

# Cape Flattery Silica

Annual General Meeting  
& Webinar presentation

22 November 2023



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FLATTERY  
SILICA

**Metallica Minerals Limited** (ASX: MLM)  
A critical minerals company

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# Listing Rule & Competent Person Statements



## ASX Announcements cited

The following ASX Announcements are cited in this presentation

1. See ASX Release 15 November 2023 “Cape Flattery Silica Updated DFS supports 3Mtpa saleable product”
2. See ASX Release 25 September 2023 “Cape Flattery Silica Sand Project Update”
3. See ASX Results 19 September 2023 “Bulk metallurgical tests confirm High Purity Silica Sand”
4. See ASX Release 1 June 2023 “Extension of MOU to explore off-take arrangements”

The statements in this presentation concerning Mineral Resource Estimates at the CFS Project are derived from ASX announcements 1, 4 and 6 above.

## Listing Rule 5.23

The Company confirms that it is not aware of any new information or data that materially affects the information included in these original market announcements and, in the case of estimates of mineral resources or ore reserves and production forecasts and forecast financial information, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcements continue to apply and have not materially changed. The company confirms that the form and context in which the Competent Person’s findings are presented have not been materially modified from the original market announcement.

Statements concerning production targets and related financial information are derived from ASX announcements 3 and 5 above.

## Listing Rule 5.19.2

The Company confirms that all material assumptions underpinning the production target and corresponding financial information continue to apply and have not materially changed.

## Competent Person Statement

The information in this report that relates to the Cape Flattery Silica Project – Eastern Resource Area is based on information and modelling carried out by Chris Ainslie, Project 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 Mutton consent to the disclosure of information in the form and context in which it appears in this 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”.

## Cape Flattery Silica Sand Exploration Results

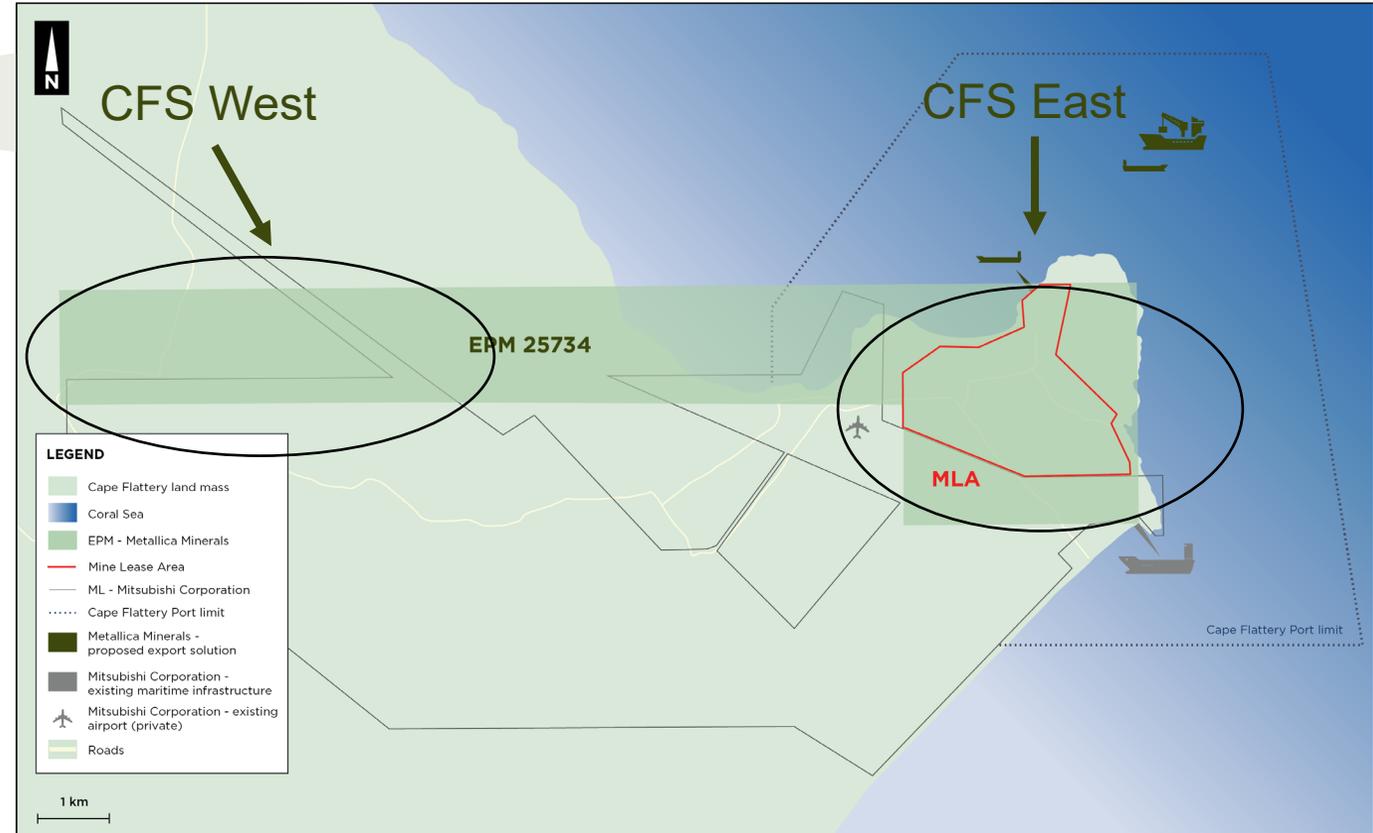
The information in this report that relates to the Exploration Sampling and Exploration Results is based on information compiled by Mr Patrick Smith, a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy.

