

Noosa Mining & Exploration Investor Conference

14 – 16 July 2021



**Metallica Minerals Limited** (ASX:MLM)

*100% owner of Cape Flattery Silica Sand Project*

*A Silica Sand Development Company*



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## Footnotes

1. See ASX Release 3 March 2021 "Revised 38 Mt of High Purity Silica Sand Resource"
2. See ASX Release 15 June 2021 "Mining Lease Application lodged for Cape Flattery Silica"
3. See ASX Release 22 April 2021 "Rights Issue Closes"
4. See ASX Release 22 June 2021 "Excellent Metallurgical Test results on Cape Flattery Silica Sand"



# Competent Persons

## Cape Flattery Silica Sands

The information in this announcement that relates to the Cape Flattery Silica Project-Eastern Exploration Target and this Resource Estimation was based on results and data collected and compiled by Mr Neil Mackenzie-Forbes, who is a Member of the Institute of Geoscientists and is a Consulting Geologist employed by Sebrof Projects Pty Ltd and engaged by Metallica Minerals Ltd. Mr Mackenzie-Forbes has more than 20 years mining and exploration experience in Australia with major mining and junior exploration companies. Mr Neil Mackenzie-Forbes consents to the inclusion of this information in the form and context in which it appears in this release/report.

The information in this announcement that relates to the Cape Flattery Silica Project - Eastern Resource Area is based on information and modeling undertaken by Mr Chris Ainslie, Geotechnical Engineer, who is a full-time employee of Ausrocks Pty Ltd and a Member of the Australasian Institute of Mining & Metallurgy. The work was supervised by Mr Carl Morandy, Mining Engineer who is Managing Director of Ausrocks Pty Ltd and a Member of the Australasian Institute of Mining & Metallurgy and also by Mr Brice Mutton who is a Senior Associate Geologist for Ausrocks Pty Ltd. Mr Mutton is a Fellow of the Australasian Institute of Mining & Metallurgy and a Fellow of the Australian Institute of Geoscientists. Mr Morandy and Mr Ainslie and Mr Mutton are employed by Ausrocks Pty Ltd who have been engaged by Metallica Minerals Ltd to prepare this independent report, there is no conflict of interest between the parties. Mr Morandy, Mr Ainslie and Mr Mutton consent to the disclosure of information in the form and context in which it appears in this release/report.

The overall resource work for the Cape Flattery Silica Project - Eastern Resource Area is based on the direction and supervision of Mr Mutton who has sufficient experience that is relevant to the style of mineralisation and type of deposits under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves".

## Technical Information

The technical information in this report that relates to process metallurgy is based on information reviewed by Arno Kruger (MAusIMM) and work completed by IHC Mining. Mr Kruger is a metallurgical consultant and an employee of IHC Mining. Mr Kruger has sufficient experience that is relevant to the type of processing under consideration and to the activity being undertaken to qualify as a Competent Person as defined by the JORC Code 2012. Mr Kruger consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.



# Silica Sand is in demand – Globally



WORLD POLITICS

## A sand shortage? The world is running out of a crucial — but under-appreciated — commodity

PUBLISHED FRI, MAR 5 2021 1:14 AM EST  
UPDATED FRI, MAR 5 2021 10:20 AM EST

Sam Meredith  
@SMEREDITH19

SHARE



## Australia can now join the silica sands race thanks to a global supply crisis

Mining

June 7, 2019 | Angela East

Up until now Australia hasn't been a contender in the silica sands industry, but the tightening supply crunch has made an opening for potential players.

While silica sand is the most abundant mineral on the planet, it is still a finite resource. It's also – apparently – the most used commodity after air and water.

Most supply is used to make concrete for construction, but it is also used to make glass for buildings, solar panels and electronics like mobile phones and TVs, as well as to make car parts.

