



**PENINSULA MINES**  
LIMITED



# PENINSULA MINES LIMITED

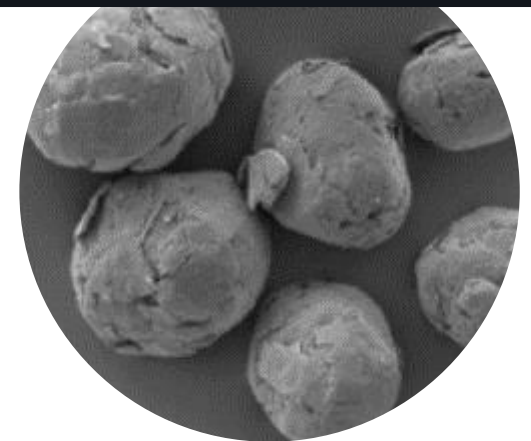
**discovery.**



**development.**



**delivery.**



“High-purity graphite and other metals for  
South Korea’s battery industry.”

PENINSULA MINES LTD (ASX:PSM)

05 June 2018 |

# The “SPI” window of opportunity,

to produce high-purity graphite and other key metals, in Korea



## **SECURITY** of graphite supply for Korean high-tech industries

- Korea is a major global manufacturer of Lithium-Ion (Graphite) Batteries.
- Depends entirely on high-cost imports of critical, downstream, Spherical Graphite, and other products/metals from China.
- Historically a major graphite and zinc producer until the 1980s with flake-graphite and zinc, and copper potential not exploited.



## **PURITY** of concentrate and spherical graphite

- Concerns of End-Users over the variable quality and purity of imported Chinese Spherical Graphite.
- China’s environmentally unsustainable HF acid processing to produce Spherical Graphite. Factories closing.
- Korea focused on sustainable high-tech. industries and high-purity renewable energy inputs, including graphite, zinc and copper.

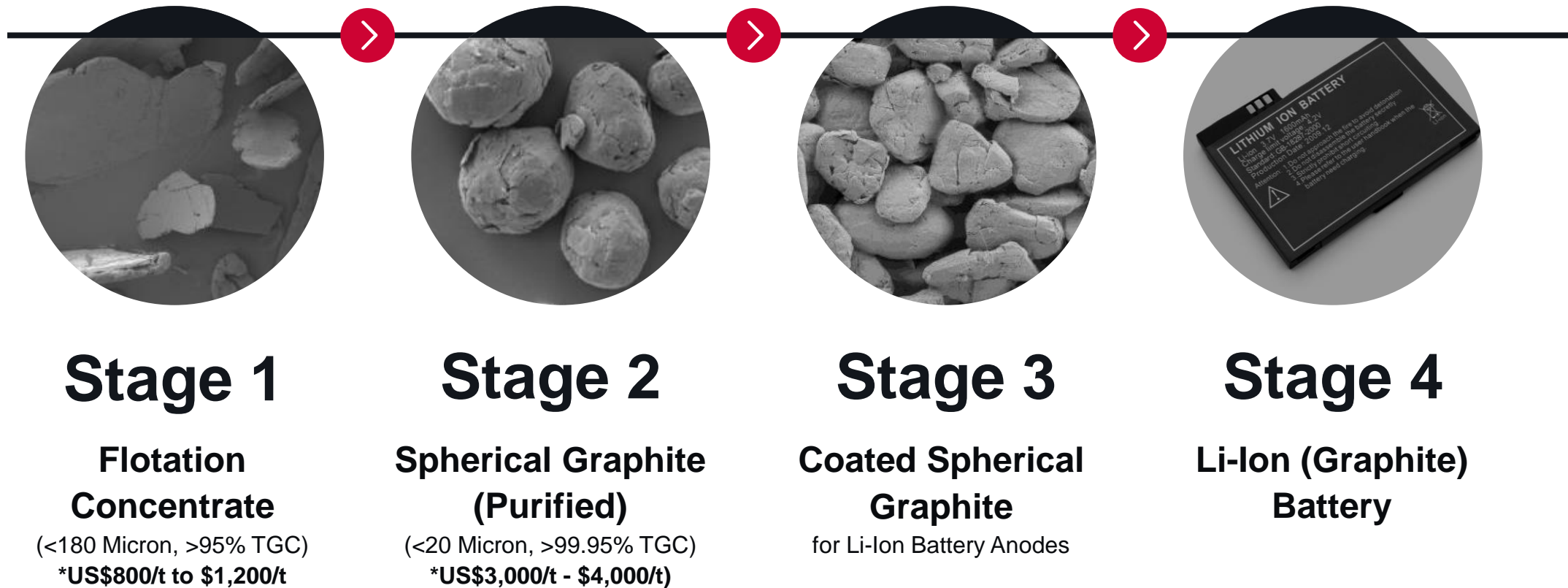


## **INGENUITY** to discover and develop downstream graphite and other metals for high-tech industries

- Apply modern exploration methods to discover/delineate Korean flake-graphite deposits and other metals e.g. zinc and copper .
- Develop high-tech. sustainable graphite production and downstream processing in Korea to directly supply Korean end-users
- Discover and delineate new, high-grade, zinc and copper deposits to supply the electric car and renewable energy industries.