Mr Smith is the owner and sole Director of PSGS Pty Ltd and is contracted to Metallica Minerals as their Exploration Manager. Mr Smith confirms there is no potential for a conflict of interest in acting as the Competent Person. Mr Smith 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. Mr Smith consents to the inclusion of this information in the form and context in which is appears in this release/report.

# Cape Flattery Silica Project Location



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# Corporate snapshot



Share Price

**2.6c**

(as at 20 November 2023)

Cash

**\$5.7m**

(as at 30 September 2023)

Ordinary Shares

**959.9m**

Debt

**Nil**

Listed Options

**179.6m**

\$0.06

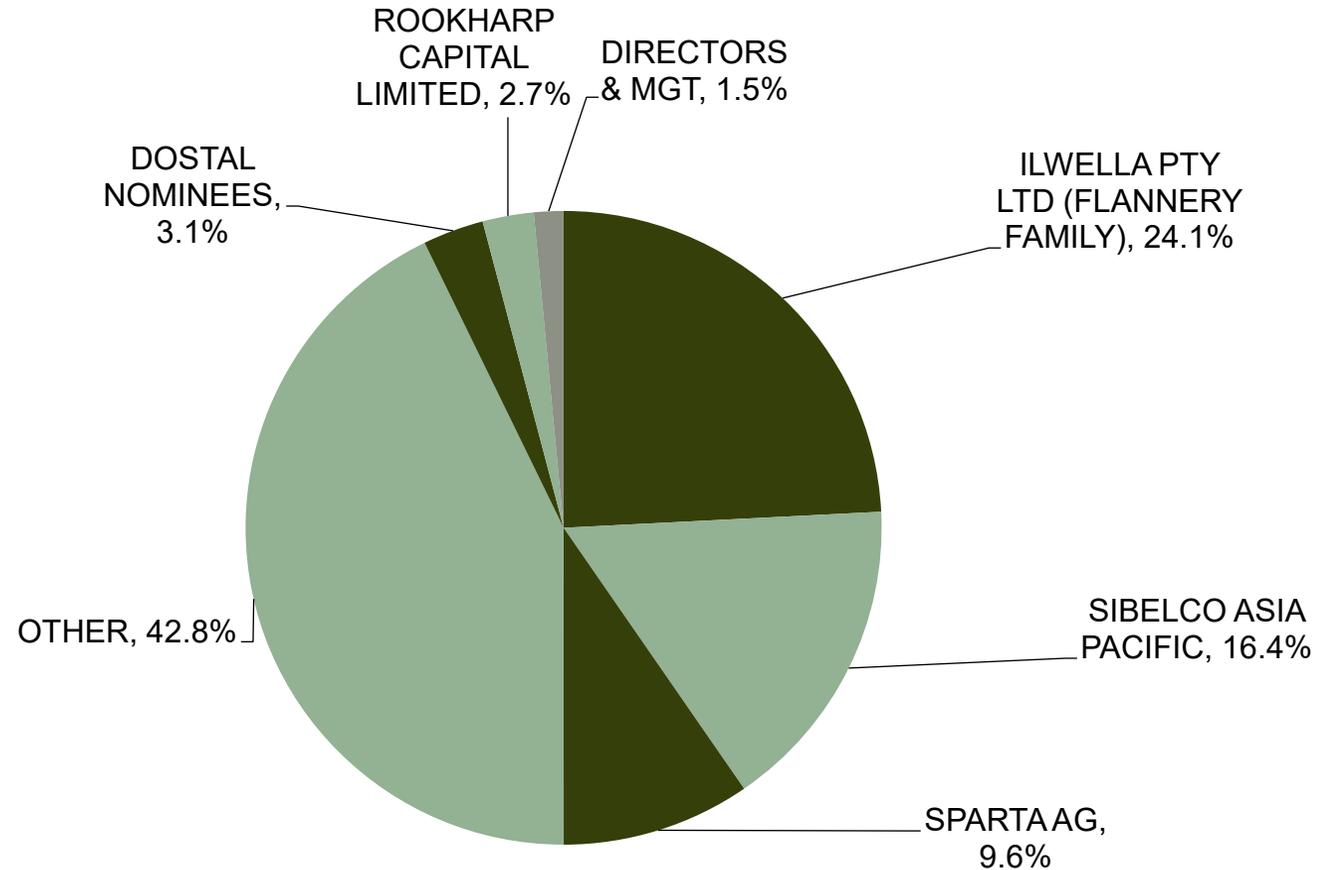
Unlisted Options

**1.0m**

Market Cap

**\$25.0m**

Top 20  
shareholders  
hold **66.3%**  
of Register



# Company Highlights



Cape Flattery Silica (CFS) is **100% owned** by Metallica Minerals and deemed a project of Regional Significance



**47Mt Reserve** high purity Silica Sand resource<sup>1</sup>



**Updated DFS highlights strong positive, low Capex, low Opex and Reserve for 15 years production<sup>1</sup>**



**Application underway to be considered a Coordinated Project<sup>2</sup>**



CFS project has a **transport solution** – located within Port Limit of Cape Flattery



**Excellent internal Metallurgical test results received** – potential customer acceptance underway<sup>3</sup>



**Booming production of Solar panels stimulates significant demand for high purity silica sand**



**MoU extended with Mitsui<sup>4</sup>**

1. See ASX Release 15 November 2023 “Cape Flattery Silica Updated DFS supports 3Mtpa saleable product”, 2. See ASX Release 25 September 2023 “Cape Flattery Silica Sand Project Update” 3. See ASX Results 19 September 2023 “Bulk metallurgical tests confirm High Purity Silica Sand”, 4. See ASX Release 1 June 2023 “Extension of MOU to explore off-take arrangements”.

# Cape Flattery silica sand market drivers



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- > Silica sand is a key ingredient in glassmaking
