

Cape Flattery Silica

Brisbane Mining Club

“Cape Flattery - no longer a secret”

12 October 2023



**CAPE
FLATTERY
SILICA**

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



Disclaimer



This presentation has been prepared by Metallica Minerals Limited (ASX:MLM) (Company/Metallica) This document contains background information about Metallica current at the date of this presentation. The presentation is in summary form and does not purport to be all-inclusive or complete. Recipients should conduct their own investigations into the completeness of the information, statements and opinions contained in this presentation and perform their own analysis in order to satisfy themselves as to the accuracy of this information.

This presentation is for information purposes only. Neither this presentation nor the information contained in it constitutes an offer, invitation, solicitation or recommendation in relation to the purchase or sales of shares or other securities in any jurisdiction. This presentation is not a prospectus, product disclosure statement or other offering document under Australian law (and will not be lodged with the Australian Securities and Investments Commission (ASIC)) or any other law. This presentation and the announcement to which it is attached does not and will not form any part of any contract or commitment for the acquisition of Metallica securities.

This presentation does not constitute investment or financial product advice (nor tax, accounting or legal advice) and has been prepared without taking into account the recipient's investment objectives, financial circumstances or particular needs and the opinions and recommendations in this presentation are not intended to represent recommendations of particular investments to particular persons. Recipients should seek professional advice when deciding if an investment is appropriate. All securities involve risks which include (among others) the risk of adverse or unanticipated market, financial or political developments. The information contained in this presentation and related market announcements should not be considered to be comprehensive or to comprise all the information which a shareholder or potential investor in Metallica may require in order to determine whether to deal in Metallica securities or otherwise participate in any offer to

acquire or sell securities, nor does it contain all the information which would be required in a prospectus, product disclosure statement or other offer document prepared in accordance with the Corporations Act 2001 (Cth).

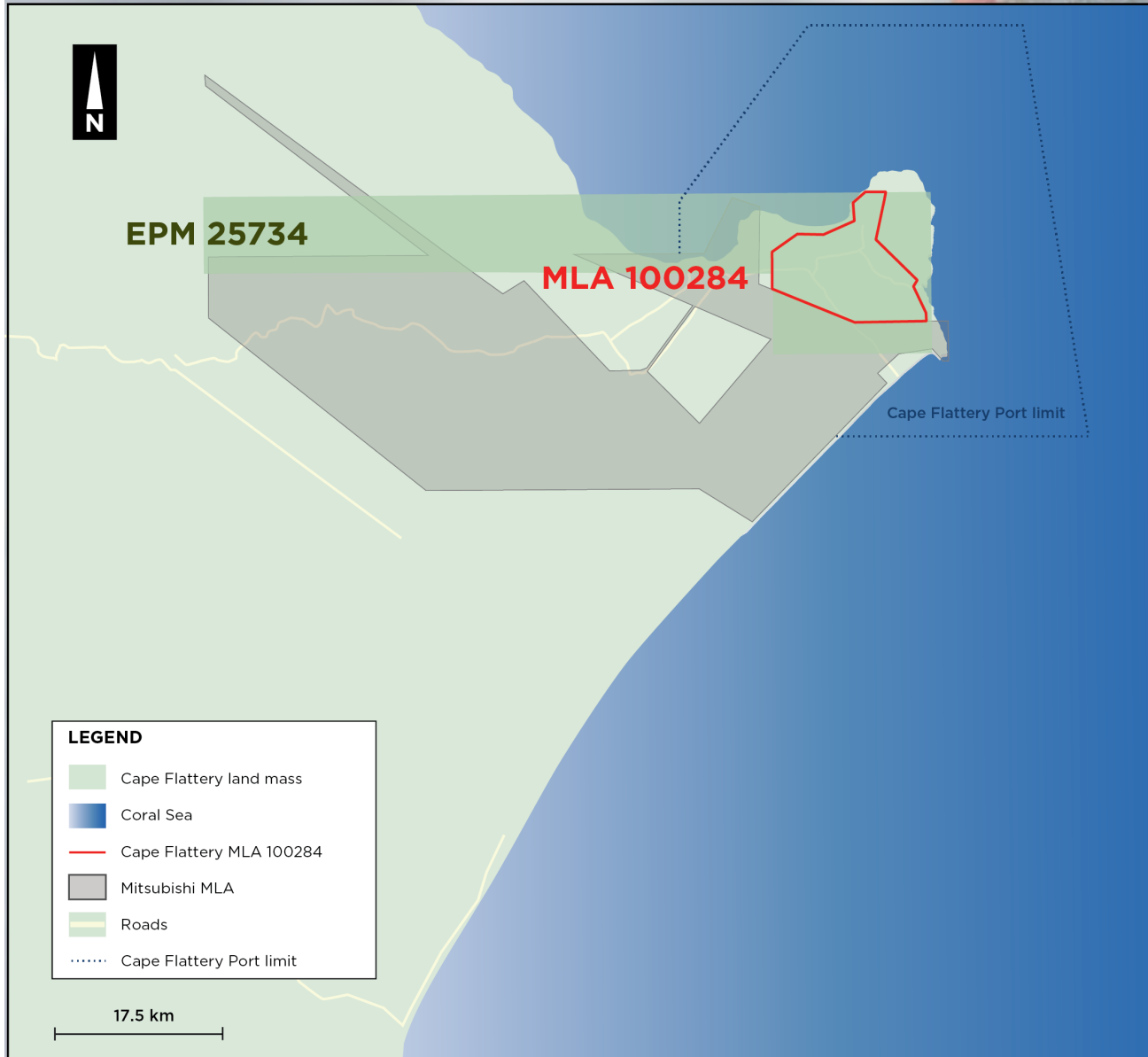
To the fullest extent permitted by law, Metallica, its officers, employees, agents and advisors do not make any representation or warranty, express or implied, as to the currency, accuracy, reliability or completeness of any information, statements, opinions, estimates, forecasts or other representations contained in this presentation. No responsibility for any errors or omissions from this presentation arising out of negligence or otherwise are accepted. To the maximum extent permitted by law, Metallica and its directors, officers and employees exclude and disclaim all liability, including without limitation for negligence or for any expenses, losses, damages or costs incurred by you as a result of your participation in any offer or dealing in Metallica securities or the information in this presentation and market announcements to which it is related being inaccurate or incomplete in any way for any reason, whether by negligence or otherwise.

This presentation may include forward-looking statements. Forward-looking statements are only predictions and are subject to risks, uncertainties and assumptions which are outside the control of Metallica. Actual values, results or events may be materially different to those expressed or implied in this presentation. Given these uncertainties, recipients are cautioned not to place reliance on forward-looking statements. Any forward-looking statements in this presentation speak only at the date of issue of this presentation. Subject to any continuing obligations under applicable law, Metallica does not undertake any obligation to update or revise any information or any of the forward-looking statements in this presentation or any changes in events, conditions, or circumstances on which any such forward-looking statement is based.