# Securing the graphite supply chain from mine to battery

graphite production and downstream processing value-add



\*Pricing from Benchmark Mineral Intelligence monthly reports 2018

# Why South Korea? and, why Peninsula Mines (PSM)?



## Global leader in High-Tech Manufacturing:

- South Korea: stable first world economy with excellent infrastructure and FI incentives,
- major end user of high-tech commodities – Graphite, Lithium, Zinc, Copper,
- leading manufacturer of Li-Ion (Graphite) batteries and key player in renewable energy,
- historically major graphite and other metals e.g. zinc producer with no modern exploration.



**Underexplored Flake-Graphite deposits** as well as **Lithium** and **Zinc-Lead-Copper** potential linked with a positive commodity price outlook and strong in-country off-take demand.



**Opportunity** to drill and develop high-grade graphite discoveries at surface and extensions defined by already identified strong EM anomalies in four key project areas.



**Proven** metallurgical testing on four key projects has produced **>95% graphite concentrate**, and **testing underway for spherical graphite** suitability for Li-Ion (Graphite) battery production.



**Supply agreement** with large-flake graphite developer/producer in Madagascar, an established high-quality graphite production area.



**Relationships** with key Korean end-users of Flake-Graphite products and other high-tech minerals such as zinc and copper.



Drilling, testing high-grade **Zinc-Lead-Copper Targets** in underexplored porphyry-skarn system with high-grade intersections to follow up.



Highly-anomalous **Lithium**-pegmatite, potential for development to supply Li-ion battery industry and compliment graphite focus.

# Applying modern exploration to an under-explored, but highly prospective, high-tech. country

## Flake Graphite:

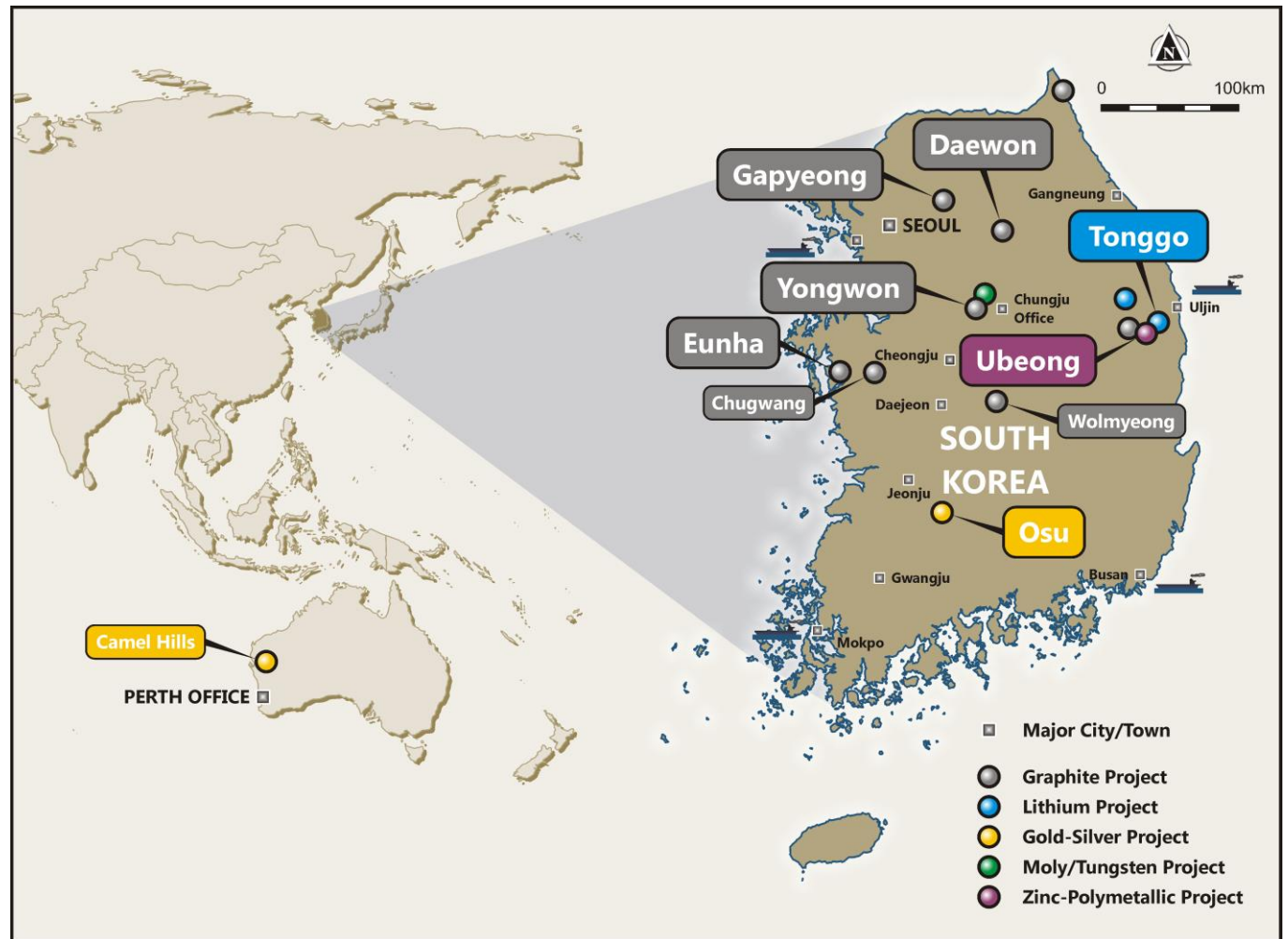
- **Eunha** – now drilling
  - Large flake, EM, Met. 97.6% TGC
- **Gapyeong** – next drill target
  - Large, high-grade, Met. 95.3% TGC
- Yongwon
  - High-grade, EM, Met. 96.8% TGC
- Daewon
  - Shallow dip, EM, Met. 96.6% TGC