- > High purity silica sand, such as that produced at Cape Flattery is an essential raw material for the production of hi-tech glass
  - Solar PV glass used in solar modules (90% manufactured in Asia)
  - Building Integrated Photovoltaic (BIPV) and e-glass
  - Architectural glass
  - Thin film transistor glass (smartphones, TV's and tablets)
  - Fibre optics
  - LED lighting
- > Current seaborne market for HPSS is 8-10Mtpa and growing
- > Readily accessible high purity Silica Sand is a finite resource that is in limited supply



# Cape Flattery silica sand market drivers - the energy transition



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- > The International Energy Agency (IEA) highlights reaching net zero by 2050 (NZE2050) will be based largely on renewables, with solar power as the single biggest supply source at 51% of capacity
- > NZE2050 requires total solar PV capacity to reach 6,101 GW by 2030, which would require average annual capacity additions of 620GW per year commencing in 2023, approximately 3 times the record achieved in 2022
- > Solar PV modules require a high quality glass that maximises transparency, minimises reflection, and is strong enough to withstand hail storms and other impacts
- > Depending on the technology used (eg monofacial or bifacial), 1GW of solar modules may require 50,000 – 60,000 tonnes of glass, which in turn requires high purity silica sand to manufacture

Australian National  
Electricity Market  
(NEM) capacity  
2022-23  
55GW

Global solar PV  
installations NZE2050  
620GWpa or ~ 11times  
NEM

# MLM Market Activities

- The HPSS market is evolving and currently not covered in any meaningful way by commodity analysts
- Glass makers are looking to understand the seaborne market and the new merchant suppliers as a means to improve security of supply
- MLM is engaging with glass makers and sand processors to understand quality requirements, pricing and cost structures of captive HPSS operations
- Building knowledge base on competing merchant suppliers in Indonesia, Vietnam, Malaysia and Australia – costs, quality and barriers to entry
- The goal is for the CFS Project to be in the lowest third of the cost curve or better, on a landed Asia basis