## FINANCIAL REVIEW

### Why sand shortage is a big problem

The Lex Column

Aug 9, 2020 – 8.11pm

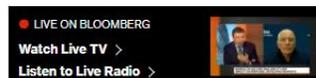


Green

## Glass Shortage Threatens Solar Panels Needed for Climate Fix

Bloomberg News  
5 November 2020, 14:46 GMT+10 Updated on 6 November 2020, 12:00 GMT+10

- ▶ PV glass output seen 20%-30% short of demand next year
- ▶ Price have risen 71% since July, hurting solar power economics



- **IMARC estimates the global silica sand market could grow from US\$8 billion in 2019 to US\$20 billion in 2024\*.**
- Post COVID many countries will embark on infrastructure projects to stimulate their economies. This will also increase the demand for silica sand.
- **Primary uses of Silica Sands; Manufacturing glass, Foundry use, Hydraulic Fracturing, Filtration and Abrasives and other uses.**

\* <https://www.imarcgroup.com/silica-sand-manufacturing-plant>



# Silica Sand demand – growing stronger and stronger

- 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 and in 2019 the size of the market was US\$8 Billion\*.
- **IMARC also estimated the global silica sand market could grow from US\$8 billion to US\$20 billion in 2024\*.**
- Demand will be driven by the construction market, rising automotive production and sales, mounting per capita income, and technological advancements. Besides this, emerging trends such as increasing usage of hybrid guide plate, solar control glazing for automotive and building glasses, lightweight glazing glass, and advanced nanotechnology in flat glass are also contributing towards the growth of the glass industry, consequently, boosting the demand for silica sand\*.
- **Post COVID many countries will embark on infrastructure projects to stimulate their economies. This will also increase the demand for silica sand.**
- Primary Uses of Silica Sands; Manufacturing glass (36%), Foundry use (33%), Hydraulic Fracturing (16%), Filtration (7%) and Abrasives and other uses (8%).



<https://www.imarcgroup.com/silica-sand-manufacturing-plant>

# Company Highlights



100% owned Cape Flattery Project is adjacent to the world's largest Silica Sand Mine



Demand for Silica Sands Expected to grow significantly



38Mt High Purity Silica Sands Resource<sup>1</sup>



Mining Lease Application lodged<sup>2</sup>



Cape Flattery Project is within the current Port boundary



Successful Rights Issue and Placement raised \$7m<sup>3</sup>



Major drilling program to commence in July/August 2021



Excellent Metallurgical test work results received<sup>4</sup>

# Corporate Snapshot

<b>ASX Code</b>	<b>MLM</b>
Share Price (as at 12 July 21)	3.4c
Ordinary Shares	557.7m
Options	
\$0.029	10m
\$0.06	130.7m
Market Cap	\$18.8m
Cash (as at 30 June 21)	\$7.5m
Debt	Nil

Top 20 shareholders hold 45.2% of Register

Top 4 Shareholders	Holding
1. Ilwella Pty Ltd	17.6%
2. Dostal Nominees Pty Ltd	6.2%
3. Rookharp Capital Limited	3.5%
4. Osmosis Holdings Pty Ltd	2.5%

**Theo Psaros**  
**Non-Executive Chairman**  
*Appointed 1 February 2019*

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 publically listed company, private companies and government departments.

**Scott Waddell**  
**Executive Director, CFO and Coy Sec**  
*Appointed 1 February 2019*

Mr Waddell has over 28 years of resources company experience gained through positions with Metro Mining Limited, Cape Alumina Limited, Anglo Coal and Rio Tinto Alcan.

**Andrew Gillies**  
**Non-Executive Director**  
*Appointed 1 February 2019*

Mr Gillies is a highly experienced geologist, having 35 years' experience and over 20 years combined experience as a company director of ASX listed junior resource companies, providing for a strong resource and mineral exploration, company management, project feasibility, project development, mining, governance and corporate background.

**Brad Sampson**  
**Non-Executive Director**  
*Appointed 13 May 2021*

Brad Sampson is a Brisbane based internationally experienced business leader, Director and mining professional with more than 30 years resources industry experience. He brings significant mine development and operating experience to the Metallica Board along with listed company governance experience across multiple international jurisdictions

**Mark Bojanjac**  
**Non-Executive Director**  
*Appointed 13 May 2021*

Mark is a Perth based company Director with more than 20 years significant experience in ASX resource companies including those that have taken exploration projects into production. He is currently Executive Chairman of PolarX Limited (ASX: PXX), Non-executive Director of Kula Gold Limited (ASX: KGD).