## Tonggo Lithium:

- Large, lithium-bearing pegmatite

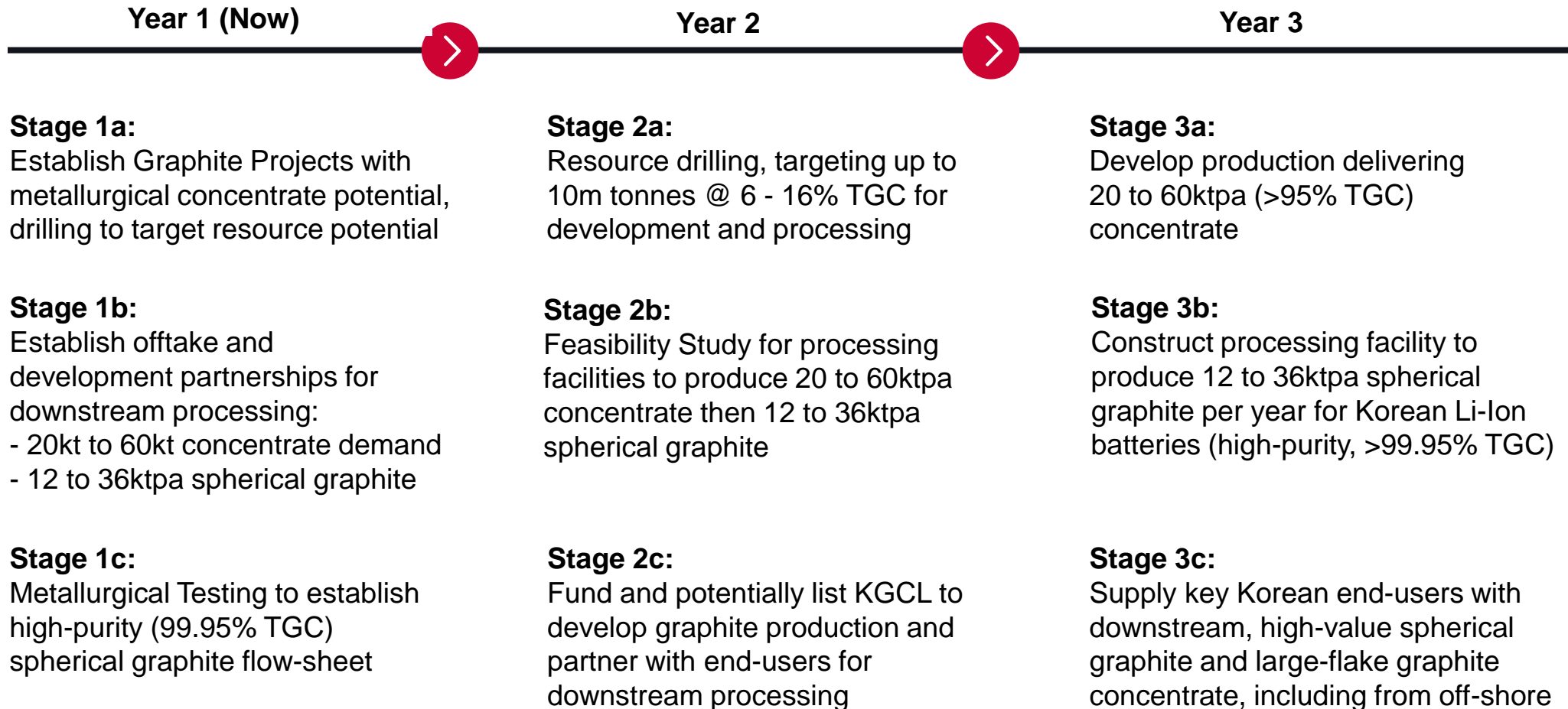
## Polymetallics:

- Ubeong, high-grade drill targets:
  - Zinc-Lead-Silver
  - Porphyry Cu-Au
- Osu Gold – Silver Targets