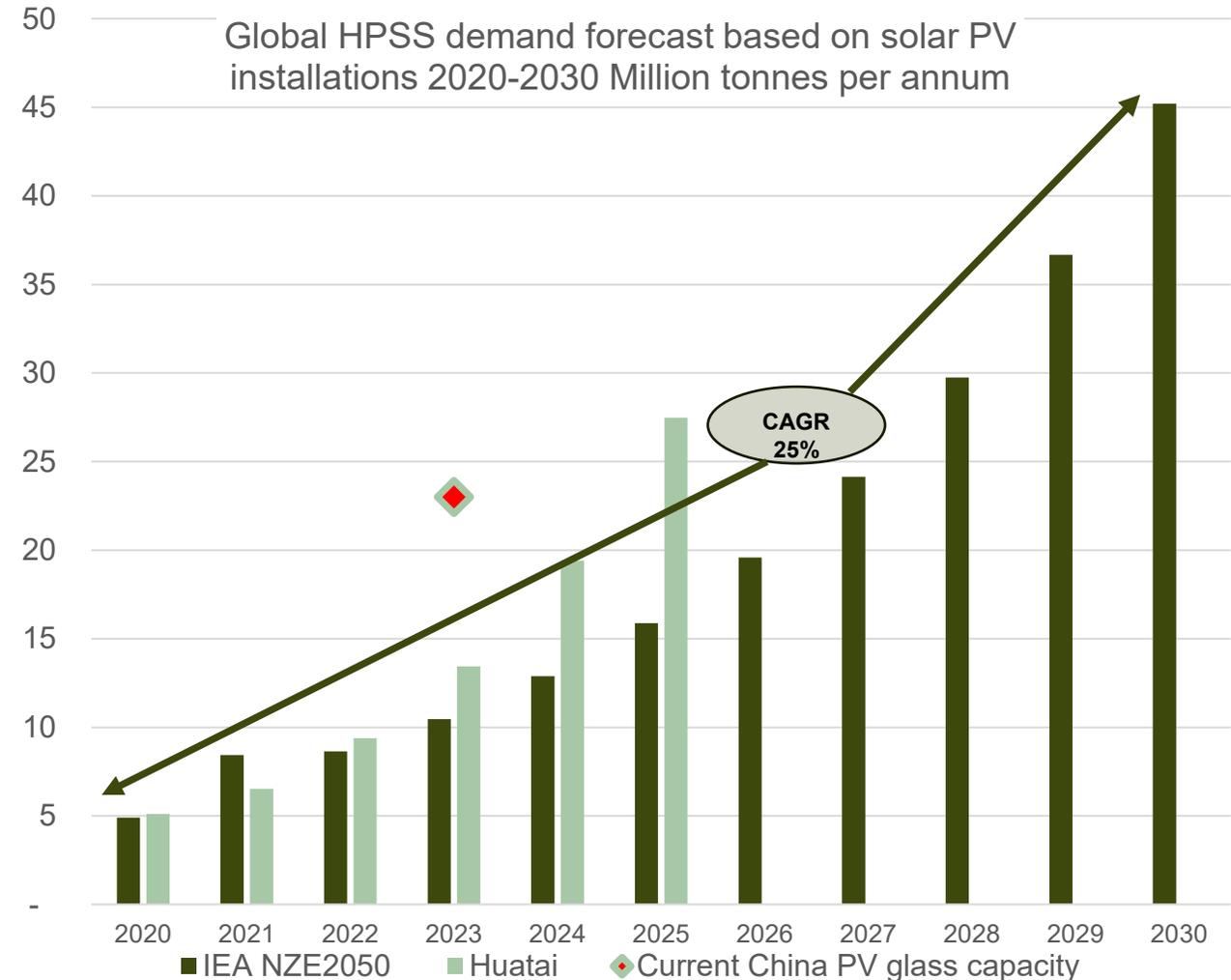


# High purity silica sand demand growth



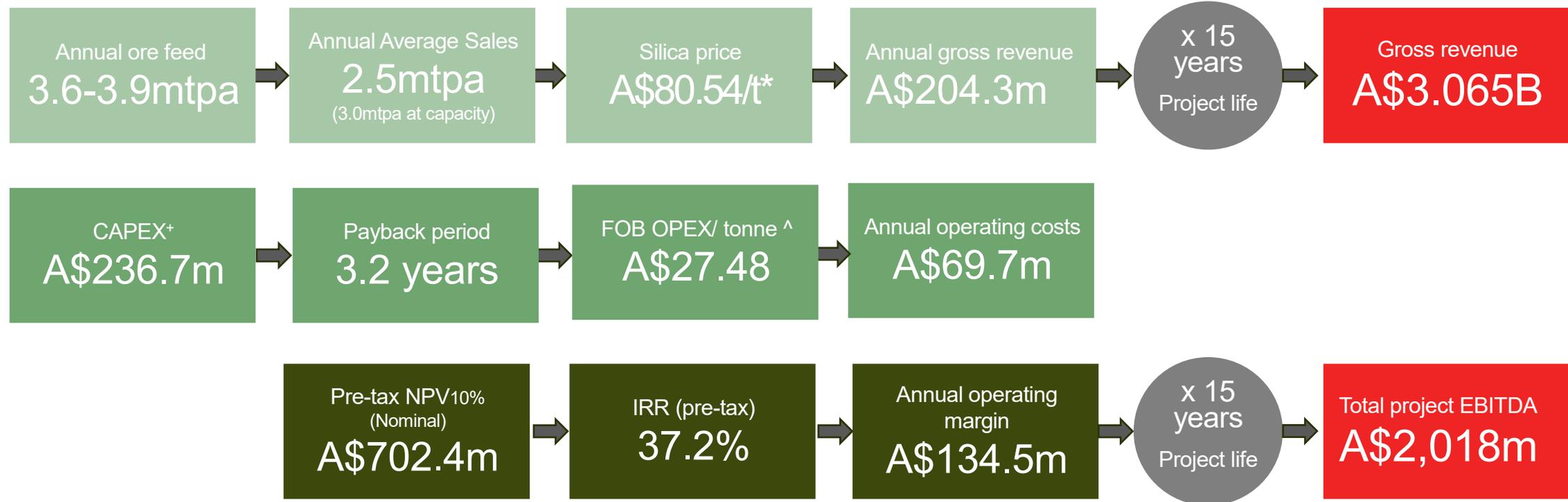
## Why is the CFS project a winner?

- ✓ North Asian PV glass producers are running at rates above the IEA NZE2050 scenario, potentially with unutilized capacity
- ✓ Forecast rapidly rising demand for solar PV glass
- ✓ Proximity to market and port solution
- ✓ Quality of silica sand and size of Reserve
- ✓ No substitute for HPSS in the manufacturing process for high quality glass, including recycled glass
- ✓ Declining sand resource quantity and quality in China means the seaborne market is likely to experience rapid growth



Source: MLM Management analysis - HPSS demand derived from IEA WEO 2023 NZE2050 scenario, 2023 Energy Institute Statistical Review of World Energy, Huatai Securities June 2023 and Metallica Minerals Limited market research

# Updated Definitive Feasibility Study



\* The price assumption is for a high purity silica sand product ('low iron') suitable for solar PV cover glass manufacturing (FOB-Cape Flattery Port)

+ Capital development costs include a 10% contingency (\$21.5m)

^ FOB OPEX includes Qld Gov Royalty of \$0.90 per tonne; C1 OPEX excludes Qld Gov Royalty

3. All references are in unleveraged, mid-2025 Real AUD unless stated otherwise; See ASX Release 15 November 2023 "Cape Flattery Silica Updated DFS supports 3Mtpa saleable product"

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Statements concerning production targets and related financial information are derived from ASX announcement above and ASX Release 15 November 2023 "Cape Flattery Silica Updated DFS supports 3mtpa saleable product"

