

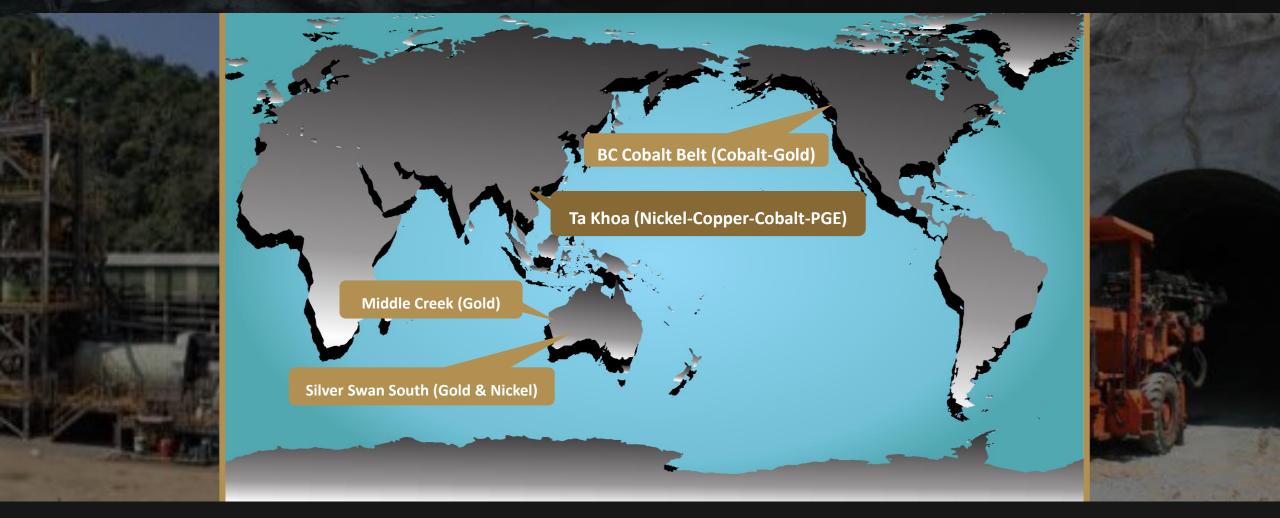
Ta Khoa - Investor Site Visit Presentation (ASX: BSX)

June 2019

Exploring Southeast Asia's Premier Nickel Sulfide District

## **Projects Locations**

An international portfolio of nickel, copper, cobalt & precious metals exploration projects





# **Projects Summary**

An international portfolio of battery & precious metals exploration projects





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### Ta Khoa Nickel Project (Nickel-Coper-Cobalt-PGE), Vietnam

- Ban Phuc Mine operated from 2013 to 2016, mining 975kt @ 2.4% Ni & 1.0% Cu for 20.7kt Ni & 10.1kt Cu<sup>1</sup>;
- Existing infrastructure built to Australian Standards includes a 450ktpa concentrator and a modern mechanised underground mine located within a premier nickel sulfide district;
- Invested capital in excess of US\$136m generated US\$213m in revenue and paid total contributions to government of US\$65m during a 3.5 year period of falling nickel prices.

### BC Cobalt Project (Cobalt-Gold), British Columbia, Canada

- Multiple new targets with coincident Cu-Au-Co in soil anomalies and IP chargeability and resistivity signatures typical of sulfide bearing bodies;
- 48km of strike potential of untested geology analogous to the world class Bou-Azzer district.

### Silver Swan South Project (Gold & Nickel), Western Australia

- Emerging gold discovery located 8 km along strike of the world class Kanowna Belle gold mine (+5 Moz gold endowment);
- Nickel-Cobalt sulfide targets located only 10 km south of the Silver Swan (655 kt @ 9.5% Ni) and Black
  Swan (10 Mt @ 1% Ni) nickel mines (166 kt nickel endowment).

### Middle Creek Project (Gold), Western Australia

- Pilbara gold exploration adjacent Novo Resources (NVO.tsx-v) Beatons Creek Conglomerate Gold project and Millennium Minerals (MOY.asx) Nullagine Gold project;
- Visible gold in quartz veins at surface and an untested 1.3km long gold in soil anomaly.

