



**BLACKEARTH**

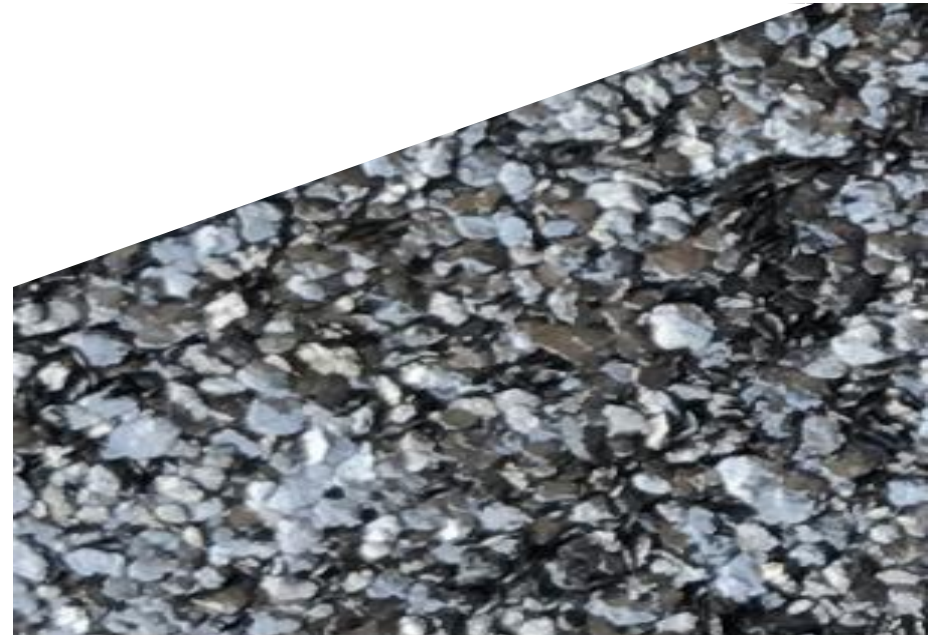
Specialising in Critical Commodities

## JV AGREEMENT WITH METACHEM

A New Force in the Low  
Cost & Sustainably Produced  
Expandable Graphite Market

OCTOBER 2021

ASX:BEM



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Some of the information contained in this presentation has been derived from previously released information to the ASX refer: 30/1/19 "Progressing to Full Feasibility", 17/1/20 "Fast Tracking the Maniry Graphite Project", 29/4/20 "Quarterly Activities Report – 31 March 2020", 31/7/20 "Quarterly Activities Report – 30 June 2020"

## COMPETENT PERSONS STATEMENT

The information in this document that relates to Exploration Results, Exploration Targets and Mineral Resources is based on information compiled by Ms. Annick Manfrino, Principal of Sigma Blue and Manager Geology of Black Earth Minerals a Competent Person who is a member of the Australasian Institute of Mining and Metallurgy and a consultant to the Company. Ms. Manfrino has sufficient experience that is relevant to the style of mineralization and type of deposit 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. Ms Manfrino consents to the inclusion of the information in this document in the form and context in which it appears.

### CAUTIONARY STATEMENT

The Exploration Targets reported herein are not JORC compliant Mineral Resources. The potential quantity and grade of the Exploration Targets are conceptual in nature, there has been insufficient exploration to determine a Mineral Resource and there is no certainty that further exploration work will result in the determination of a Mineral Resource.



# VISION: TO BECOME A MATERIAL, VERTICALLY INTEGRATED GLOBAL GRAPHITE BUSINESS

## Maniry Graphite Project

- Proven location
- Quality Resource & large Exploration Target
- Product tested and samples qualified by tier 1 users
- Plan to complete the DFS in CY 2022
- Plant commissioning planned in CY 2023

## Stage 1 Downstream

- Expandable graphite production: 2,000-2,500 tpa (Stage 1)
- JV to commence Stage 1 construction within 3 months
- Est gross JV revenue of A\$9M in the first year ramping up to ~A\$17M post expansion to 4,000 tpa (Stage 2)
- Binding offtake with Tier 1 European buyer in place
- Plan to commission Stage 1 plant by Q3, 2022

## Graphite Market Conditions

- End-users becoming increasingly concerned about security of supply
- Decline in coarse graphite flake supply has seen prices rise
- Increasing EV demand combined with growing ESG thematic provide strong tailwinds