# Capex Summary\*



## Initial Construction CAPEX AUD Million

Description	July DFS \$	Updated DFS \$	Change \$
Mining / MIA	3.9	5.2	
Processing Plant	44.6	89.5	
On-Site Infrastructure	18.9	29.1	
Product Transportation	32.8	32.8	
Off-Site Services / Utilities	-	-	-
Subtotal Direct Costs	100.2	156.5	56.3
Common Construction Facilities & Services	19.1	21.6	
Implementation Contractors	10.9	10.9	
Owner's Costs	11.1	12.8	
Subtotal Indirect Costs	41.2	45.3	4.1
Subtotal Base Estimate	141.4	201.8	60.4
Contingency	13.6	21.5	
Escalations	10.0	13.5	
Subtotal Escalation & Contingency	23.6	34.9	11.3
<b>Total Installed Cost</b>	<b>165.0</b>	<b>236.7</b>	<b>71.7</b>

\*See ASX Release 15 November 2023 "Cape Flattery Silica Updated DFS supports 3Mtpa saleable product"

# Operating Cost Summary\*



Operating costs	July DFS \$	Updated DFS \$	Change \$
Mining/MIA	\$4.58	\$3.75	(\$0.83)
Processing Plant	\$7.60	\$5.76	(\$1.84)
On-Site Infrastructure	\$2.86	\$1.80	(\$1.06)
Product Transportation	\$9.98	\$8.02	(\$1.96)
Off-Site Services/Utilities	\$1.80	\$1.05	(\$0.75)
General & Administrative**	\$2.77	\$2.39	(\$0.38)
Other Fees ***	\$3.58	\$3.81	\$0.23
C1 cash cost	\$33.16	\$26.58	(\$6.58)
Qld Government Royalties	\$0.90	\$0.90	-
<b>FOB cash costs</b>	<b>\$34.06</b>	<b>\$27.48</b>	<b>(\$6.58)</b>

\*See ASX Release 15 November 2023 "Cape Flattery Silica Updated DFS supports 3Mtpa saleable product"

\*\* General & Administrative expenditure includes HR, HSEC, IT, warehousing, pre-production drilling, freight, and general site office costs.