# Value-add milestones on journey to graphite production

## discovery to downstream processing pipeline



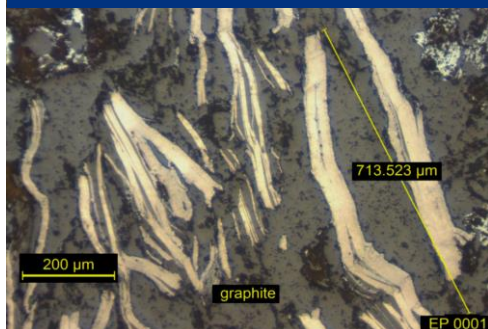


# Targeting resource potential for development

## Eunha Target:

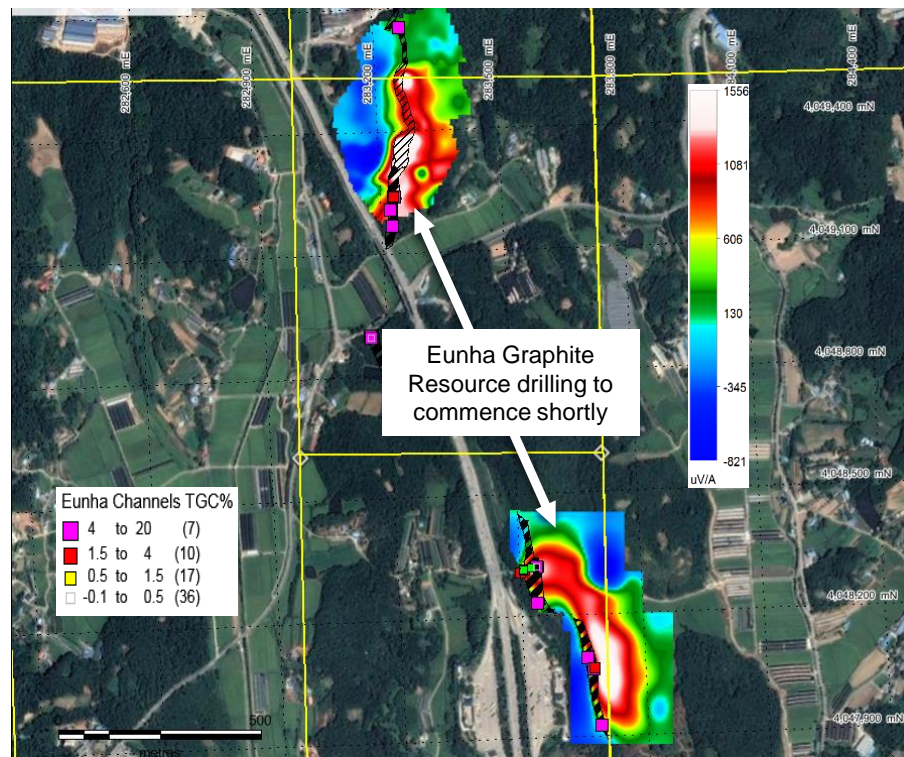
- channel sampling 4-11%TGC
- high-purity concentrate metallurgy, >97%TGC
- drilling commenced, to define resources

Eunha: “Super-Jumbo” graphite flakes (>500µm)



## Eunha Graphite:

2 x 400m x 120m x 5m x 4 - 11% TGC



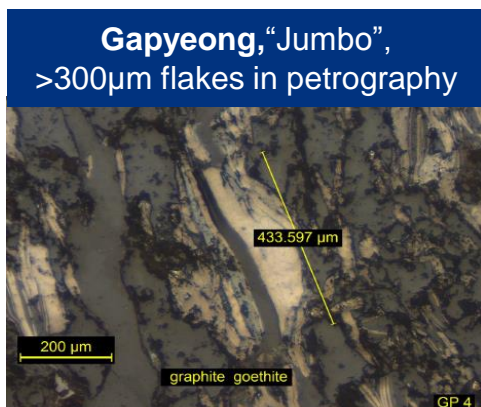
Size Fraction	Mass	Total Carbon	LOI 1000°C
µm	%	%	%
>106	17.4	98.7	98.1
>75	14.9	98.5	98.5
<75	67.7	97.1	97.0
Calc. Head	100.0	97.6	97.5



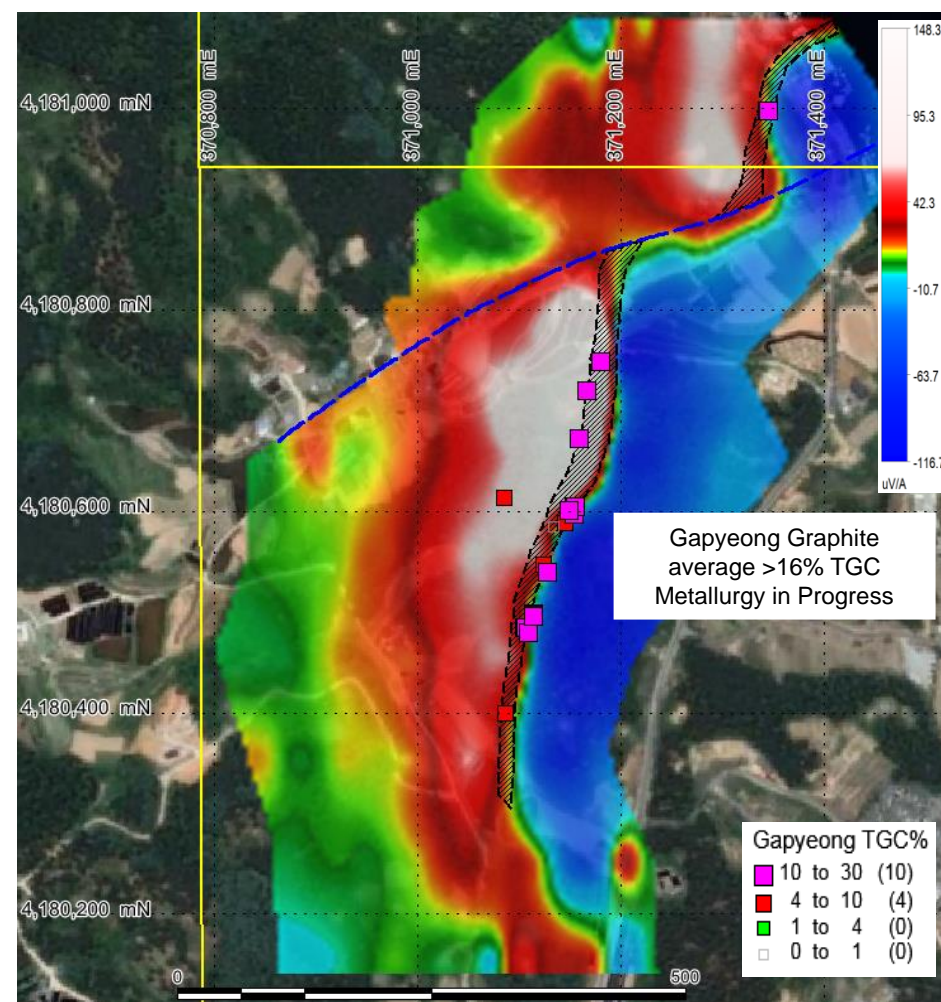
# targeting resource potential for development