Cape Flattery Silica Project



CAPE
FLATTERY
SILICA



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



CAPE FLATTERY SILICA

Australia has a golden opportunity to expand solar energy manufacturing

World's desire to wean off over-reliance on China could be a boon for local producers, according to the Australian PV Institute

Peter Hannam

Sun 25 Sep 2022 06:00 AEST

Australia has a golden opportunity to expand its solar energy manufacturing capacity as the industry booms and nations scramble to cut their over-dependence on China, a report by the Australian PV Institute says.



Solar power manufacturing could be greatly expanded in Australia, according to the Australian PV Institute. Photograph: Mick Tsikas/AAP

10 NEWS

UN warns of looming sand crisis as population and city growth lead to surging demand

Posted Thu 28 Apr 2022 at 7:14am

A United Nations report calls for urgent action to avert a "sand crisis" – including a ban on beach sand extraction – as demand surges to 50 billion tonnes a year amid population growth and urbanisation.



MARKETS BUSINESS INVESTING TECH POLITICS CNBC TV WATCHLIST

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 f t

KEY POINTS

- Sand is the world's most consumed raw material after water and an essential ingredient to our everyday lives.
- Yet the world is facing a shortage – and climate scientists say it constitutes one of the greatest sustainability challenges of the 21st century
- "Is it time for panicking? Well, that will certainly not help, but it is time to take a look and change our perception about sand." said Pascal Peduzzi

10 NEWS

SCIENCE

The world is hungry for solar panels. Why did we stop making them?

ABC Science / By technology reporter James Purtil

Posted Sun 19 Sep 2021 at 5:00am, updated Sun 19 Sep 2021 at 6:38am



Every day of the year Australia installs about 1,000 rooftop solar systems, those black rectangles appearing on rooftops everywhere represent billions of dollars spent on silicon, glass and a little bit of metal.

Given that we have the highest uptake of solar in the world, you might expect that some of these panels would be made here.

What is Silica Sand used for?

- > Silica sand is the key ingredient in glassmaking
- > High Purity Silica Sand, such as CFS's silica sand, is an essential raw material for the production of hi-tech glass
 - Solar panels
 - BIPV and e-glass
 - Smartphones
 - Fibre optics
 - Tablets
 - LED lighting
 - Automotive glass
 - Over 90% of high-quality glass will be manufactured in south-east and north Asia
- > HPSS is a finite resource that is in limited supply and not readily accessible



CAPE
FLATTERY
SILICA

Corporate snapshot



Share Price

2.2c

(as at 9 October 2023)

Cash

\$5.7m

(as at 30 September 2023)

Ordinary Shares

956.9m

Debt

Nil

Listed Options

179.6m

\$0.06

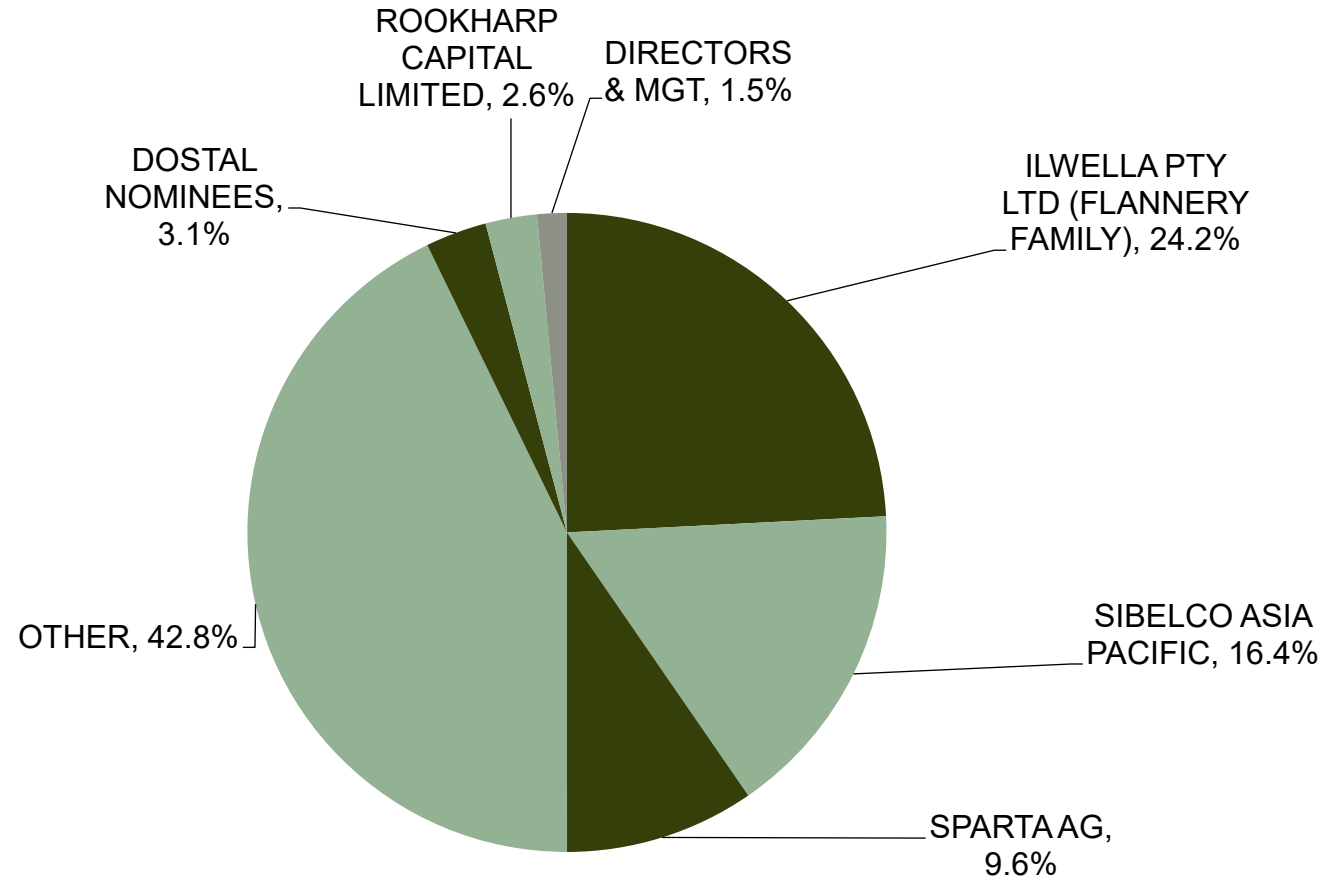
Unlisted Options

1.0m

Market Cap

\$21.0m

Top 20
shareholders
hold **66.7%**
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 resource¹



DFS highlights strong positive, low Capex, low Opex and Reserve for 25 years production¹



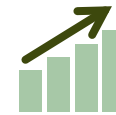
CFS West Maiden Resource²



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



Excellent internal Metallurgical test results received – potential customer acceptance underway³



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



MoU extended with Mitsui⁴

1. See ASX Release 17 July 2023 “Cape Flattery DFS – confirms excellent economics”, 2. See ASX Release 3 March 2023 “Maiden Inferred Mineral Resource of 12Mt at 99.15% SiO₂, 0.09% Fe₂O₃ Estimated for CFS West Project” 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”.

Board of Directors



Theo Psaros
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 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).