<sup>1</sup>Source: Refer to AMR quarterly MD&A reports from JunQ 2013 to SepQ 2016 <u>www.asianmineralres.com</u>

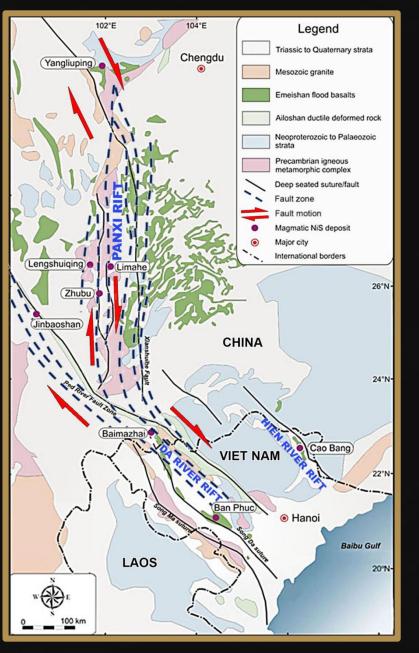


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# **Ta Khoa Nickel Project**

Exploring Southeast Asia's Premier Nickel Sulfide District

- Located 160km west of Hanoi in Son La Province of Vietnam, existing modern nickel mine built to Australian Standards, currently under care and maintenance;
- Exclusive 150km<sup>2</sup> land package includes a 34.8km<sup>2</sup> exploration license with over 25 advanced stage massive sulfide vein (MSV) targets and a number of large bulk-tonnage disseminated sulfide (DSS) targets;
  - Internationally-designed 450ktpa processing plant connected to local hydro grid power with a fully-permitted tailings facility and a modern 250 person camp;
  - Operated as a modern mechanised underground nickel mine from 2013 to 2016 and mined 975kt @ 2.4% Ni & 1.0% Cu for 20.7kt Ni & 10.1kt Cu<sup>1</sup>;
  - Ban Phuc invested capital in excess of US\$136m generated US\$213m in revenue and paid total contributions to government of US\$65m during falling nickel prices;
    - Long term existing partnership exists between AMR Nickel (90%) and a supportive local partner COXAMA (10%), a private Vietnamese industrial conglomerate with primary operations in Son La.



# Ta Khoa Nickel Project

Located within a premier nickel sulfide district

### Location

- The Ban Phuc deposit is located 160km west of Hanoi in the province of Son La;
- Access to the mine is via a sealed road from Hanoi which is approximately 240 Km;
- The capital of Son La province, is a further 35km north west of the Ban Phuc Mine and is accessed by sealed road;
- Access to Hai Phong Port is via a sealed road which is approximately 357km.

### History

- Early exploration work conducted by Vietnamese geologists in the mid-1950's and early 1960's was initially focussed on copper;
- AMR Nickel was established in 1993 and commenced modern exploration in 1996;
- Mining commenced in 2008 and stopped soon after due to the GFC;
- Construction recommenced in 2012 and the mine was bought into full scale production during 2013 and completed in mid 2016;
- 381 holes drilled for 61,894m (310 holes for 49,743m into Ban Phuc) up to 2016.

### Geology

- Located within the Song Da Rift Zone, a major crustal suture zone which forms part of a greater system of deep continental rifting;
- Geotectonic and structural setting analogous to major Ni-Cu deposits such as Norilsk (Russia) and Jinchuan (China);
- Ta Khoa anticline is a domal feature within the Song Da Rift Zone, significant potential exists for multiple Ni-Cu-Co-PGE deposits within the Ta Khoa dome.

## **Existing Modern Infrastructure Built to Australian Standards**

A modern mechanised underground nickel mine built to Australian Standards currently under care and maintenance

### **Existing Modern Infrastructure**

- Internationally-designed 450ktpa processing facility connected to local hydro grid power;
- Historically high metallurgical recoveries;
- Fully-permitted tailings facility with excess capacity and expansion options;
- Established workshops, fabrication, and maintenance facilities;
- Modern 250 person camp;
- Internationally certified laboratory.







