1,177</b>	<b>9.5</b>	<b>7.9</b>	<b>1.0</b>	<b>1.1</b>	<b>1.3</b>	<b>1.2</b>	<b>112</b>	<b>11.7</b>	<b>13.6</b>	<b>13.1</b>

## NOTES

1. The Ore Reserves are based on the following forecast long term FOB prices: Zircon \$1,500/t, Rutile US\$1,200/t and Ilmenite US\$200/t.
2. Ore Reserves are based on a Zircon Equivalent cut-off grade of 0.90%.
3. Zircon Equivalent = Zircon % + 0.8 x Rutile % + 0.13 x Ilmenite %. Recoveries used in the equivalence calculation are 98.2%, 98.0% and 95.8% for Zircon, Rutile and Ilmenite respectively.
4. The HMS Reserves have been independently estimated by consultants IMC Mining Pty Ltd.
5. For further information see ASX Release "Maiden Independent Ore Reserve for Urquhart Point HMS project" dated 24 June 2014.
6. The information in the table above is summarised from the "JORC 2012 Mineral Resource" in the ASX Release dated 24 Jan 2014.

# NOTES TO RESOURCE TABLES

## GOVERNANCE OF MINERAL RESOURCES

The Company engages external consultants and Competent Persons to prepare and calculate Mineral Resources estimates. These estimates and underlying assumptions are reviewed by the Board and Management for reasonableness and accuracy. The results of the Mineral Resource estimates are then reported in accordance with the JORC codes and other applicable rules. Where material changes occur during the year to a project, including project's size, title or exploration results or other technical information, then previous resource estimates and market disclosures are reviewed for completeness.

Metallica reviews its Mineral Resources annually. Where a material change has occurred in the assumptions or data used in previously reported Mineral Resources, a revised resource estimate will be prepared as part of the Annual Review process.

## MINERAL RESOURCES AND ORE RESERVES STATEMENTS NOTES

Tonnages, grades and contained metal have been rounded to reflect the accuracy of the calculations. Rounding errors may occur.

Mineral Resource estimates are completed in accordance with JORC (2012) Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. The information provided in this report is summarised from the latest Mineral Resource statements as referenced in each case.

The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements, and in the case of estimates of Mineral Resources that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. Metallica confirms that the form and context in which the Competent Person's findings are presented have not materially changed from the original market announcement.

## CAUTION REGARDING FORWARD LOOKING STATEMENTS

Certain statements made in this report contain or comprise certain forward-looking statements.

Although Metallica believes that the estimates and expectations reflected in such forward-looking statements are reasonable, no assurance can be given that such expectations will prove to have been correct. Accordingly, results could differ materially from those set out in the forward-looking statements as a result of, among other factors, changes in economic and market conditions, success of business and operating initiatives, changes in the regulatory environment and other government actions, fluctuations in commodity prices and exchange rates and business and operational risk management. Metallica undertakes no obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after today's date or to reflect the occurrence of unanticipated events.

# TOP 20 SHAREHOLDERS

Rank	Name	Shares	%
1	JHEN MINING PTY LTD	40,099,678	12.37
2	PLAN-I PTY LTD	13,287,502	4.1
3	DOSTAL NOMINEES PTY LTD	8,010,000	2.47
4	J P MORGAN NOMINEES AUSTRALIA PTY LTD	7,324,665	2.26
5	MR GRAHAM RAYMOND DOW	6,000,000	1.85
6	TAMBORINE TREES PTY LTD	5,000,000	1.54
7	BONDLIN LIMITED	4,910,966	1.52
8	COROWA NOMINEES PTY LTD	4,380,098	1.35
9	MRS CAROLYN DOW	4,000,000	1.23
10	GEFRATO TRADING PTY LTD	4,000,000	1.23
11	LATSOD PTY LTD	4,000,000	1.23
12	MACFORBES SUPER PTY LTD	3,000,000	0.93
13	MR CLIFFORD MALCOLM ARNOLD	3,000,000	0.93
14	MR LEWIS ALFRED SHOTTER	3,000,000	0.93
15	MINNELEX PTY LTD	2,865,260	0.88
16	ASDEN INVESTMENTS PTY LIMITED	2,745,121	0.85
17	BNP PARIBAS NOMINEES PTY LTD	2,630,192	0.81
18	AUSTRALIAN EXPORTS & INDUSTRIALISATION SUPER PTY LTD	2,512,500	0.78
19	CODAN TRUSTEES	2,500,000	0.77
20	MR MICHAEL ROBERT HENNESSEY	2,256,572	0.70
<b>TOTALS</b>		<b>125,522,554</b>	<b>38.73</b>

\*As at 30 September 2019

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