# JV STRUCTURE KEY TERMS



- ▶ Joint Venture (“JV”) is 50% owned BEM and 50% by Metachem Manufacturing Company Pvt. Ltd.
- ▶ The JV plan is to lease a property in a designated Special Economic Zone India and construct a new facility with clear access to the port, facilitating easy shipping.
- ▶ The JV will operate under Australian environmental and general governance standards.
- ▶ BlackEarth and Metachem to appoint two directors each.
- ▶ BEM will initially source suitable concentrate to feed the plant prior to using concentrate from its Maniry Project (estimated 2023).
- ▶ Metachem will provide the technology and know-how required to operate the plant.
- ▶ BlackEarth will be responsible for sales of the final expandable graphite product; tied into the BlackEarth’s Grafitbergbau Kaisersberg GmbH (“Grafitbergbau”) offtake announcement (21/6/21).
- ▶ The initial focus will be feasibility – engineering and costing study to support investment decision.
- ▶ Initial CAPEX estimate for the project is USD\$3-4M total, with MetaChem and BlackEarth to share the cost 50/50, with BlackEarth’s portion to be paid from cash reserves.
- ▶ Preliminary construction time estimate: 6-8 months.
- ▶ The JV company will own any Intellectual Property developed.



# JV OPERATIONAL STRATEGY



## SHORT TERM STRATEGY

- ▶ Identify a property within a Special Economic Zone (“SEZ”) in India, suitable for:
  - ▶ Construction of the plant
  - ▶ Potential expansion of the plant in line with the JV’s medium to long term strategy
- ▶ Construct the plant over an estimated period of (est.) 6-8 months