## Gapyeong Target:

- high-grades, >16%TGC
- High-purity concentrate metallurgy, >95%TGC
- drilling planned to define resources



## Gapyeong High-Grade Graphite: 800m x 200m x 8m x 16% TGC

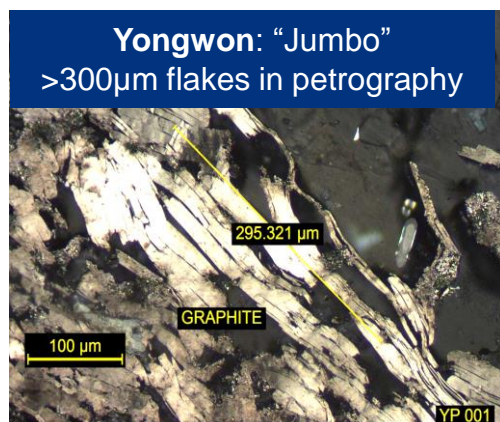


Size Fraction	Mass	Total Carbon	LOI 1000°C
µm	%	%	%
>106	4.0	92.0	92.0
>75	7.7	94.7	96.1
<75	88.3	95.5	95.3
Calc. Head	100.0	95.3	95.2

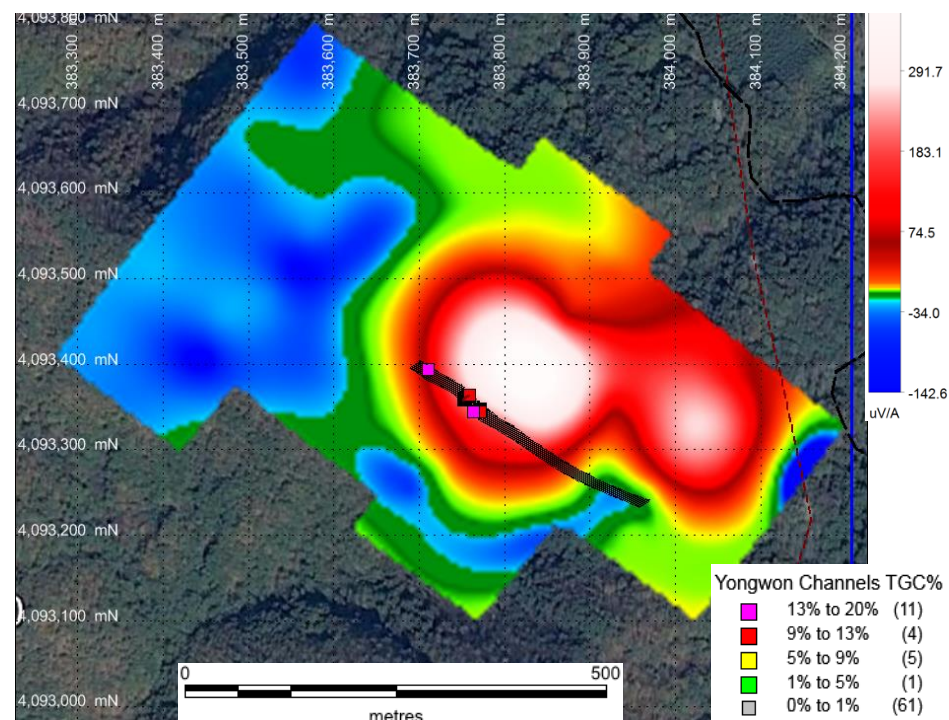
# targeting resource potential for development

## Yongwon Target:

- channel sampling >10%TGC
- high-purity concentrate metallurgy, >96.8%TGC
- drilling planned to define resources, subject access



## Yongwon Graphite: 400m x 180m x 10m thick x 10% TGC



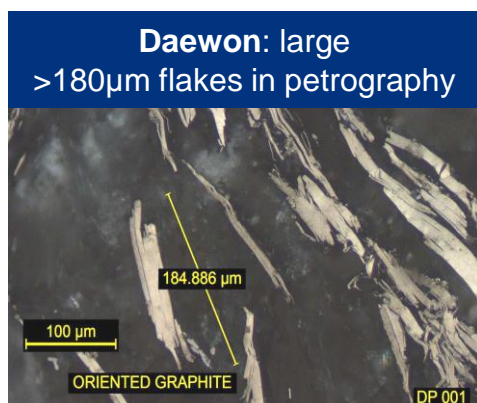
Size Fraction	Mass	Total Carbon	*LOI 1000°C	TGC Recovery
µm	%	%	%	%
>106	8.2%	97.6	97.9	
>75	13.7%	97.8	98.2	
<75	78.1%	96.6	96.7	
Calc. Head	100.0%	96.8	97.0	87.3%