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. Brad has experienced all aspects of mining operations, having worked in leadership roles through the entire cycle of exploration, development, operations and closure.



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). He was previously Non-executive Director and later Managing Director of Adamus Resources leading the transition of the company to a gold producer.



Management



**CAPE
FLATTERY
SILICA**



Scott Waddell
CFO and Company Secretary
Appointed 1 February 2019

- > More than 28 years' resources experience gained through positions with Metro Mining Limited, Cape Alumina Limited, Anglo Coal and Rio Tinto Alcan.



Nicholas Villa
GM, Cape Flattery
Appointed 14 June 2021

- > More than 20 years' mining industry experience
- > Experience in Queensland resource project approvals processes including Environmental Studies and Native Title negotiations
- > Project Manager which delivered Metro Mining's Bauxite Hills mine in Northern Cape York to full production.



Sam Fisher
GM Commercial
Appointed 17 October 2022

- > Over 25 years' experience in dry bulk commodities marketing, infrastructure and logistics from strategy through to execution
- > 10 years' focused on Asian markets with strong focus on business development
- > Held leadership positions with New Hope Corporation and BHP



Pat Smith
Geologist
Appointed 1 February 2021

- > Geologist with 30 years' experience
- > Experience in silica sands, copper, gold, nickel, tin and tantalum
- > Worked as Exploration or Country Manager in Australia, Middle East, Africa and Kazakhstan and PNG



Jeff Brown
Metallurgy Consultant
Appointed 1 February 2022

- > Over 25 years' experience in Mineral Sand mining and processing
- > Senior Metallurgist roles with Iluka and Sibelco



Brendan Cowie
Environmental Consultant
Appointed 8 June 2023

- > 20 years' experience in Environmental Science
- > Experience including detailed design, approvals, construction operation and closure phases of major developments

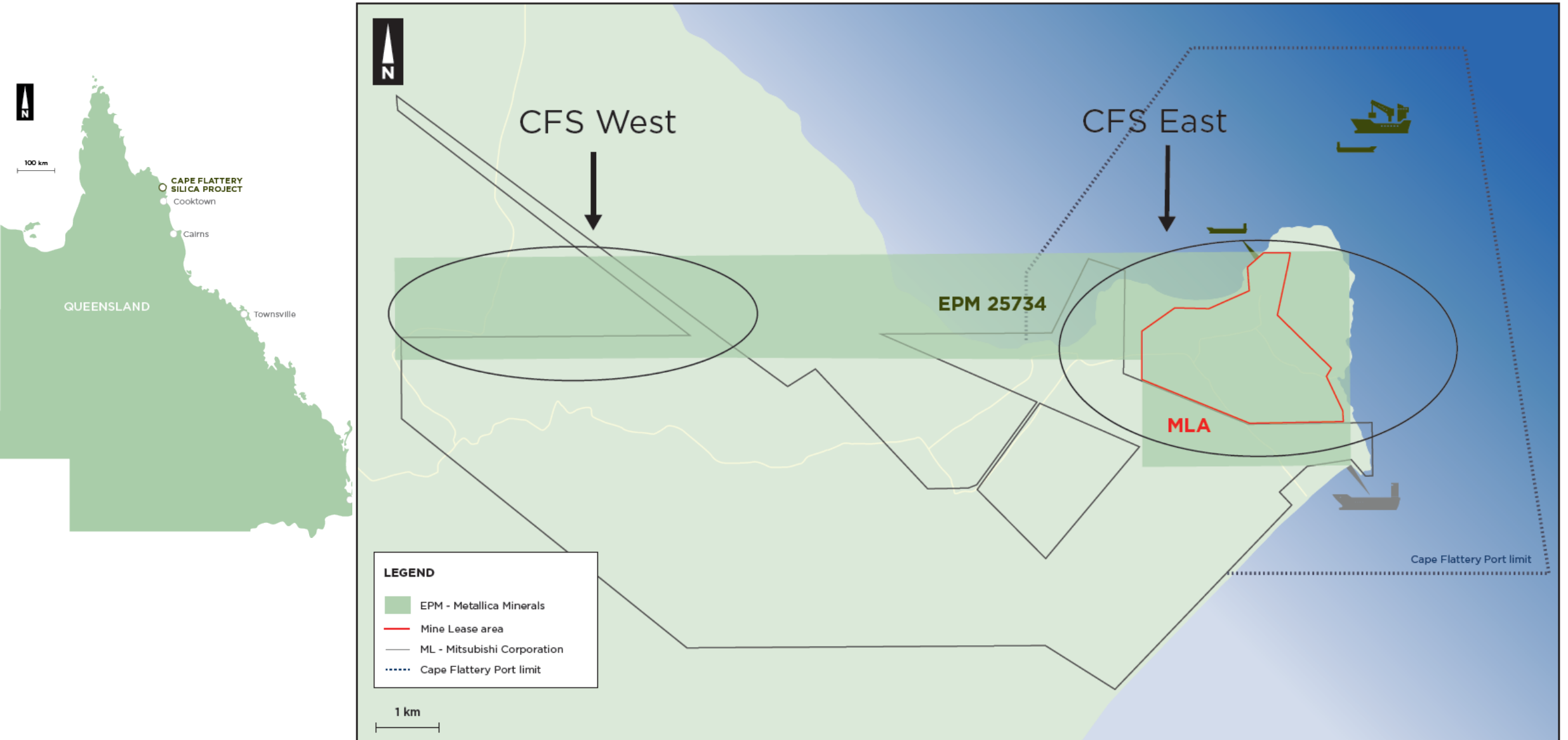
Cape Flattery Silica



CAPE
FLATTERY
SILICA



Cape Flattery Silica Project Location



Our Neighbour – Mitsubishi



CAPE
FLATTERY
SILICA

- > CFSM project was founded in 1967 and acquired by Mitsubishi in 1977 and is one of the world's largest silica sand mines
- > CFSM constructed a deep water jetty in 1987
- > CFSM exports approximately 3mtpa and most of this product is sold into China, Japan and Taiwan
- > Why Cape Flattery silica sand?
 - Raw sand requires minimal processing
 - Iron Oxide, Silicon dioxide, Titanium dioxide & Aluminium oxide are all at acceptable levels prior to processing
 - the Particle Size Distribution meets global specifications that the photo-voltaic glass manufacturers are seeking

Pathway to net zero



CAPE
FLATTERY
SILICA

- > The International Energy Agency (IEA) highlights reaching net zero by 2050 will be based largely on renewables, with solar power as the single biggest supply source
- > IEA report states the pathway to net zero requires annual additions of solar PV to reach 630 gigawatts and wind power to reach 390 gigawatts by 2030*
- > Together this is four-times the record level achieved in 2020
- > For solar PV, this means installing the world's current largest solar park roughly every day

*IEA, 2021: <https://iea.blob.core.windows.net/assets/4719e321-6d3d-41a2-bd6b-461ad2f850a8/NetZeroby2050-ARoadmapfortheGlobalEnergySector.pdf>