## MEDIUM TERM STRATEGY

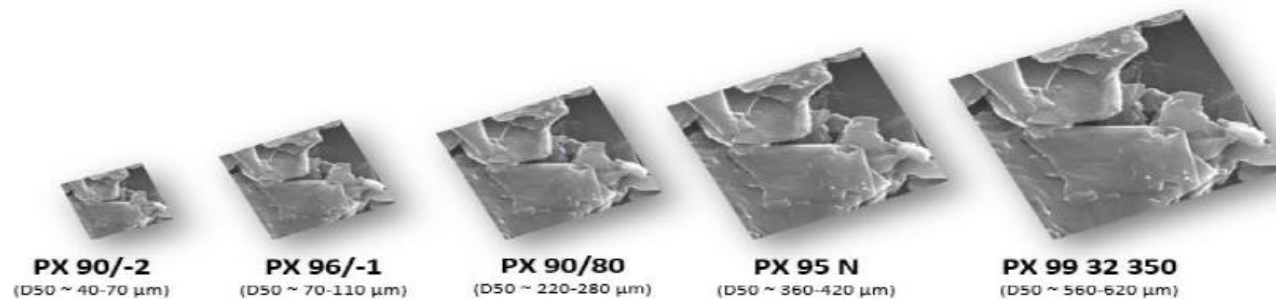
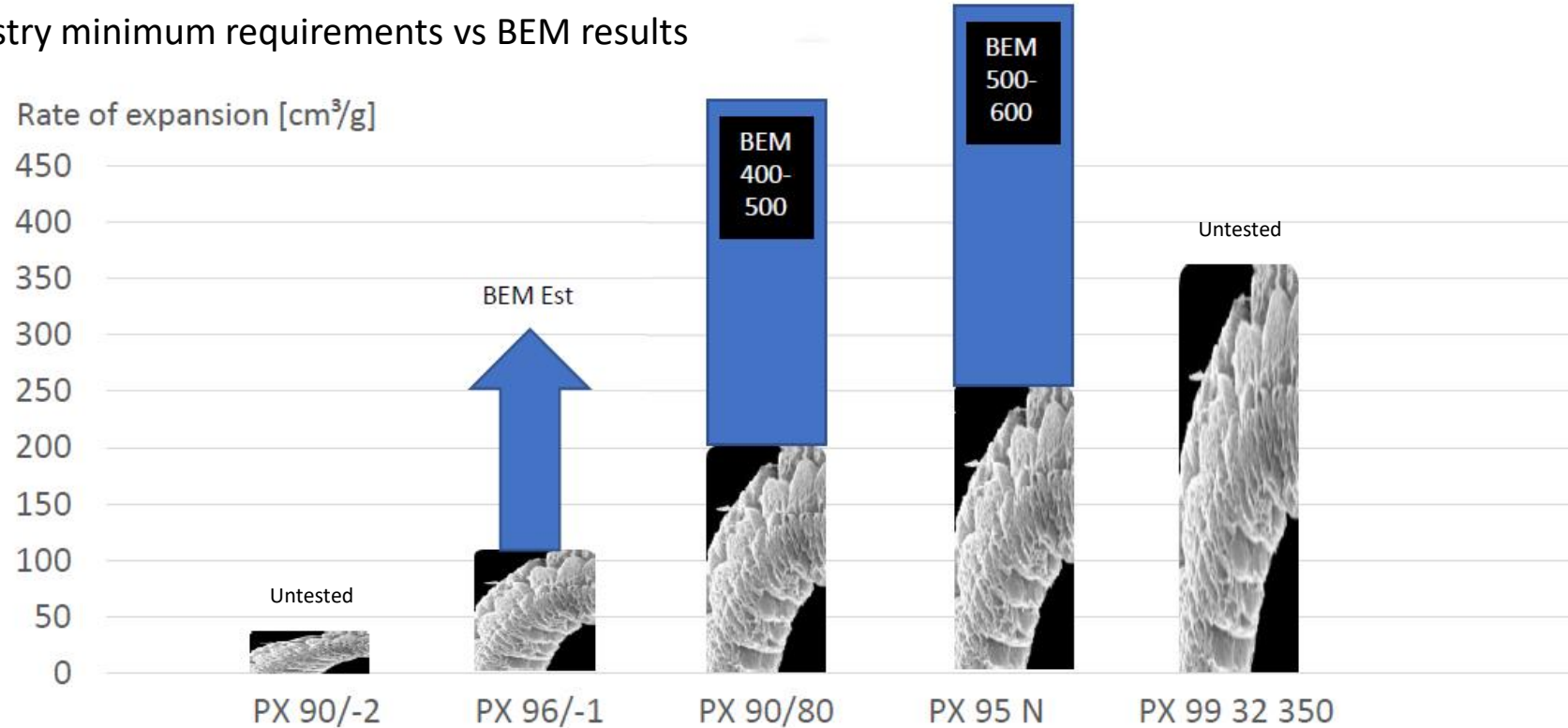
- ▶ Utilise BlackEarth’s access to suitable large flake graphite concentrates and European and global networks to identify further suitable customers
- ▶ Make use of Metchem’s IP and operating know-how to position the JV as a producer of high quality expandable graphite

## LONG TERM STRATEGY

- ▶ The JV will buy product from BlackEarth’s Maniry Graphite Project in Madagascar once commissioned
- ▶ Expand the facility to capitalise on the growing expandable graphite market demand
- ▶ Develop a brand as a global supplier of quality expandable graphite and expand BEM’s “global buyers network”

# EXPANDABLE GRAPHITE PRODUCT CHARACTERISTICS

Outline of industry minimum requirements vs BEM results



**Maniry Graphite**  
Project Results  
Refer ASX Release 5 Dec 2019

# ABOUT METACHEM

- ▶ Metachem is an Indian based private Company that has been in operation since the 1980's.
- ▶ Metachem has a number of divisions and is a producer of Expandable Graphite with graphite concentrate sourced from India and also Madagascar.
- ▶ A diversified company currently producing 1000 tonnes of expandable graphite per annum.
- ▶ Metachem also produces a range of downstream graphite processed products, which are supplied into the Indian domestic market.
- ▶ For over 20 years, Metachem has been exporting Expandable Graphite to Europe and also the USA.
- ▶ Metachem management and technical staff are experienced in the production of a range of graphite downstream products and their industry knowledge and market share is well recognised within India and Internationally.
- ▶ More information about Metachem can be found here <https://metachem.in/>



# MARKET APPLICATIONS

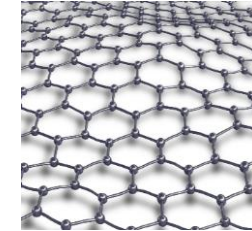
## Fire Retardants



Critical addition to:

- Polyurethane foam (furniture, construction, automotive)
- Textiles
- Polymer compounds
- Rubber products
- Roof cover foils
- Fireproof coatings / paints

## Other Applications

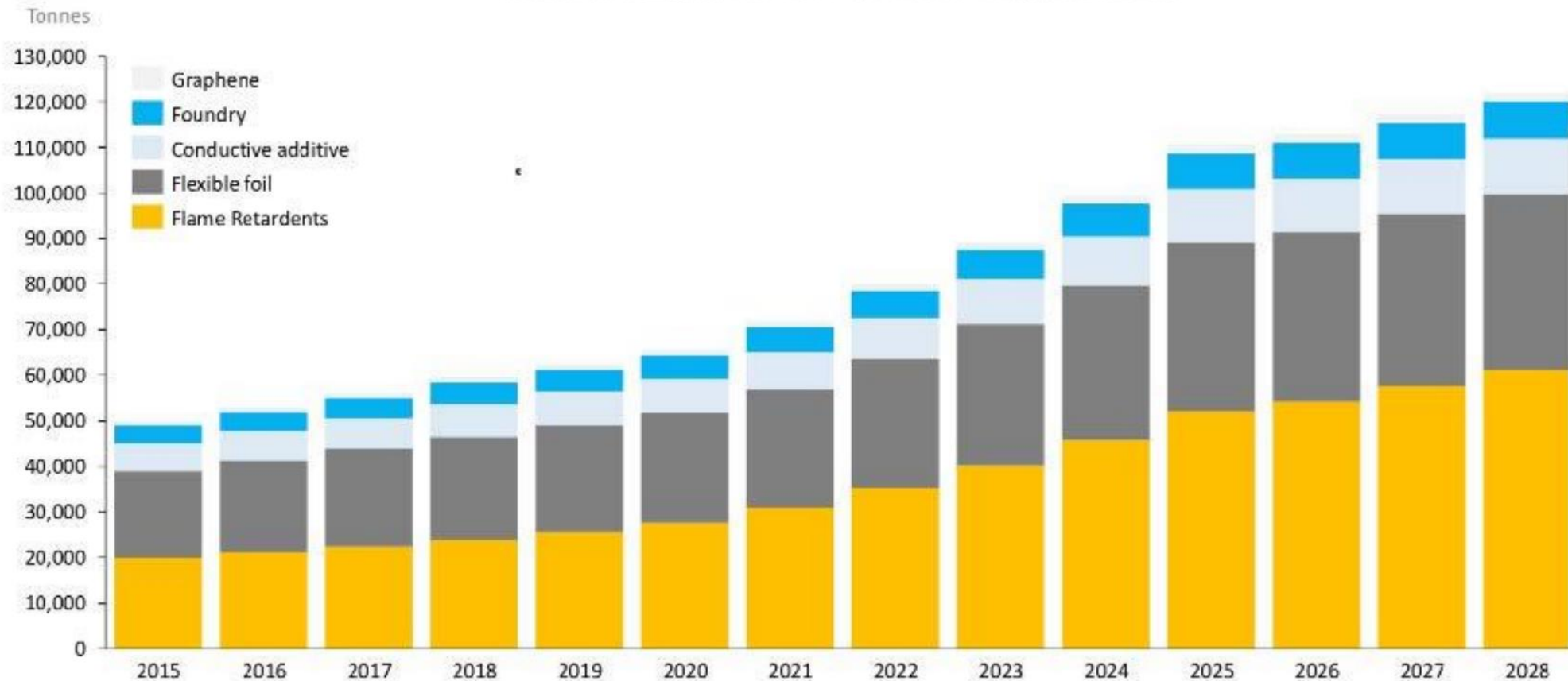


- Graphite foils
- Gaskets for high temp / pressure / corrosive environments
- Conductive additives
- Production of graphene
- “Hot-topping” compound in foundries