## **Existing Modern Infrastructure Built to Australian Standards**

A modern mechanised underground nickel mine built to Australian Standards currently under care and maintenance



## **Existing Modern Infrastructure Built to Australian Standards**

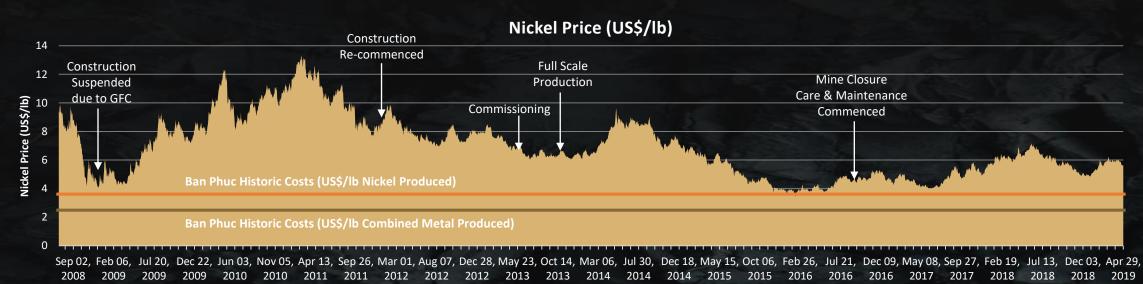
A modern mechanised underground nickel mine built to Australian Standards currently under care and maintenance



## **Ban Phuc Historic Costs vs Long Term Historic Nickel Prices**

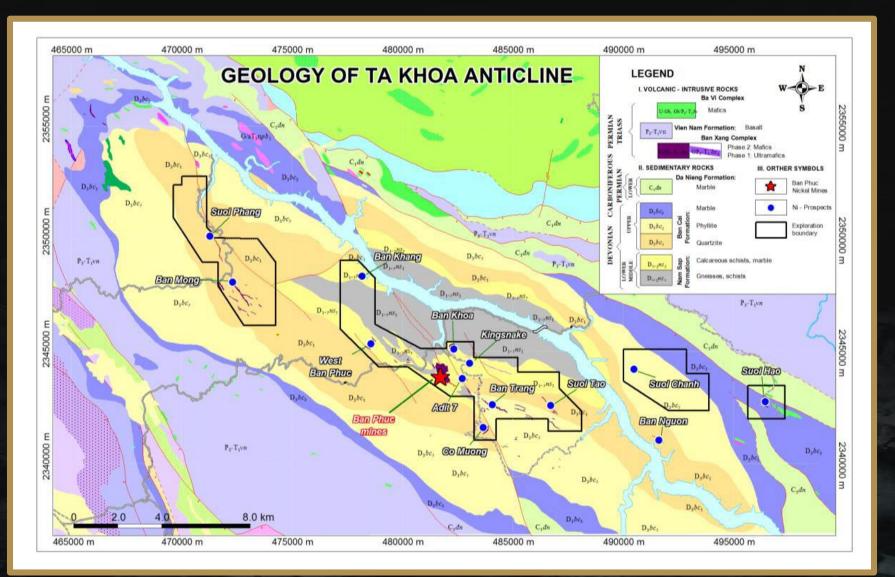
Comparison between historic operating costs at Ban Phuc nickel mine and long term historic nickel prices

	Ban Phuc Historic Costs <sup>1</sup> (US\$/lb Nickel Produced)	Ban Phuc Historic Costs <sup>1</sup> (US\$/lb Combined Metal Produced)
Mining Cost (US\$/lb)	US\$1.29/lb	US\$0.85/lb
Processing & Transport Cost (US\$/Ib)	US\$0.72/lb	US\$0.47/lb
General & Admin Cost (US\$/lb)	US\$0.26/lb	US\$0.17/lb
Tariffs & Royalties (US\$/lb)	US\$1.31/lb	US\$0.86/lb
Total Site Operating Cost (US\$/Ib)	US\$3.57/lb	US\$2.35/lb