High purity silica sand demand growth

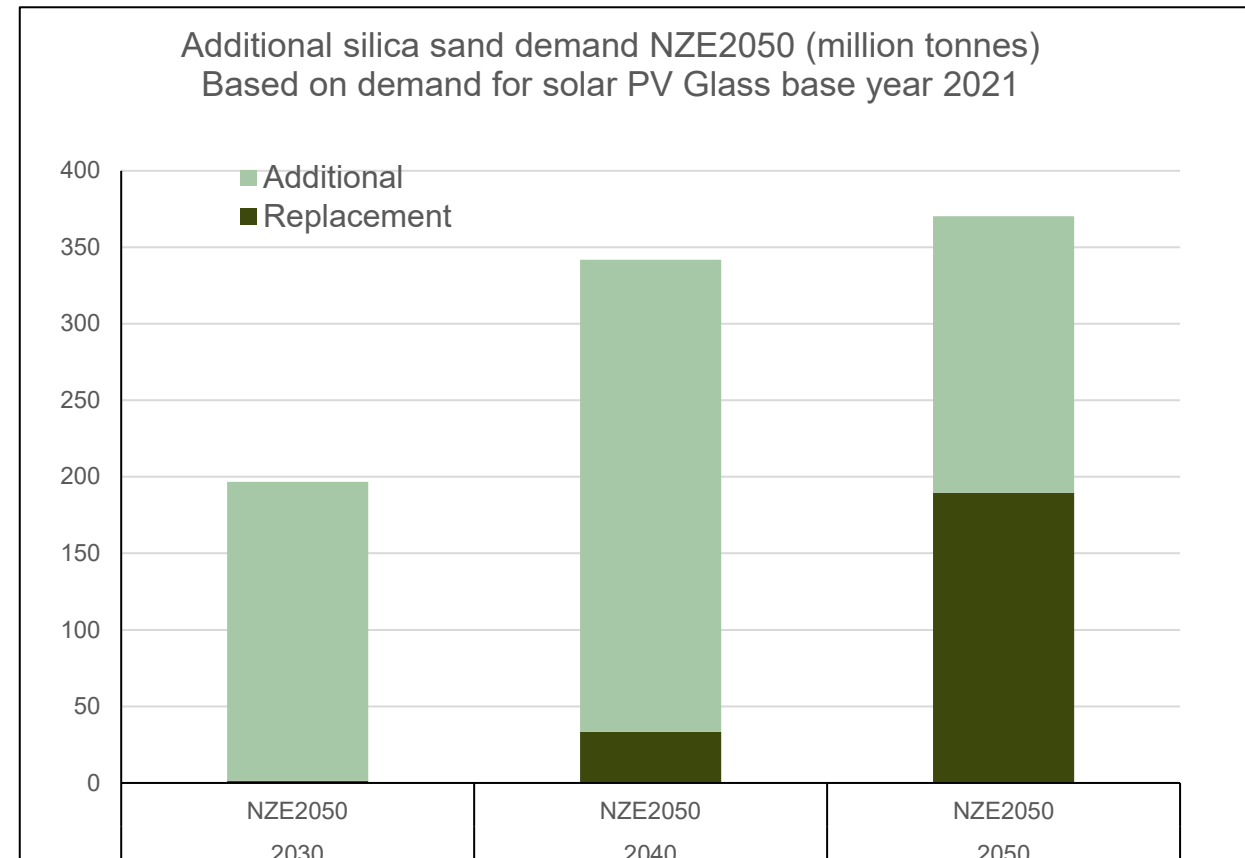


	Net Zero Emissions by 2050 Scenario (GW)						Share (%)			CAAGR (%) 2021 to:	
	2010	2020	2021	2030	2040	2050	2021	2030	2050	2030	2050
Total Capacity	5 198	7 849	8 185	15 306	26 870	33 878	100	100	100	7.2	5.0
Renewables	1 343	2 989	3 278	10 349	21 398	27 304	40	68	81	14	7.6
Solar PV	39	741	892	5 052	11 650	15 468	11	33	46	21	10
Wind	181	737	832	3 072	6 435	7 795	10	20	23	16	8.0

Assumptions:
Global silica sand demand derived from growth in solar capacity NZE2050 scenario, growth from previous period, 2021 first base year, 20 year panel life, 80% replacement rate, silica sand in glass 72%

Sources:
World Energy Outlook 2022 International Energy Agency
Metallica research

- ✓ International Energy Agency forecasts significant growth in solar power capacity
- ✓ The majority of the solar PV glass for these solar modules will be manufactured in Asia Pacific
- ✓ Solar PV glass is a key driver of future seaborne demand for high purity silica sand