# THE MARKET

Expandable graphite demand forecast, 2015-2028



Expandable Graphite demand and growth – Source:- Benchmark Mineral Intelligence

# THE MARKET

## Demand for Expandable Graphite Growth – Flame Retardent Projections

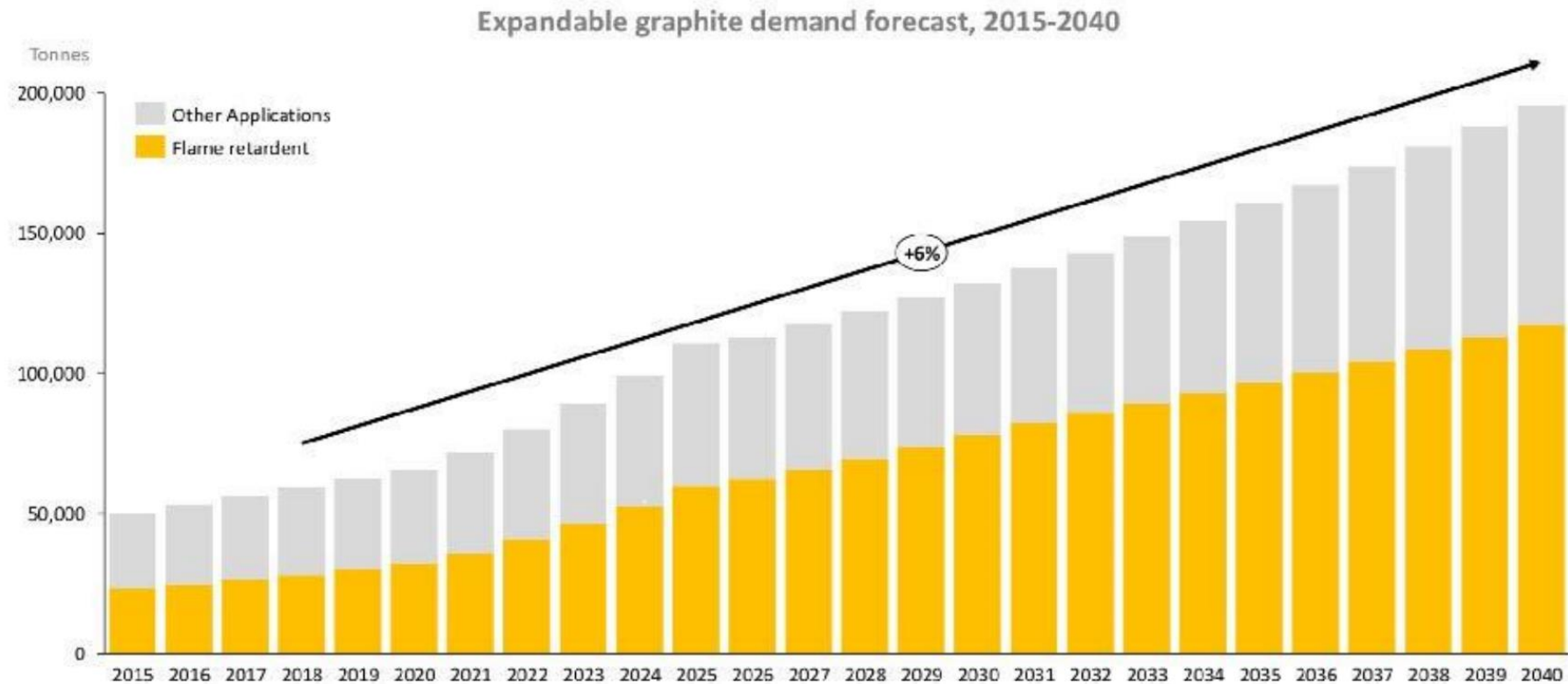


Figure 4 – Fire Retardent use as a portion of Expandable Graphite demand and growth – Source:- Benchmark Mineral Intelligence



# WHY INDIA?

- ▶ Pune, India is a well established technology and chemical production area.
- ▶ The JV will produce expandable graphite from a country and producer with a number of decades of experience
- ▶ Providing access to the experienced and knowledgeable personnel, with the area attracting a higher calibre of professionals.
- ▶ Utilise the benefits of a Special Economic Zone including access to port, making it easier to bring in feed material or reagents and export the product(s).
- ▶ Favourable fiscal terms for foreign investors
- ▶ Australia and India share a close, long-standing and multi-faceted relationship in the resources sector, including bulk commodity and energy mineral exports from Australia and extensive links in mining equipment, technology and services (METS).