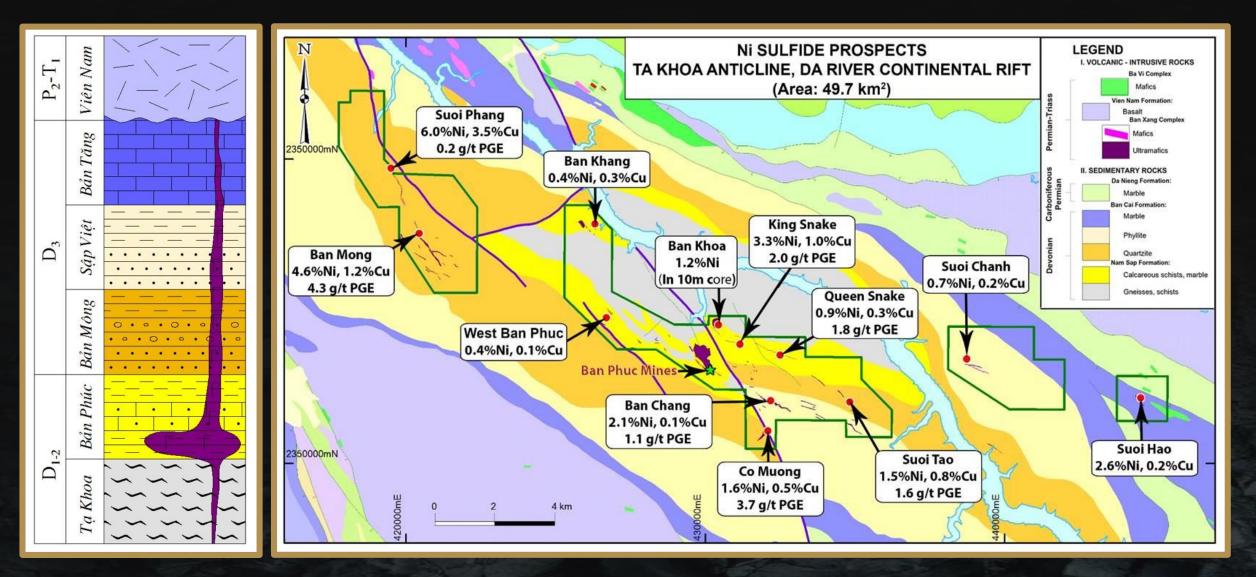
## Ta Khoa Ni-Cu-Co-PGE Project

Ta Khoa Dome is prospective for multiple magmatic nickel sulfide deposits



# Ta Khoa Ni-Cu-Co-PGE Project

Ta Khoa Dome is prospective for multiple magmatic nickel sulfide deposits

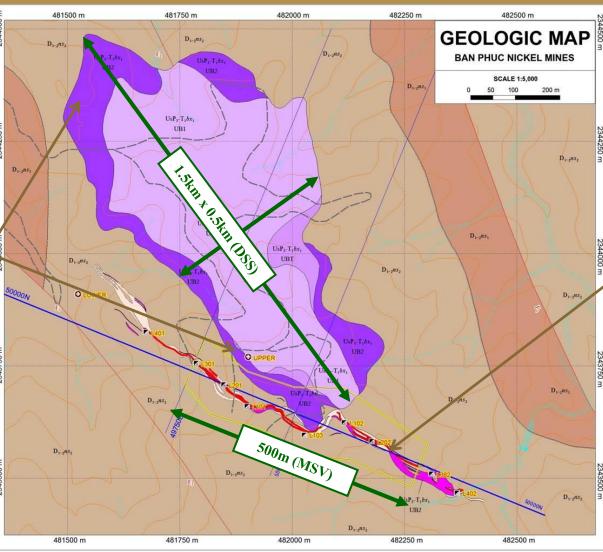


# Ta Khoa Ni-Cu-Co-PGE Project Two Styles of Mineralisation

Ta Khoa Project has both massive sulfide veins (MSV) and disseminated sulfides (DSS)