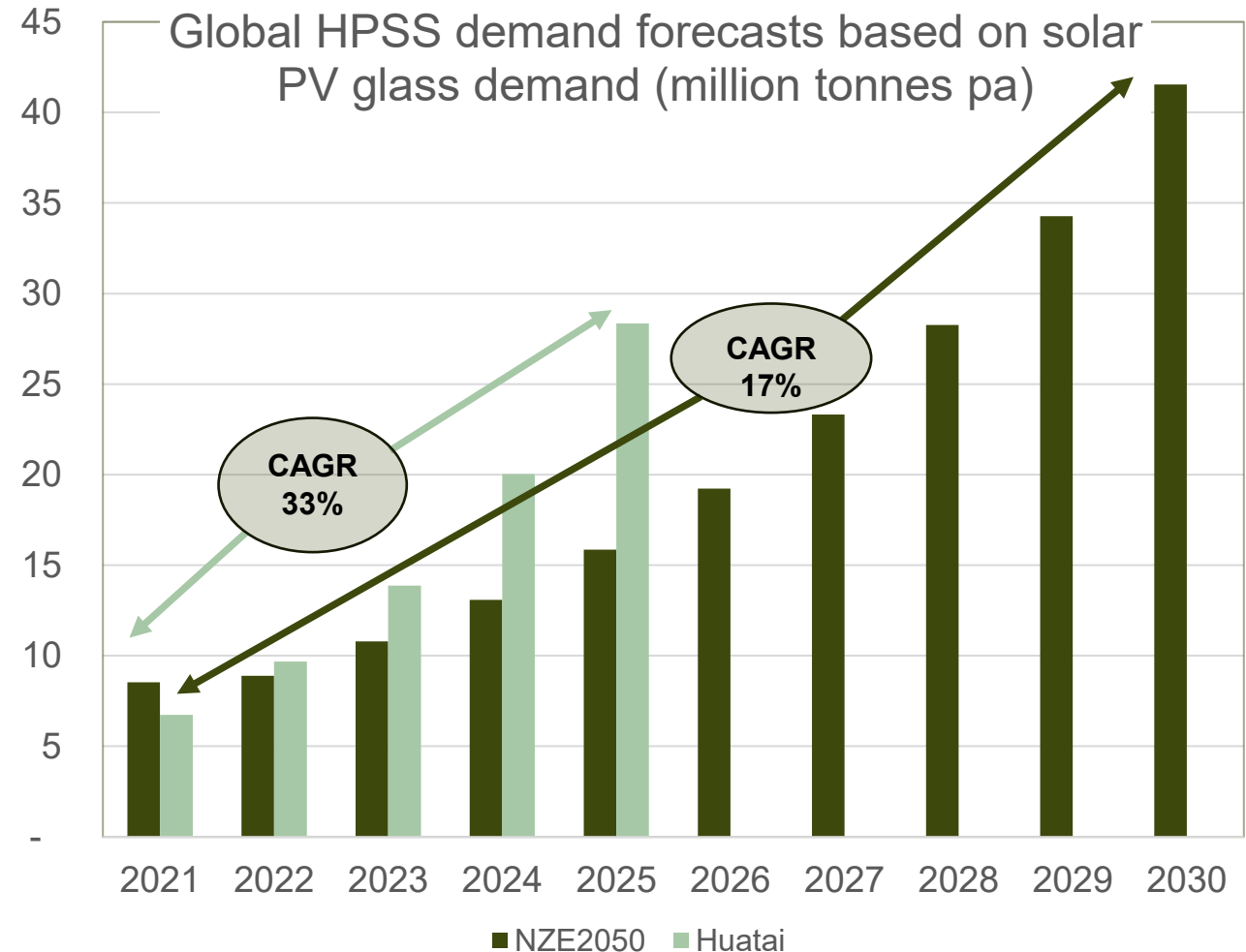


High purity silica sand demand growth



Why is the CFS project a winner?

- ✓ North Asian PV glass producers are running at rates above the IEA NZE2050 scenario
- ✓ 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
- ✓ ~80% of Chinese HPSS comes from pickling – costly and environmentally challenging
- ✓ Declining sand resource quantity and quality in China means the seaborne market is likely to experience rapid growth

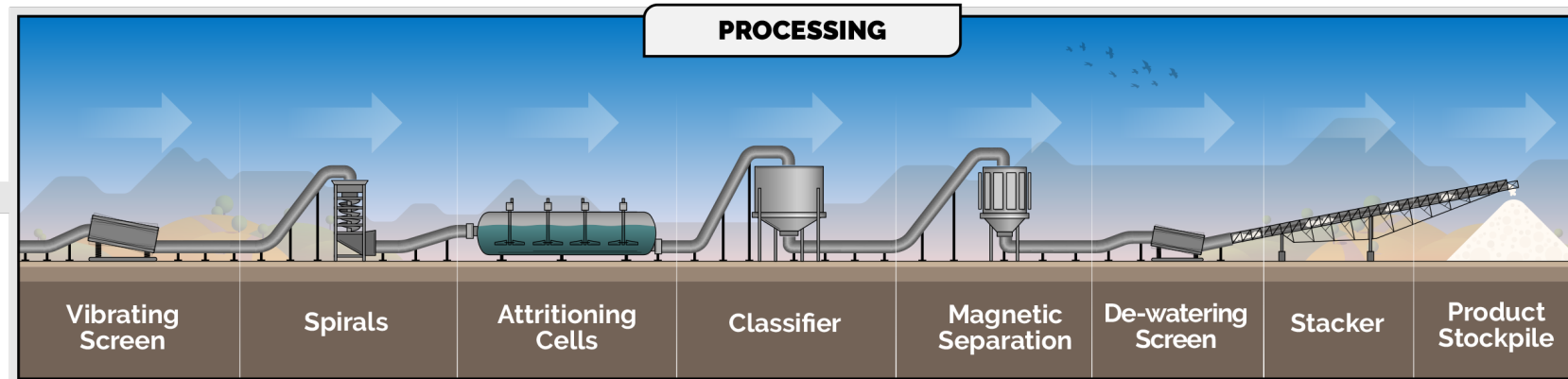
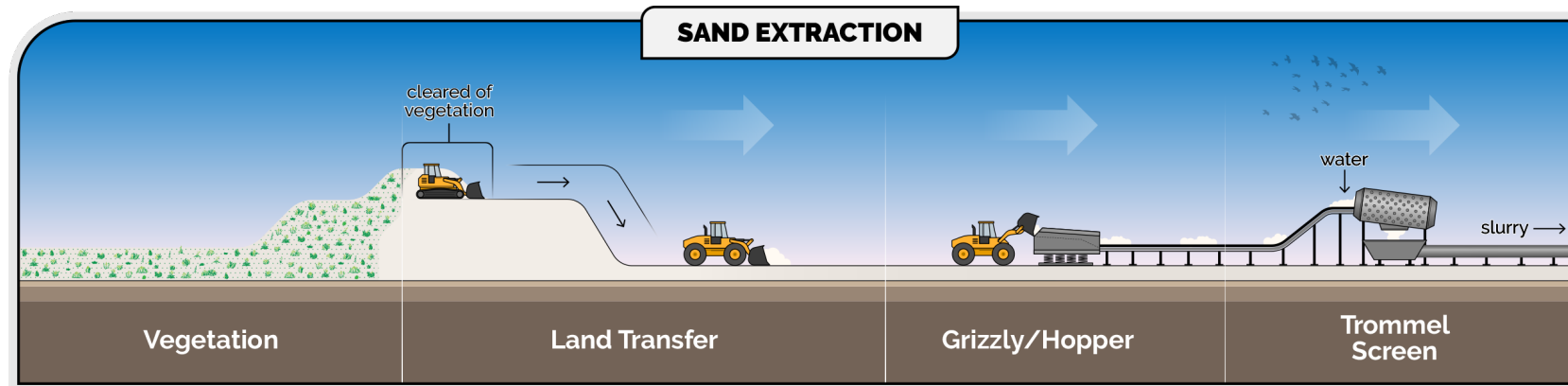


Source: HPSS demand derived from IEA WEO 2022 NZE2050 scenario, Huatai Securities 2023 and Metallica Minerals Limited market research

MLM Market Activities

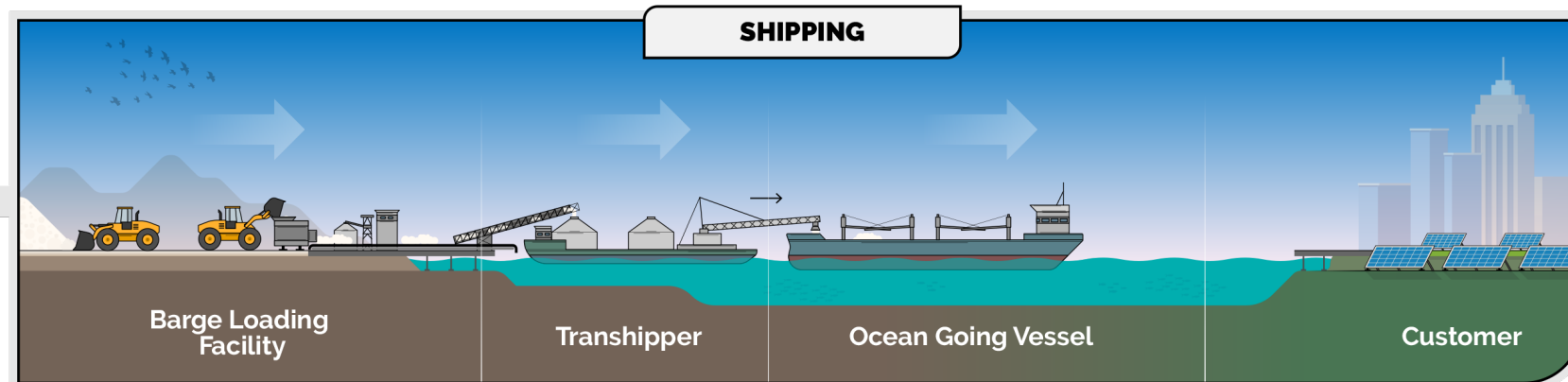
- The HPSS market is opaque but evolving, not covered in any meaningful way by the commodity analysts
- Glass makers are looking to understand the seaborne market and the new merchant suppliers as a means to improve security of supply
- MLM is engaging with glass makers to understand quality requirements, 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