\*\*\* Other Fees expenditure includes estimated TLO Royalties, demurrage, marketing fees and water licence fees. It has been assumed that there will be an increase to demurrage fees due to the additional sales per year.

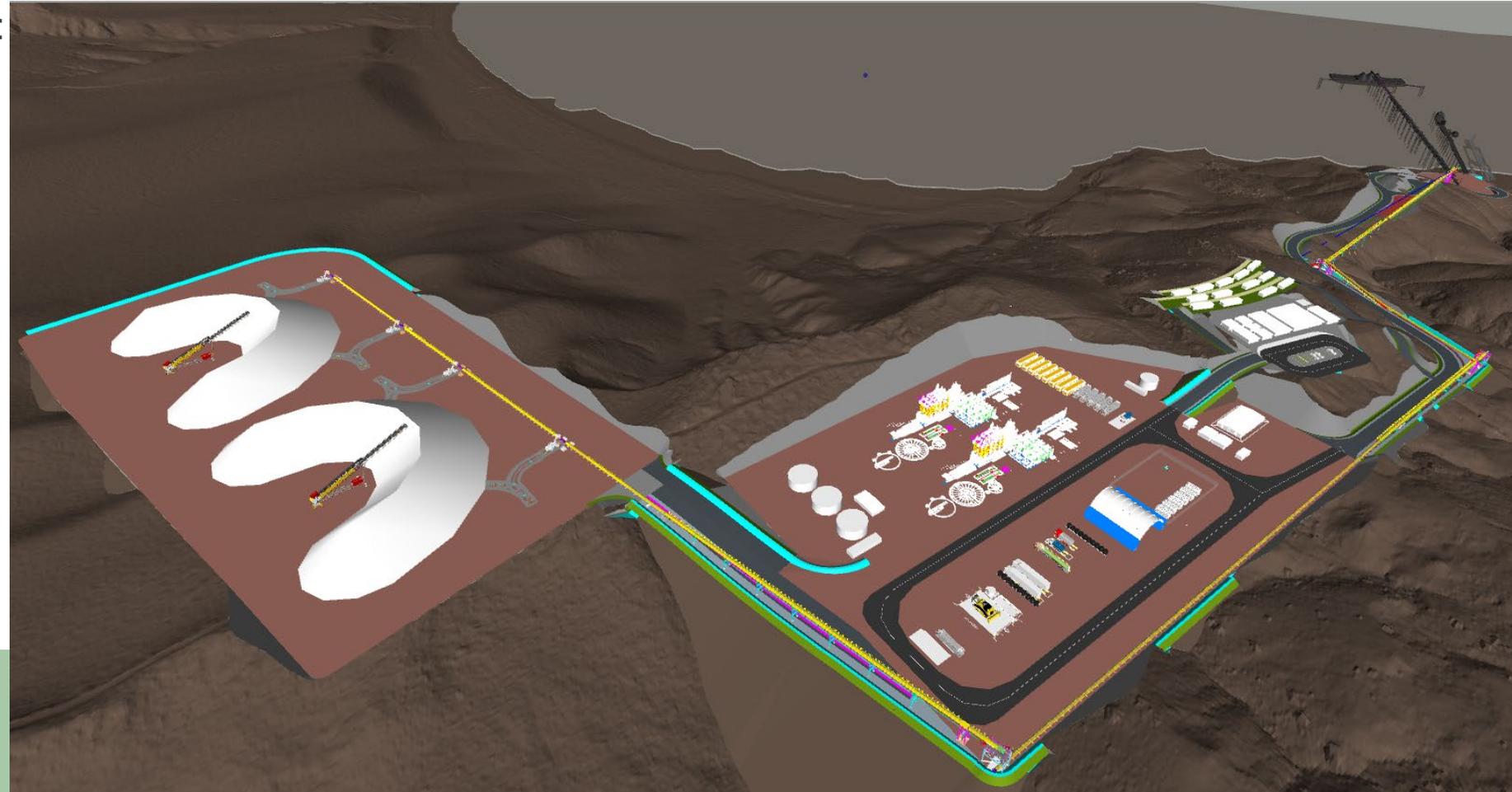