Disseminated Sulfide (DSS)\*





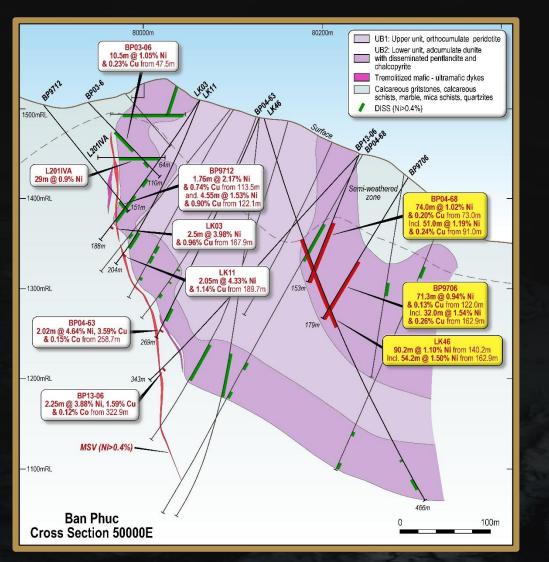
Massive Sulfide Vein (MSV)\*

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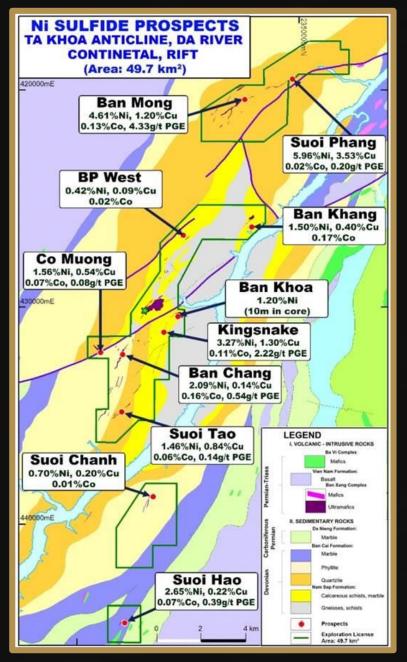
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## **Ban Phuc Disseminated Sulfide (DSS)**

Previous drilling indicates the Ban Phuc disseminated sulfide orebody has potential for significant tonnes at mineable grades based on historical results







## Ta Khoa Massive Sulfide Vein (MSV) Prospects

Extensive advanced stage high grade massive sulfide vein targets

### Suoi Phang

- 2.1 m @ 4.19% nickel, 0.36% copper & 0.14% cobalt;
- 1.0 m @ 5.96% nickel, 3.53% copper, 0.02% cobalt & 0.2g/t PGE;
- 1.0 m @ 5.98% nickel, 0.24% copper, 0.19% cobalt & 0.17g/t PGE.

### Kingsnake

- 1.7 m @ 3.30% nickel, 1.02% copper, 0.11% cobalt & 2.16g/t PGE;
- 1.6 m @ 3.27% nickel, 1.30% copper, 0.11% cobalt & 2.22g/t PGE;
- 0.8 m @ 3.08% nickel, 1.59% copper, 0.17% cobalt.

### Ban Chang

- 1.6 m @ 2.19% nickel & 1.54% copper;
- 1.0 m @ 2.65% nickel & 1.04% copper;
- 1.7 m @ 1.89% nickel & 0.91% copper.

### Ban Khang

- 2.6 m @ 1.59% nickel, 0.71% copper & 0.08% cobalt;
- 2.5 m @ 1.76% nickel, 0.25% copper & 0.19% cobalt;
- 1.8 m @ 1.51% nickel, 0.35% copper & 0.17% cobalt.

### Ban Mong

- 0.5 m @ 6.11% nickel, 0.11% copper & 0.2% cobalt;
- 0.5 m @ 4.56% nickel, 0.15% copper & 0.15% cobalt;
- 0.5 m @ 4.61% nickel, 1.20% copper, 0.13% cobalt & 4.33g/t PGE.