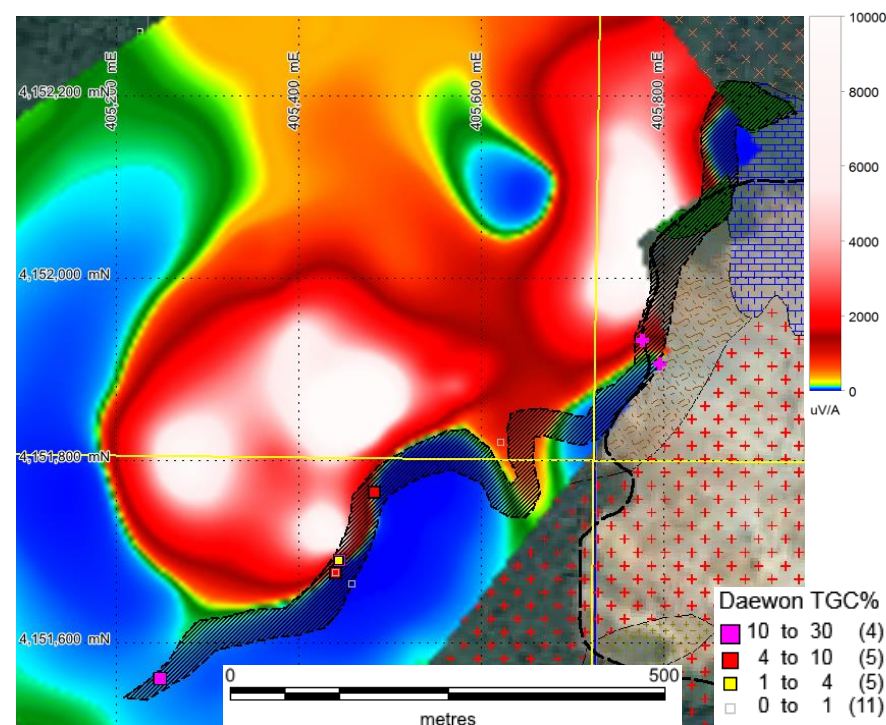
# targeting resource potential for development

## Daewon Target:

- channel sampling 4-24% TGC
- high-purity concentrate metallurgy, >96.5% TGC
- drilling planned, to define resources, subject access



## Daewon Graphite: 800m x 200m x 6m thick x 6 - 10% TGC



Size Fraction	Mass	Total Carbon	*LOI 1000°C	TGC Recovery
µm	%	%	%	%
>106	6.7%	97.0	97.1	
>75	11.4%	97.5	97.7	
<75	81.9%	96.5	96.6	
<b>Calc. Head</b>	<b>100.0%</b>	<b>96.6</b>	<b>96.7</b>	<b>81.8%</b>

# Key opportunity – value-added spherical graphite processing in Korea

three stage processing test work underway:



1

Generate >5kg, high-purity (>97% TGC), concentrate from Eunha and other projects (e.g. Gapyeong) for spherical graphite testing.



2

High-purity graphite concentrate samples to Germany for Micronisation and Spheroidisation of flake graphite then,



3

Purification of spherical graphite – targeting >99.95% TGC purity (thermal, non-fluoride), followed by electrochemical (battery) testing of purified spherical graphite, by German firm, in collaboration with CSIRO.