**Nicholas Villa**  
**General Manager, Cape Flattery**  
*Appointed 14 June 2021*

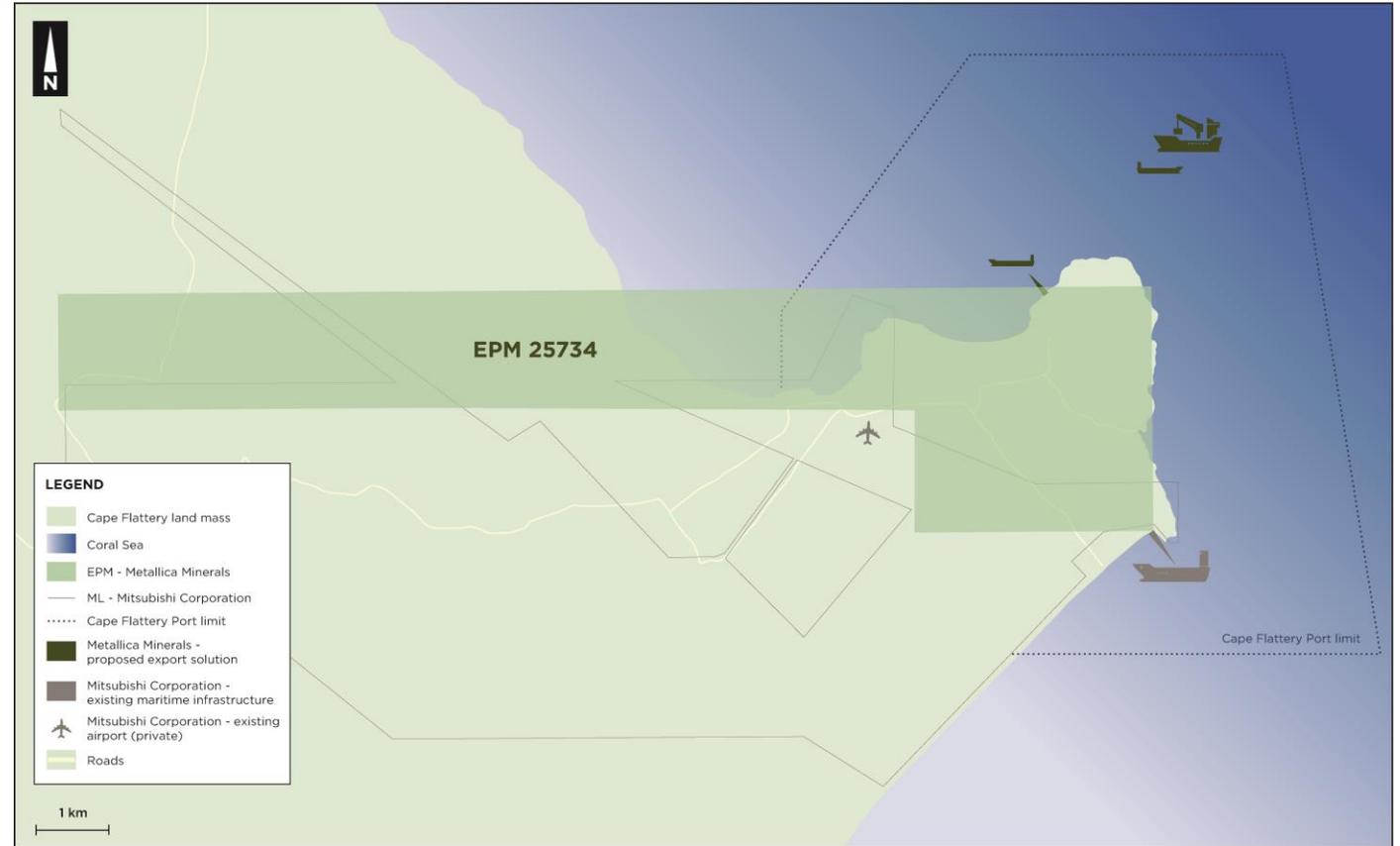
Possessing over 20 years' experience as a Mining Professional, Nicholas is thoroughly versed in Queensland resource project approvals processes including Environmental Studies and Native Title negotiations, Nicholas was Project Manager for the team that successfully delivered Metro Mining's Bauxite Hills mine to full production in Northern Cape York. This was comprised of both mining and marine elements, situated in a remote location with complex logistics.