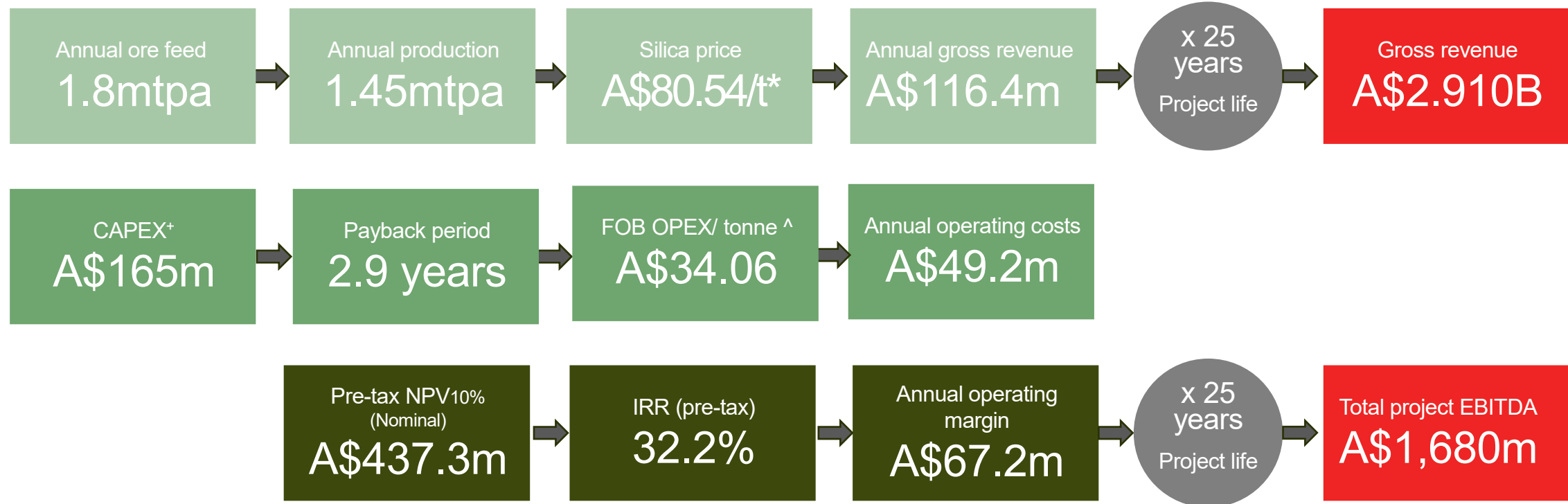


Processing by

- Gravity
- Mechanical
- Magnetic
- No acid or other chemical treatment



Definitive Feasibility Study outcomes₃



* 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 (\$13.6m)

^ 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 17 July 2023 "Cape Flattery Silica DFS – confirms excellent economics"

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 announcement above and ASX Release 17 July 2023 "Cape Flattery Silica DFS – confirms excellent economics"

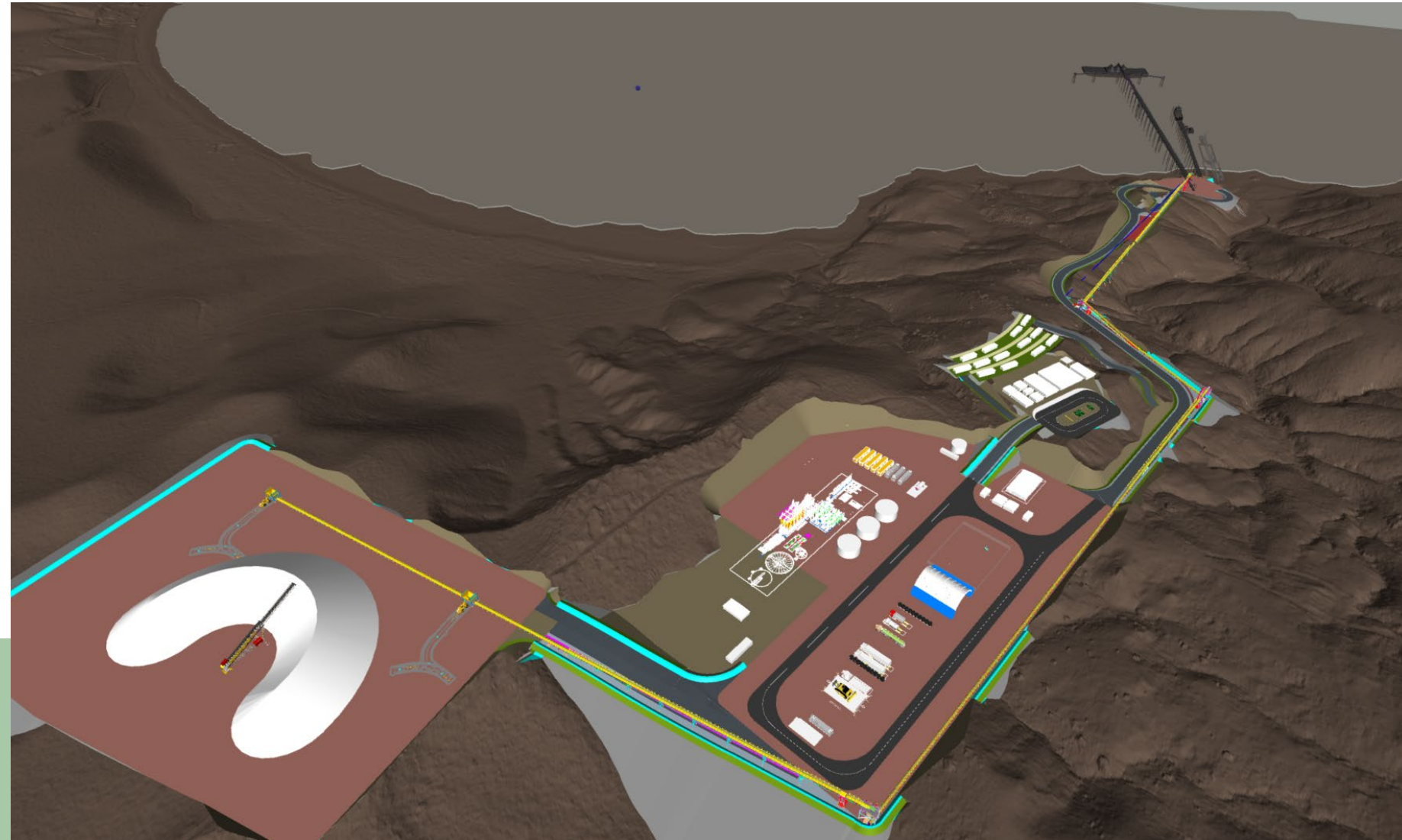
Planned CFS Project Operations



CAPE
FLATTERY
SILICA

Key site infrastructure includes:

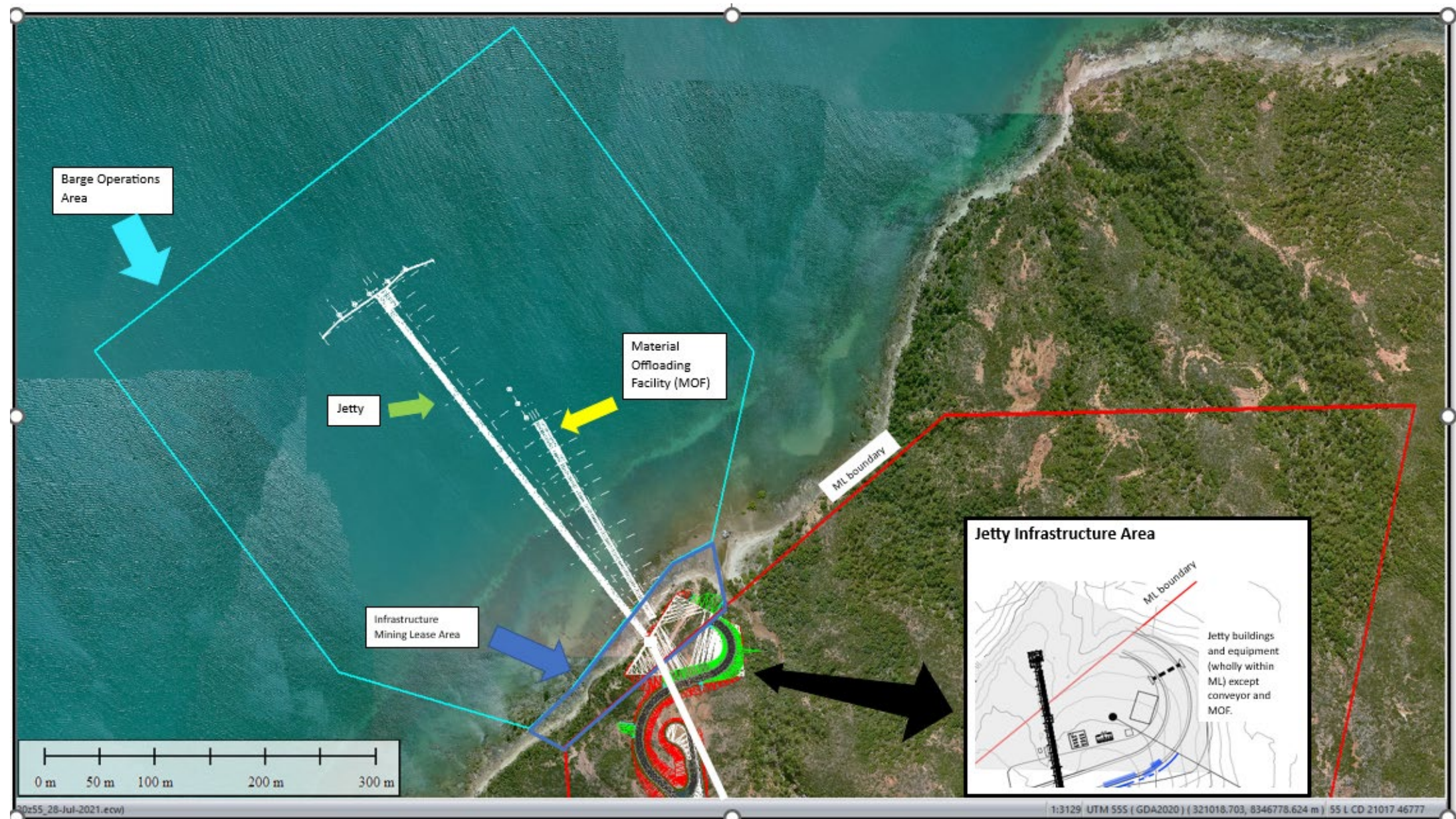
- > Product stockpile
- > Processing plant and pad
- > Conveyor
- > Jetty infrastructure facility
- > Purpose-built accommodation facility.