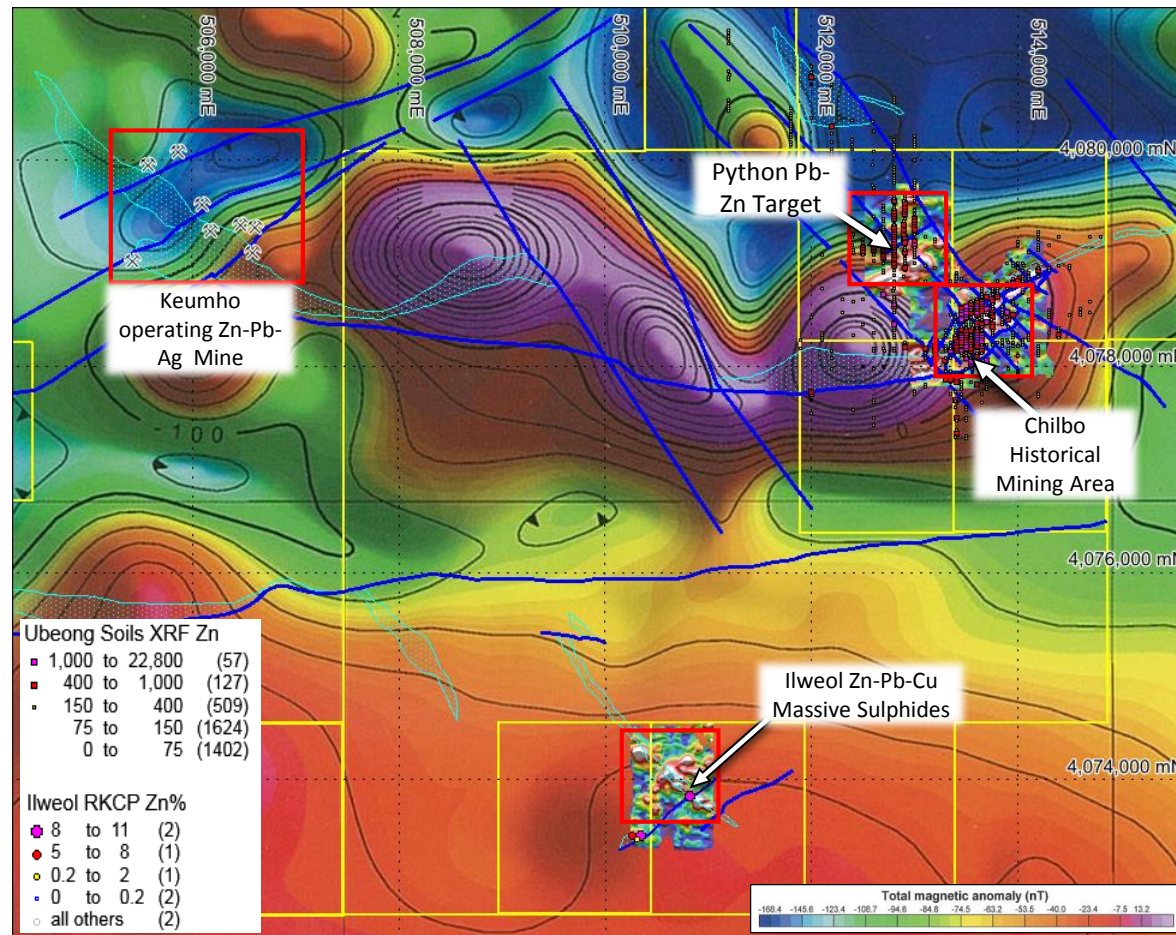


**Next steps:** Scoping then Feasibility Study into in-country processing to non HF, high-purity spherical graphite (99.95% TGC).

# Other discovery and development opportunities in Korea

Ubeong zinc – polymetallic project, drilling in progress:

- first application of modern exploration to major high-grade Zn-Pb-Cu system



- **Large Ubeong Zinc-Lead-Copper Project**
  - 10km mineralised skarn-limestone trends with historical workings and operating Keumho mine adjoining
- **Drilling of Chilbo and Python Prospects:**
  - numerous workings with high-grade Zn & Cu in outcrop at **Chilbo**
  - high-grade Zn & Pb sulphides (to 22% Pb, 21% Zn) intersected at **Python**
  - previous massive sulphide “discovery” intersections at **Ilweol** including:
    - 7m @ 14.6% Zn, 2.1% Cu
    - 2.1m @ 18.7% Zn, 11% Pb, 3.2% Cu
    - 3.6m @ 15.5% Zn, 1.48% Pb
- **Nearby, operating, Keumho Zinc Mine** offers immediate processing potential and offtake in-country available e.g. Korea Zinc smelter within 30km with excellent transport.



# Peninsula Mines (ASX:PSM) - why invest?

outstanding opportunities for discovery, development, delivery in Korea



## **Four key flake - graphite discoveries in under-explored Korea:**

- 100% owned, granted tenements, with four identified flake-graphite deposits,
- drilling now testing flake – graphite resource potential of up to 10mt @ 4% – 16% TGC at four projects,
- outstanding metallurgical potential to produce >95% purity, flake - graphite concentrate,
- downstream spherical graphite testing for 99.95% purity spherical graphite production for Li-Ion batteries



## **Established relationships with Korean graphite end-users and large-flake graphite supplier:**

- MOU with expandable graphite producer for large flake-graphite offtake and development cooperation
- Supply agreement for up to 24kt per year of large-flake graphite from developer/producer in Madagascar, an established high-quality graphite production area.
- Advanced discussions with key Korean end-users for offtake of, high-purity, spherical graphite



## **Drilling, testing high-grade Zinc-Lead-Silver and Copper-Gold Targets** in underexplored skarn system.

- 100% owned tenements covering >10km strike of mineralised Zn-Pb-Cu skarn near existing mine
- High-grade zinc and lead sulphides intersected under extensive surface Pb-Zn geochemistry at Python
- Previous high-grade zinc-copper-lead intersections at Ilweol, up to **7m @ 14.6% Zn, 2.1% Cu**, for follow up
- Up to 90m zone of disseminated with some massive Zn sulphides under extensive workings at Chilbo

# strong leadership with track record of delivery



## **Jon Dugdale – Managing Director**

BSc (Hons), FAusIMM, MAICD

- 32 years experience including 20 years geology/discovery and 12 years corporate/investment
- Proven track record of discovery, project development and funding
- Extensive international network within the Asian region



## **Danny Noonan – Executive Director**

BSc (Hons), MAusIMM

- Extensive International geology experience
- Very experienced mining and resources development geologist
- Generated the Korean projects and focussed on resources and development



## **Phillip Jackson – Non-Executive Chairman**

BJuris LLB MBA FAICD

- 25 years International resources experience
- Legal and contracts agreements expertise
- Commercial and contract law focus