# Planned CFS Project Operations



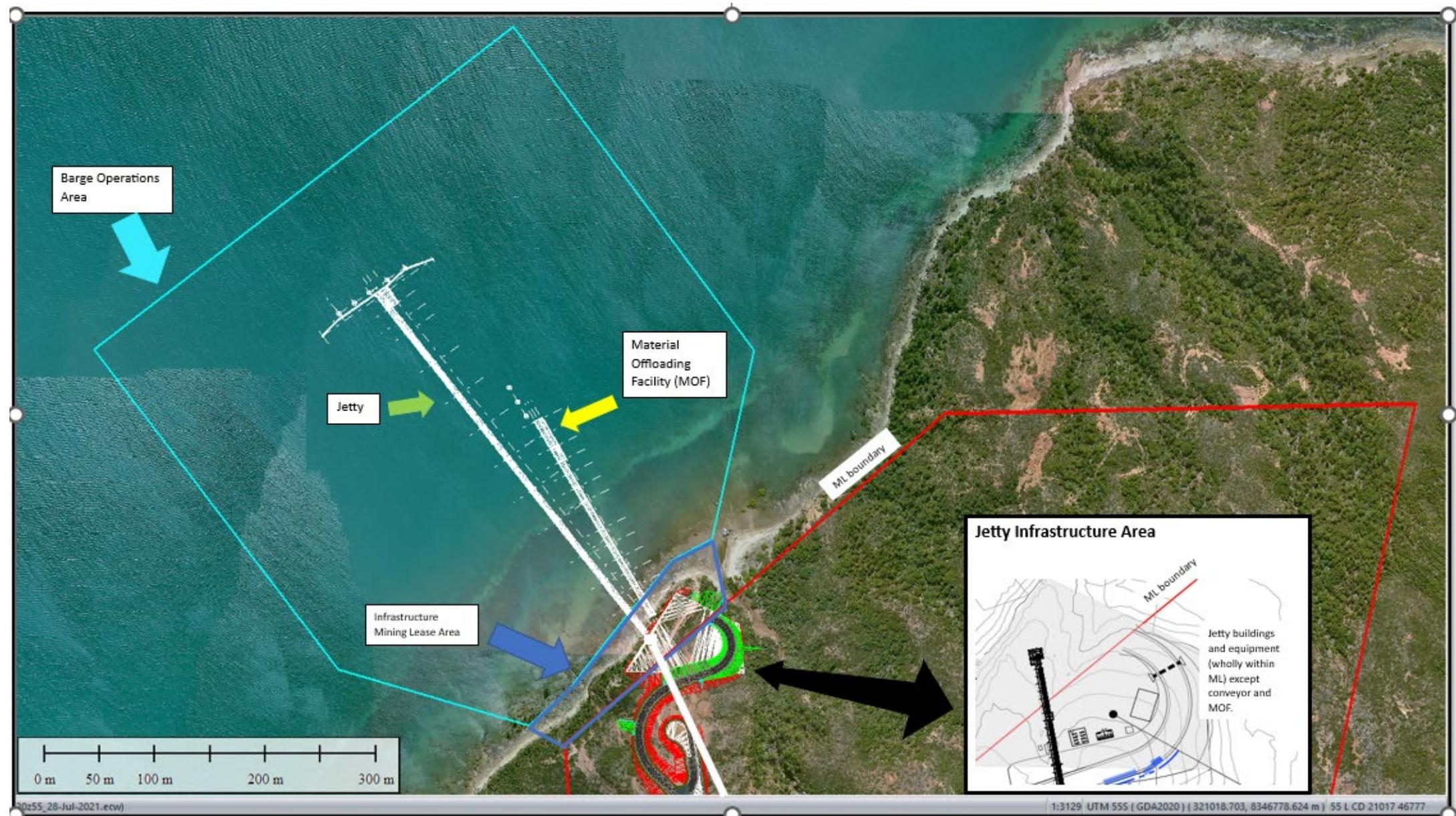
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Key site infrastructure includes:

- > Product stockpiles
- > Processing plants and pad
- > Conveyor
- > Jetty infrastructure facility
- > Purpose-built accommodation facility.