# Cape Flattery Silica Sands Project (100% owned)

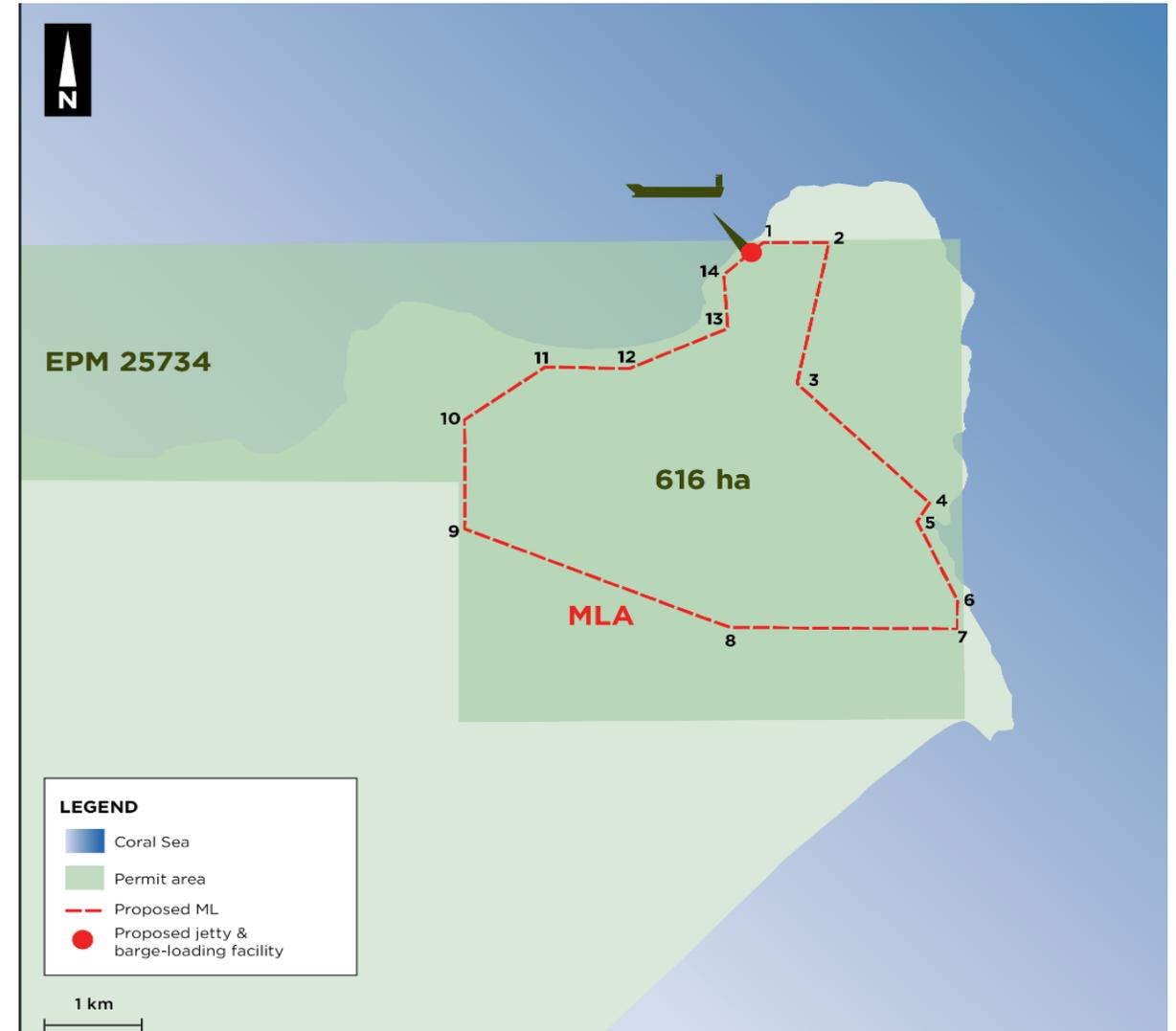


*Metallica is focused on becoming a Silica Sand producer.*



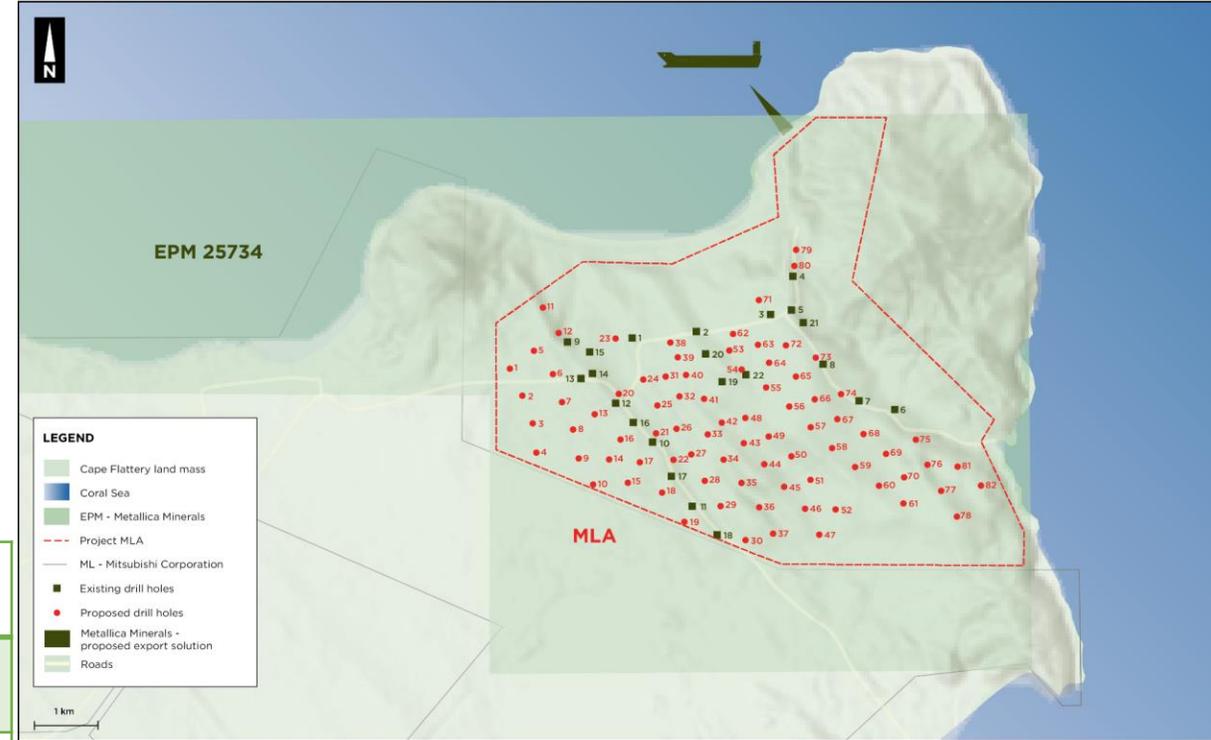
# Mining Lease Application<sup>2</sup>

- Mining Lease Application (ML 100284) has been lodged with the Queensland Department of Resources
- The MLA area of 616 Hectares contains the current JORC Mineral Resource



# JORC Resource<sup>1</sup>

- High purity silica sand resource increased to 38.3Mt @ 99.0% SiO<sub>2</sub>
- 22 Drill hole program completed in December 2020
- 82 Drill holes planned to be drilled in July/August 2021
- Resource has scope for significant expansion with additional drilling
- In-situ SiO<sub>2</sub> averages 99% at an 98.5% cut-off grade
- Cultural Heritage clearance to be undertaken in July 2021