# SPECIAL ECONOMIC ZONES



- ▶ BlackEarth will benefit from a Special Economic Zone (SEZ), an area in which the business and trade laws are more favourable for foreign investors.
- ▶ SEZs are aimed at increasing trade balance, higher foreign investment, job creation and effective administration.
- ▶ To encourage businesses to set up in the zone, financial policies are introduced, which typically encompass upfront investing incentives, improved operating fiscal initiatives and less red tape.

**“India has an ambitious industrial reform agenda to expand manufacturing capability and to transition to a low-carbon and digitised economy. This includes plans for rapid expansion of electric mobility and renewable energy generation, as well as enhanced capability across high-technology sectors. These are among the key drivers for India in seeking to source stable and secure supply of critical minerals and related processing and refining technologies.”**

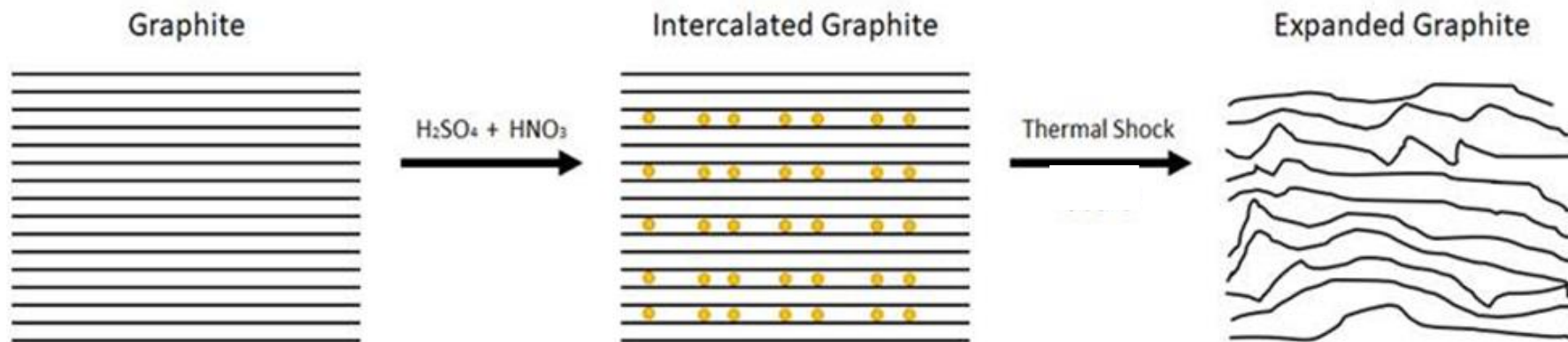
**- Australian Government – Trade and Investment Commission**



# EXPANDABLE GRAPHITE

## HOW IS IT MADE & HOW DOES IT WORK?

- Natural flake graphite is assessed as suitable, based on a number of parameters including: composition, particle size, purity, pH value, starting temperature and rate of expansion – not all natural flake graphite is suitable
- To produce expandable graphite, natural graphite flakes are treated with both acid and an oxidising agent to partially separate graphite layers in a process called intercalation
- Suitable expandable graphite results in a high proportion of intercalated layers, with residual compounds lodged between the layers. (Expandable Graphite)
- When subjected to a strong heat source, these residual compounds vaporise and create significant pressure between the graphite layers converting expandable graphite to expanded graphite



# NEWSFLOW CATALYSTS

Expandable Plant Only

Q4 2021 – Q3 2022



IDENTIFICATION OF  
SUITABLE (SEZ) SITE



FINALISATION OF  
ENGINEERING AND  
COST STUDY



FURTHER OFFTAKE  
PARTNERS



COMMENCEMENT OF  
CONSTRUCTION



COMMISSIONING OF  
THE JV EXPANDABLE  
PLANT



FIRST SALES







# BLACKEARTH

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## **Tom Revy**

Managing Director

[tom.revy@blackearthminerals.com.au](mailto:tom.revy@blackearthminerals.com.au)

Phone: + 61 (0) 411 475 376

## **David Round**

Finance Director

[david.round@blackearthminerals.com.au](mailto:david.round@blackearthminerals.com.au)

Phone: + 61 (0) 411 160 445

L3 1138 Hay St

West Perth, WA, Australia

Phone: + 61 (08) 61589916

[www.blackearthminerals.com.au](http://www.blackearthminerals.com.au)