## Ta Khoa Disseminated Sulfide (DSS) Prospects

Advanced stage disseminated sulfide targets

### Ban Khang

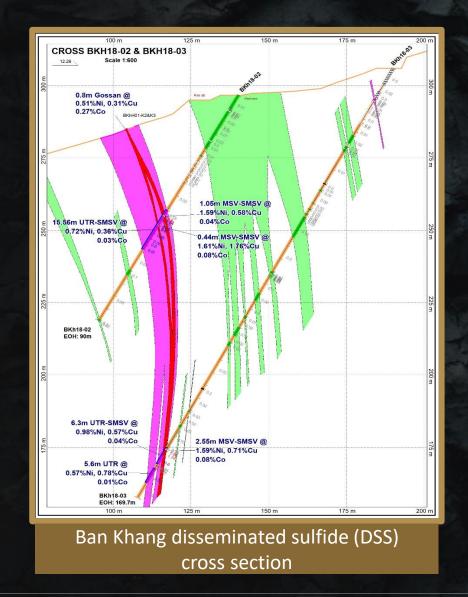
- Located 6km northwest of Ban Phuc;
- Discrete magnetic anomaly consistent with a mafic or ultramafic body ~300m long with a swarm of tremolite dykes;
- Soil sampling and trenching discovered a 650m long and 5-20m wide gossan zone.

### **Ban Chang**

- Located 2.5km southwest of Ban Phuc;
- Massive dyke swarm mainly veins and lenses of massive sulfide as well as disseminated sulfide hosted within tremolite dykes;
- Dyke swarm is ~900m long and varies between 5-60m wide
- Magnetic interpretation suggests presence of a large concealed intrusive proximal to Ban Chang.

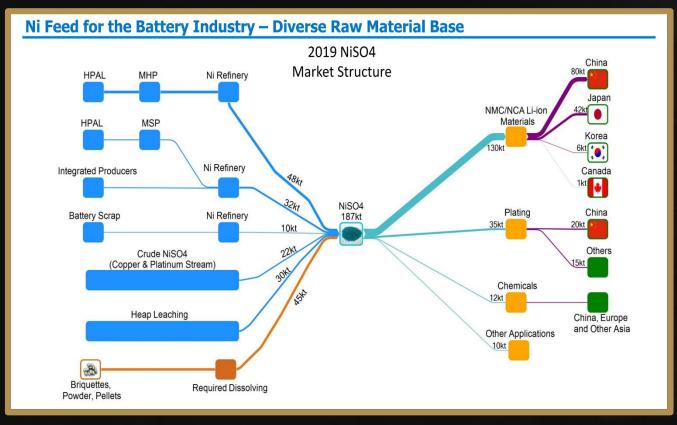
### Ban Khoa

- Located 1.5km north of Ban Phuc;
- 300m wide layered ultramafic sill folded into syncline, disseminated nickel sulfide in cumulate layers at base of dunite;
- Best intersection is 25m @ 0.8% Ni including 10m @ 1.16% Ni
- Electromagnetic (FLTEM) anomaly links Ban Khoa and Kingsnake (no modern drilling)



### **Downstream Processing Opportunities**

Potential to build downstream processing infrastructure to supply increasing demand from Lithium Ion battery and cathode manufacturers