CFS Project – Eastern Resource Area – planned Drill holes July/August 2021

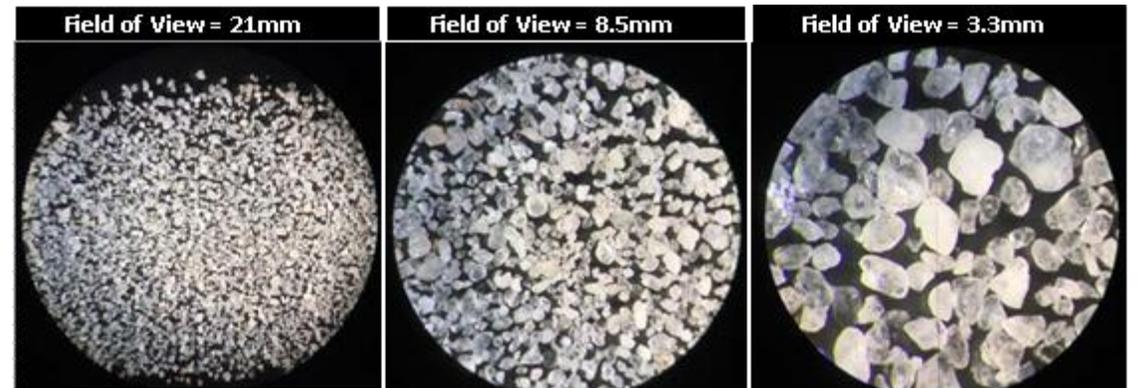
Cape Flattery Silica Sand Classification	Silica Sand (mt)	Silica Sand (Mm <sup>3</sup> )	Density (t/m <sup>3</sup> )	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	Fe <sub>2</sub> O <sub>3</sub> %	TiO <sub>2</sub> %	LOI %
Indicated Resource	5.4	3.4	1.6	99.1	0.04	0.09	0.13	0.13
Inferred Resource	32.9	20.5	1.6	99.0	0.07	0.12	0.15	0.11
<b>TOTAL</b>	<b>38.3</b>	<b>23.9</b>	<b>1.6</b>	<b>99.0</b>	<b>0.06</b>	<b>0.12</b>	<b>0.15</b>	<b>0.12</b>

<sup>1</sup>For further details, see ASX Release on 2 March 2021 titled “38 Mt of High Purity Silica Sand Resource at Cape Flattery Silica Sands Project”.

# Metallurgical Test work<sup>4</sup>

- Bulk sample metallurgical testing confirms high quality silica sand product
- The test work confirmed a product with 99.8% SiO<sub>2</sub>, 170ppm Fe<sub>2</sub>O<sub>3</sub> and 450ppm Al<sub>2</sub>O<sub>3</sub>
- Further work included a successful test of process to reduce Fe<sub>2</sub>O<sub>3</sub> from 170ppm to 70ppm Fe<sub>2</sub>O<sub>3</sub>
- The work demonstrated a relatively low contaminant product with an attractive narrow particle size distribution and a high-moderate yield
- Further metallurgical testing will be undertaken with bulk samples from the July 2021 drilling program based on white sand samples to investigate further enhancement of the processed product

Potential Product Options	Mass Yield	Assay				
		SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	TiO <sub>2</sub>	LOI 1000
	%	%	ppm	ppm	ppm	%
Feed Preparation Sand	97.6	99.7	715	760	1225	0.07
Spiral Product	84.0	99.9	500	240	260	0.10
UCC Product	77.4	99.8	450	170	210	0.05



# Planned Infrastructure

- A key advantage is the project being located in the designated Cape Flattery Port Area
- Queensland Government legislation does not allow for new ports being built outside the designated port areas
- Potential to truck our product less than 1km to our own proposed jetty or a third party jetty for barging operations provides significant commercial advantages
- Ports North has identified swing basin areas for ships (up to Panamax size vessels) close to this site
- Close to deep water suitable for barge loading
- Support from Traditional Land Owners is expected for this location