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



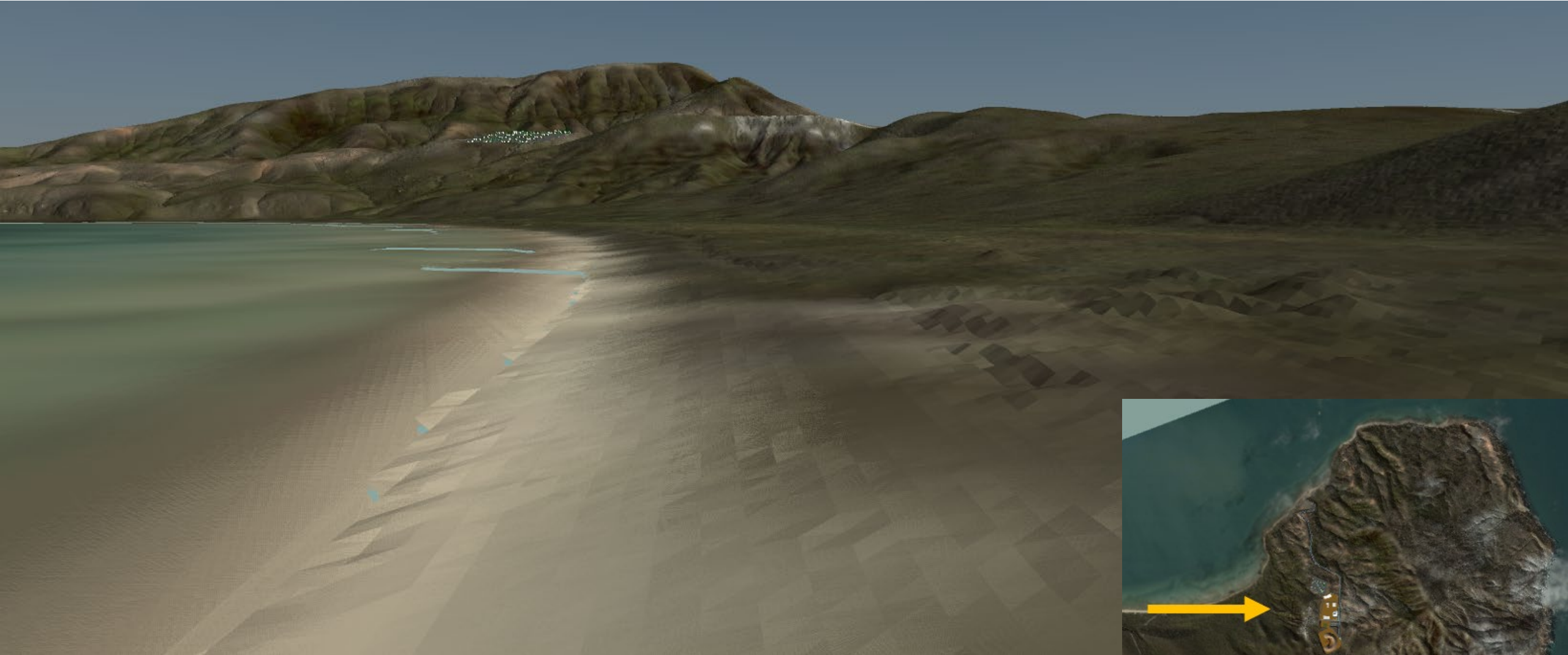
CAPE
FLATTERY
SILICA



View from Connies Beach access road



CAPE
FLATTERY
SILICA



Our Environmental approach



- > Adopting a low-impact approach to silica sand mining to minimise environmental impact.
- > Environmental management at the Cape Flattery Silica project will be comprehensive.
- > Key objectives include:
 - » minimising the operation's footprint
 - » protecting biodiversity
 - » responsible water use
 - » rehabilitating disturbed areas after disturbance.
- > No chemicals will be used in production.
- > Minimal dust will be produced during mining activities.
- > Adopting progressive rehabilitation.
- > Appropriate buffers, tree protection zones and offsets will be established.
- > Additional seeding with preferred species will be undertaken.



L-R Theo Psaros, Owen Cobus, Masato Sugahara and Kenneth McLean

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 have been held in respectful and friendly manner
- > TLOs planning employment, training, apprenticeships and new business opportunities



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 – recent roadshow to Tokyo, Kuala Lumpur & London in March 2023 and China (July 2023) resulted in many positive discussions. Follow up visit to China and Taiwan in October 2023
- > Continue to value add the project
- > Preparation for Final Investment Decision in 2025
- > Prepare for construction readiness

Queensland's Critical Minerals Strategy

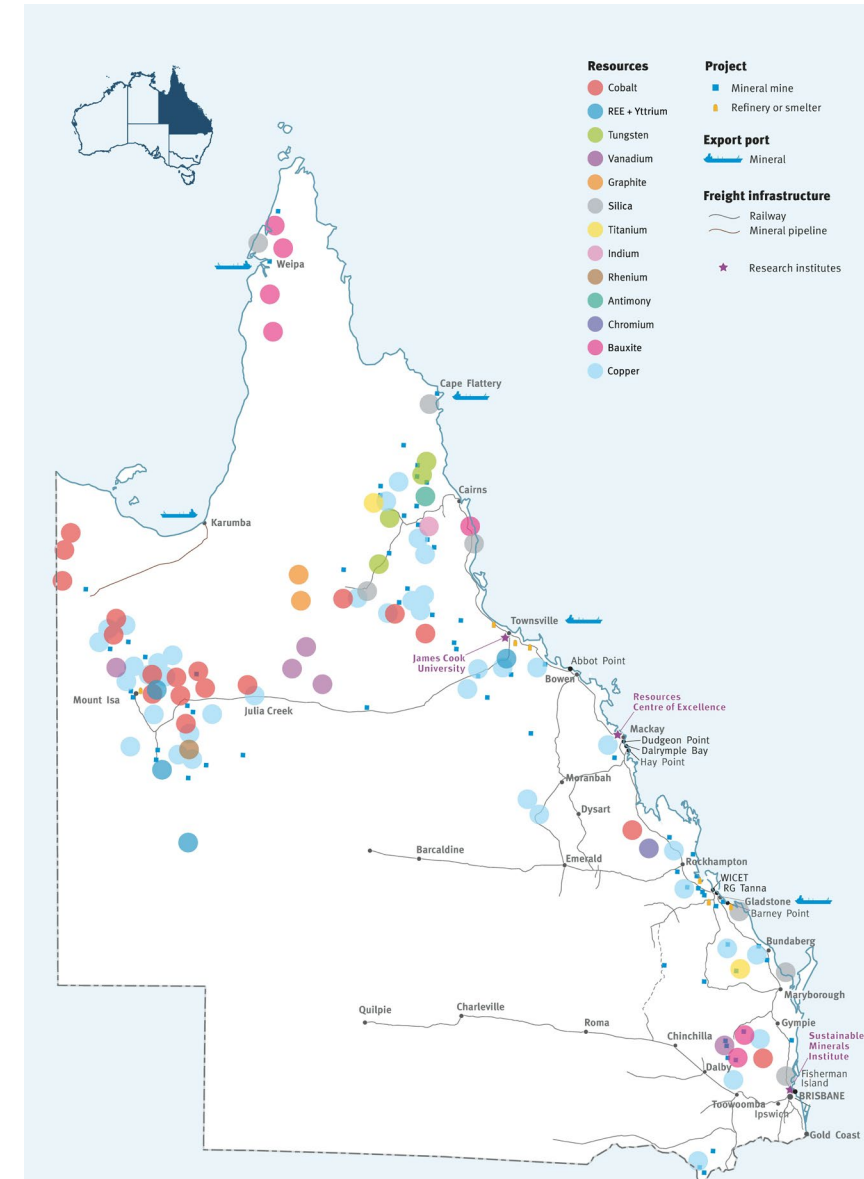


“...has been developed to unlock the next resources boom in critical minerals.”

> 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



What can we do better as a nation?



CAPE
FLATTERY
SILICA

A quote from The West Wing – *“It’s not the battles we lose that bother me, it’s the ones we don’t suit up for.”*

- > It is North Queensland’s time to put its hand up and be part of something innovative. Let’s establish solar panel quality glass manufacturing there.
- > HPSS is already part of the energy transition. The technology is proven. We are already ahead of lithium and green hydrogen that has technology risk.
- > Our competitors are responding faster with generous subsidies and approval processes that are not challenging. Their labour and energy costs are cost effective.
- > We need to think differently – similar to the Tesla Chair’s request, grant North Queensland a tax free window. Provide employment opportunities to the region.
- > As our Prime Minister said at the National Press Club – *“At the moment about 85% of the world’s solar panels are made in one country, I think you can guess which one it is. That will rise to in excess of 95% in a decade’s time.”*

Tesla boss urges Chalmers to give tax breaks for lithium processing

Tesla Chairman Robyn Denholm *“It’s our economic opportunity to lose”*

Australian Financial Review, 5 September 2023



Albo’s warning over China’s near monopoly on a key energy source

Prime Minister Anthony Albanese *“85% of the world’s solar panels are made in one country. If nothing changes over the next decade, this will rise to 95%”*

The Courier Mail, 8 September 2022



“I’d put my money on the sun and solar energy. What a source of power! I hope we don’t have to wait until oil and coal run out before we tackle that.” — Thomas Edison, 1931.



**CAPE
FLATTERY
SILICA**

Listing Rule & Competent Person Statements



ASX Announcements cited

The following ASX Announcements are cited in this presentation

1. See ASX Release 17 July 2023 “Cape Flattery Silica Definitive Feasibility Study”
2. See ASX Release 3 March 2023 “Maiden Inferred Mineral Resource of 12Mt at 99.15% SiO₂, 0.09% Fe₂O₃ Estimated for CFS West Project”
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.