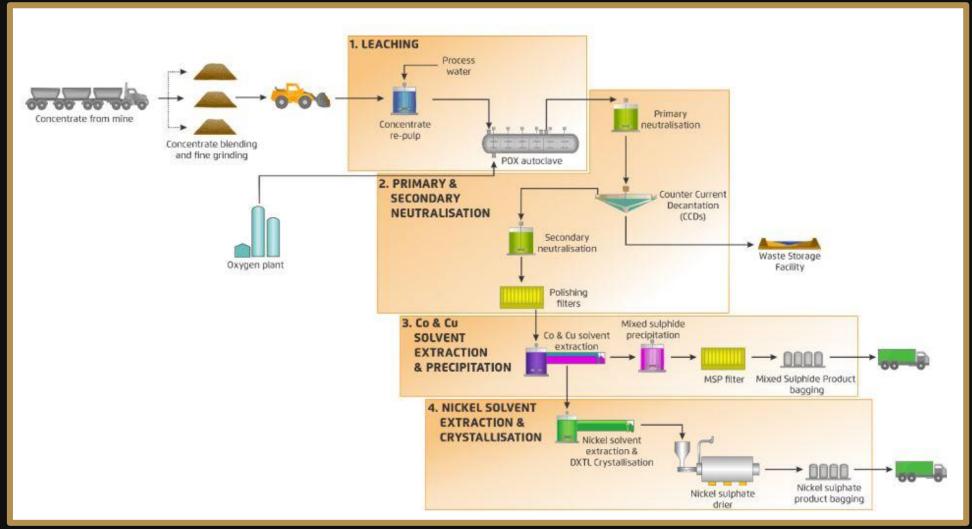
#### Source: Nornickel

### **Downstream Nickel Processing**

- Previous owners completed engineering studies for a downstream nickel smelter to reduce tariffs from 20% to 5%;
- Ta Khoa has favourable metallurgical characteristics for downstream processing at relatively low capex;
- Low cost manufacturing industry in Vietnam is an ideal location to establish downstream processing for nickel sulfide feed into Asia's growing battery industry;
- Blackstone will investigate the potential for downstream processing to produce a downstream nickel product for the Lithium Ion battery industry.

## **Downstream Processing: Pressure Oxidation (POx) Process**

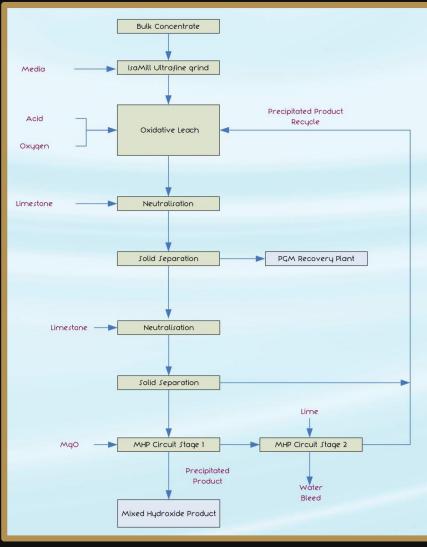
Blackstone investigates plans to build downstream processing infrastructure to supply the Lithium Ion battery industry (see Example Pressure Oxidation flowsheet below)

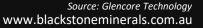


Source: Independence Group

## **Downstream Processing: Albion Process**

Blackstone investigates plans to build downstream processing infrastructure to supply the Lithium Ion battery industry (see Albion Process flowsheet below)



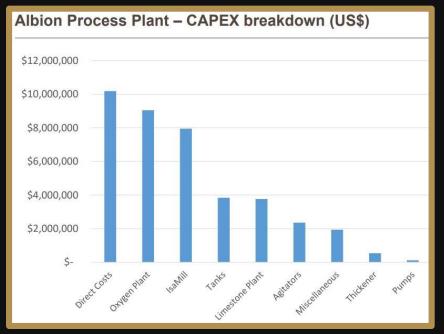




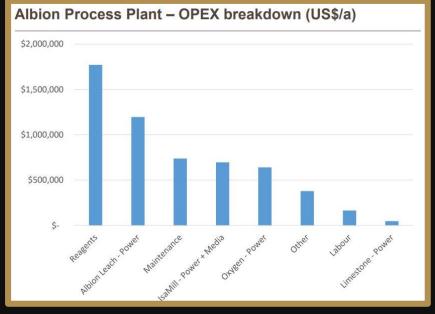
Source: Glencore Technology



Source: Glencore Technology



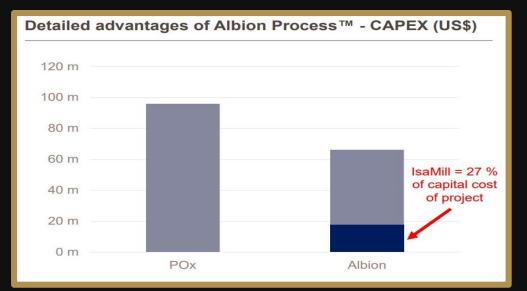
#### Source: Glencore Technology



Source: Glencore Technology www.blackstoneminerals.com.au

## **Downstream Processing: POx vs Albion Process**

Blackstone investigates plans to build downstream processing infrastructure to supply the Lithium Ion battery industry (see POx vs Albion Process below as example)