# Benefits for North Queensland

- Employment opportunities for Hope Vale and Cooktown communities (Indigenous Employment Policy to be developed)
- Indirect employment opportunities in the region
- North Queensland's reputation enhanced as a mineral province supporting the "green economy"
- Potential for supply to planned solar panel manufacturing in Townsville



# Upcoming milestones

- Drilling program in July/August 2021 to further define the resources
- Continue Environmental studies
- Scoping Study results to be announced
- Further Metallurgical test work to be undertaken following July/August drilling
- Traditional Landholder Agreements to be progressed
- Preliminary discussions with Off-Take Partners
- Further investigation of infrastructure options
- Pre-Feasibility Study underway (completion early 2022)
- Continued community engagement
- Environmental Application to be lodged



# Conceptual Development Timeframe\*

	2021		2022			
	Q3	Q4	Q1	Q2	Q3	Q4
Scoping Study	█					
Drilling Program No.2	█					
Pre-Feasibility Study (PFS)		█	█			
Definitive Feasibility Study (DFS)			█	█	█	
Agreements with Traditional Landowners	█	█	█	█	█	
Environmental approvals process		█	█	█	█	
Mining Lease (ML) approval process		█	█	█	█	
Offtake contracts negotiation		█	█	█	█	

\* Timing expectations are based on current best estimates and are subject to change depending upon exploration and metallurgical success, government and third party approvals, market conditions and funding availability

\* Based on granting of Environmental Authority (EA), with no Environmental Impact Statement (EIS) required

# Silica Sand peer comparisons

Company Name	ASX Code	Market Cap**	Shares on Issue	JORC Resource
Metallica Minerals	MLM	\$18.4M	558M	38.3Mt @ 99% silica oxide. (5.4Mt Indicated and 32.9 Mt Inferred)
Diatreme Resources <small>Refer to DRX Presentation dated 11 November 2020, Appendix 2A 12 November 2020, Galalar Silica Resource expands 30% to 61.9Mt 17 March 2021</small>	DRX	\$57M	2,572M	61.9Mt @ 99.2% silica oxide Measured 35.5mt/Indicated 20.6mt/Inferred 5.8mt
VRX Silica <small>Refer to VRX Presentation dated 25 August 2020 and Appendix 2A on 2 February 2021</small>	VRX	\$114M	504M	1,056 Mt @ 99.6% to 99.9% silica oxide Inferred & Indicated incl 261mt Probable Ore Reserve
Perpetual Resources <small>Refer to PEC presentation 30 March 2021 and ASX Release 17 March 2021</small>	PEC	\$64M	475m	Total probable ore reserves of 64.1Mt @ 98.6% silica oxide

\*\* Based on share prices at 12/07/2021



# Metallica in the news

view Metallica Minerals Limited

## Metallica Minerals returns strong test results on Cape Flattery silica sand

It is planning further metallurgical testing to investigate further enhancement of the processed product from the project.

## Mine offers positive future for FNQ jobs

PETE MARTINELLI

## Metallica Minerals (ASX:MLM) near-quadruples MRE at Cape Flattery

Materials

ASX:MLM MCAP \$18.40M



Simone Grogan  
simone.grogan@themarketherald.com.au  
02 March 2021 13:00 (AEST)



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## Metallica Minerals (ASX:MLM) plans \$4.9M renounceable rights issue

Mining

ASX:MLM MCAP \$18.40M



Ashleigh Melanko  
Markets Reporter  
ashleigh.melanko@themarketherald.com.au  
26 March 2021 04:00 (AEST)



## Metallica Minerals (ASX:MLM) gets pleasing metallurgical results from Cape Flattery

Materials

ASX:MLM MCAP \$18.40M



Jessica De Freitas  
Markets Reporter  
jessica.defreitas@themarketherald.com.au  
23 June 2021 05:00 (AEST)



Our project is located in the world class Cape Flattery Dune field

**For further information please contact:**

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Executive Director, CFO & Company Secretary

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