# CFS Jetty Loading Facility & Roll-on-Roll-off



# Traditional Landowner Negotiations



- > Three groups:
  - Hopevale Congress Aboriginal Corporation (Trustee Landowner)
  - Walmbaar Aboriginal Corporation (as agent for Dingaal clan – Traditional landowner)
  - Nguurruumungu clan – Traditional landowner
- > Negotiations to date have been held in respectful and friendly manner
- > TLOs planning employment, training, apprenticeships and new business opportunities



# Queensland's Critical Minerals Strategy

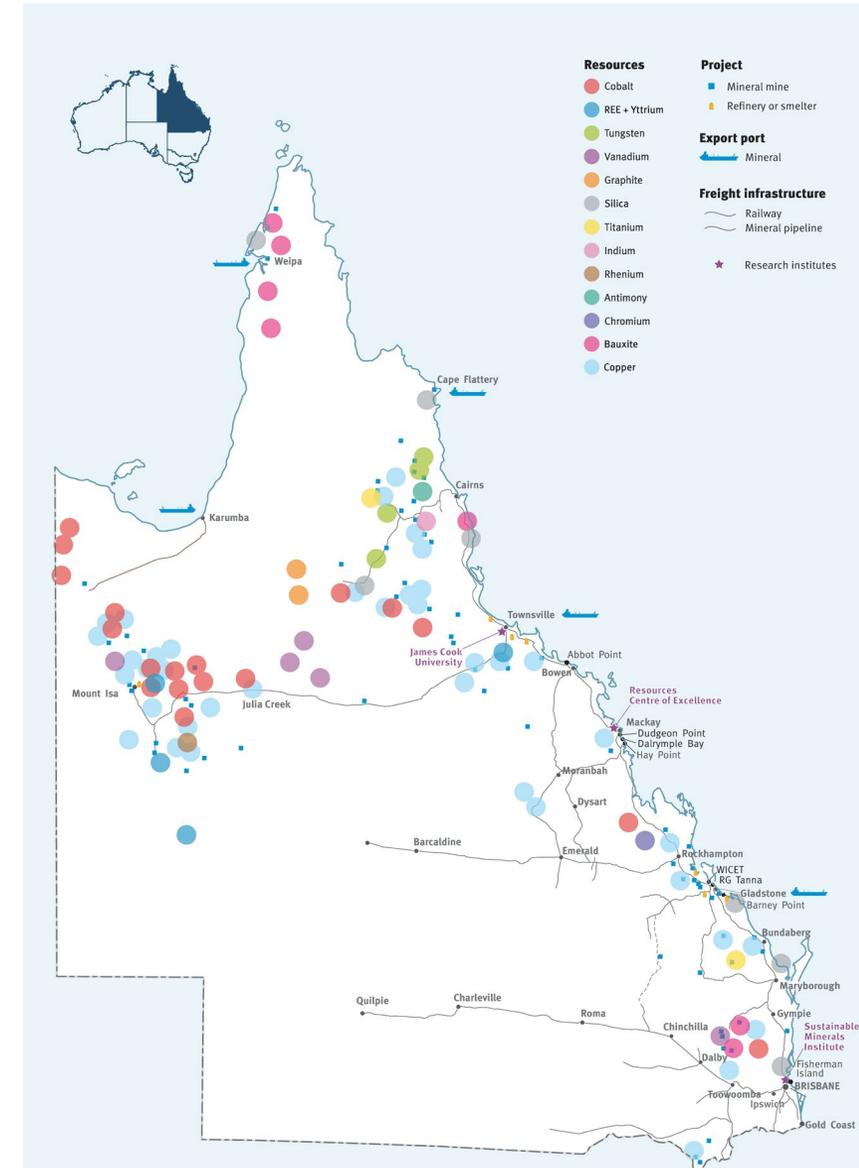


*“...has been developed to unlock the next resources boom in critical minerals.”*

> The Queensland Government is planning for targeted investment at Cape Flattery and is considering the potential for Cape Flattery to be designated a Critical Minerals Zone



Premier of Queensland Annastacia Palaszczuk launching the Queensland Critical Minerals Strategy on 25 June 2023 at the World Mining Congress



# CFS Project – the next 12 months



- > Subject to OCG process, lodge Environmental application and PRCP with Queensland's Department of Environment & Science
- > Lodge Development Application for the construction of purpose built jetty
- > Advance the EIS (significant environmental studies already completed)
- > Finalise negotiations with Traditional Landowners and Trustee Landowner
- > Progress offtake discussions with potential customers in North Asia including value adding
- > Complete analysis of transshipping operations, progress approvals with Ports North and appoint preferred contractor
- > Continue to value add the project
- > Preparation for Final Investment Decision in 2025
- > Prepare for construction readiness

***Metallica is focused on becoming a producer of High Purity Silica Sand***



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