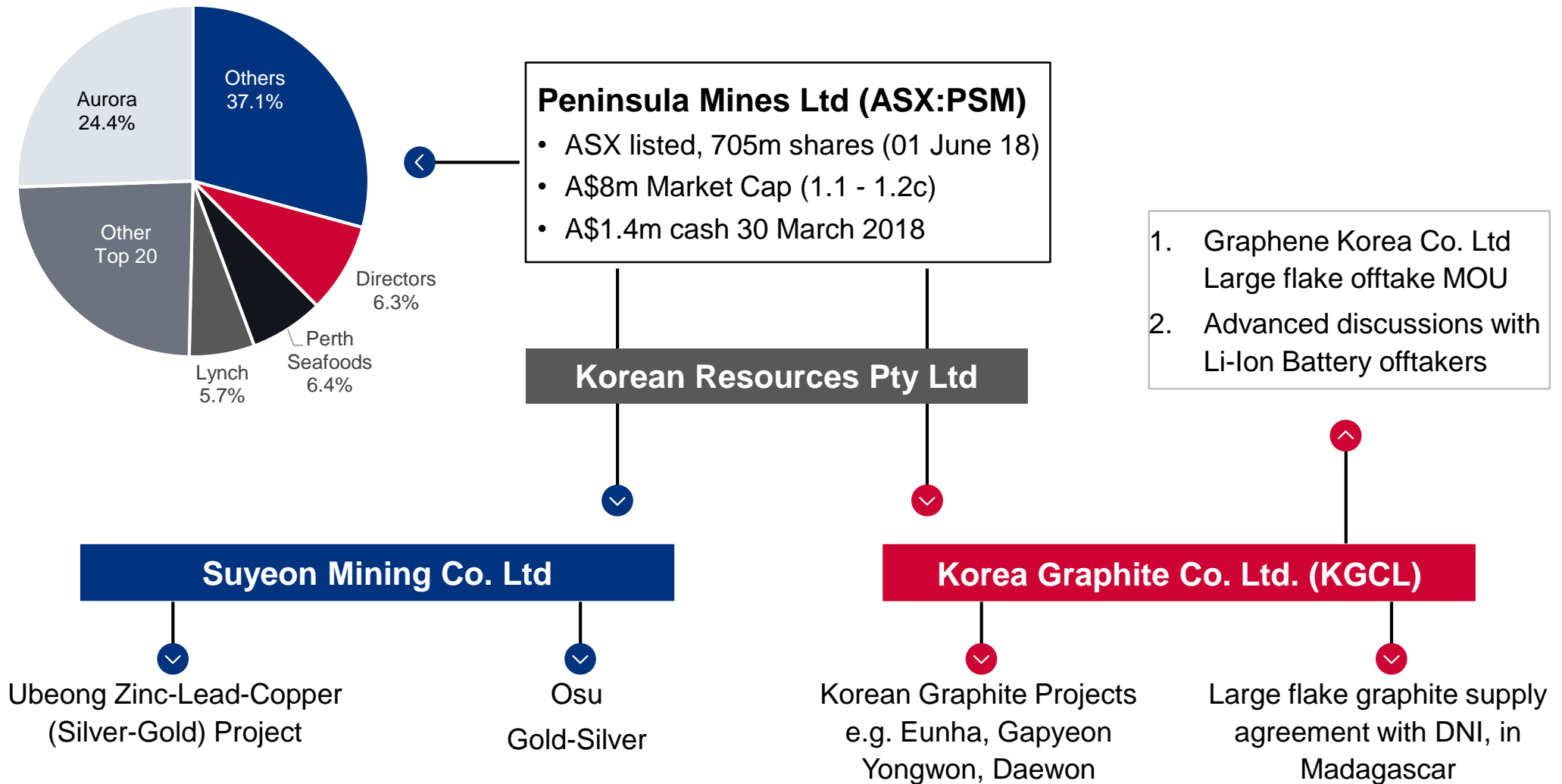


## **Martin Pyle – Non-Executive Director**

BSc (Hons), MBA

- >30 years of geology and corporate experience
- Strong network in financing and investment sector
- Track record of financing and experienced director

# tightly held register, corporate structure set-up - for investment and value growth



# for further information



## **Jon Dugdale**

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# competent persons statement and disclaimer

The information in this presentation that relates to Exploration Targets is based on information compiled by Mr Daniel Noonan, a Member of The Australian Institute of Mining and Metallurgy. Mr Noonan is engaged as a full time consultant to the Company providing exploration managerial services for the Company's Korean operations. Mr Noonan has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Mineral Resources and Ore Reserves'. Mr Noonan consents to the inclusion in this presentation of information compiled and interpreted by him in the form and context in which it now appears.

The information in this release that relates to metallurgical test work is based on information compiled and / or reviewed by Mr Peter Adamini who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Adamini is a full-time employee of IMO Project Services. Mr Adamini consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this release that relates to Geophysical Results and Interpretations is based on information compiled by Mr William Peters, a Consulting Geophysicist (Crosmin Pty Ltd) at Southern Geoscience Consultants. Mr Peters is a Fellow of the Australasian Institute of Mining and Metallurgy and Chartered Professional (Geology) and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking 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 Peters consents to the inclusion in the release of the matters based on this information in the form and context in which it appears.

The background information on the location and history of the Company's key projects has not materially changed since they were first described in earlier ASX releases of the Company following the adoption by the Company of the reporting practices outlined in the 2012 edition JORC code.

The Company's website is located at ([www.peninsulamines.com.au](http://www.peninsulamines.com.au)). The website contains information on the Company's projects, project maps, a list of the Company's announcements to ASX, information on Native Title (including the tenement grant process and heritage surveys), legislative environments under which the Company operates, Corporate Governance, a section on risks, many of which are common to exploration companies and other useful information. All the information presented in this investor update has been released to the market in previous Company announcements and no new exploration results are presented in this presentation. A list of the Company's announcements is also obtainable from the Australian Securities Exchange.

Forward-Looking Statements are included herein, regarding the future ability to finance projects and other statements that express management's expectations, or estimates regarding the timing of completion of various aspects of the projects' development or of our future performance and thereby constitute "forward-looking statements". The words "believe", "expect", "anticipate", "contemplate", "target", "plan", "aims", "intends", "continue", "budget", "estimate", "may", "will", "schedule", and similar expressions identify forward-looking statements. Forward-looking statements are necessarily based upon a number of estimates and assumptions that, while considered reasonable by management, are inherently subject to significant business, economic and competitive uncertainties and contingencies.

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