#### Source: Glencore Technology



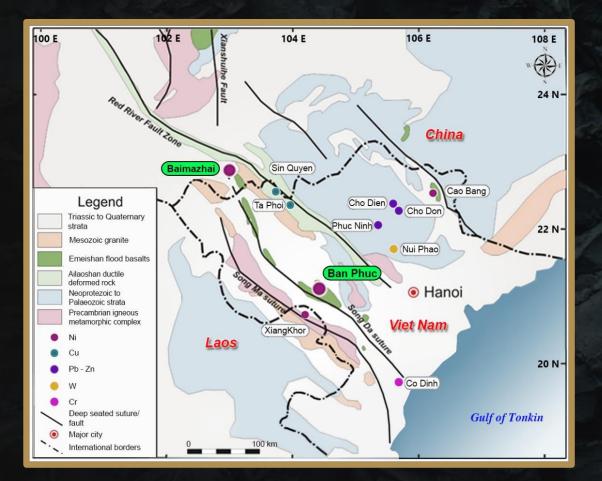
#### Detailed advantages of Albion Process<sup>™</sup> - OPEX (US\$/a)

### **Vietnamese Mining Industry**

Established mining industry with a government focussed on reform and progress

### **Vietnamese Mining Industry**

- 22 open cut mines and 23 underground mines in Vietnam;
- Vietnamese Mining Master Plan (2020 –2035) approved by the Prime Minister in July 2018 specifically identifies the Ban Phuc Nickel project, eliminating key permitting and approval obstacles;
- Mining License Grant Fee (MLGF) recently halved for new nickel mines;
- Vietnam Foreign Investment Agency (FIA) recently announced a newgeneration Foreign Direct Investment (FDI) attraction and orientation strategy for 2018-2030;
- Trans-Pacific Partnership (CPTPP), in November Vietnam ratified the comprehensive and progressive agreement for CPTPP including commitments to eliminating existing export tariffs in Vietnam.



## **Presentation Summary**

Proven track record of mineral discovery and corporate success



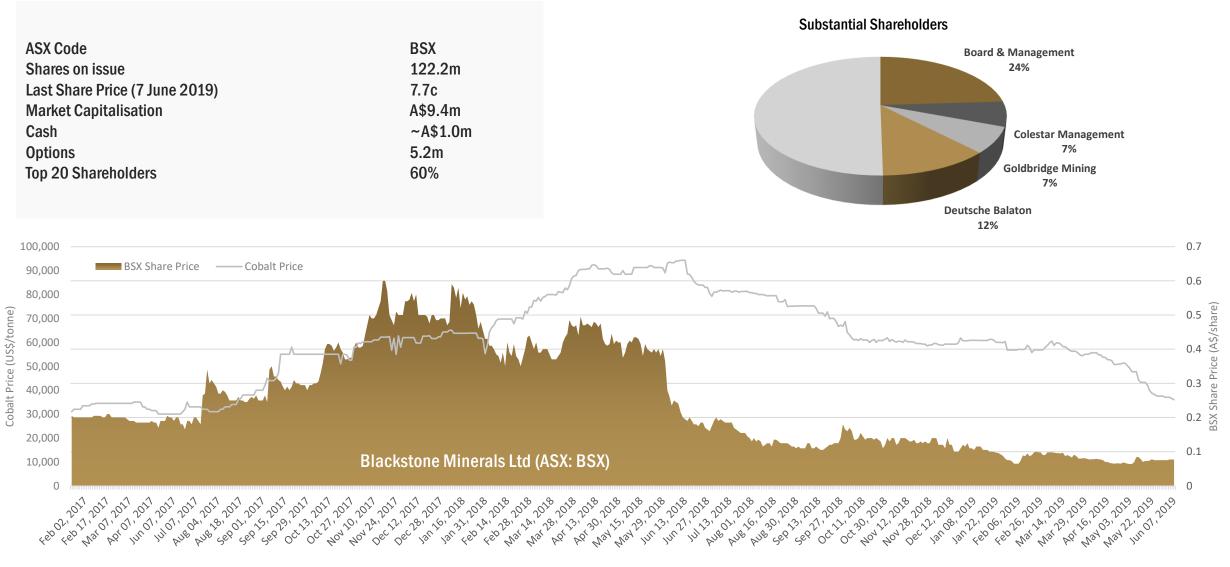
- Ta Khoa Nickel Project has existing modern infrastructure built to Australian Standards and located within a premier nickel sulfide district;
- Ban Phuc nickel mine successfully operated as a modern mechanised underground nickel mine from 2013 to 2016;
- BC Cobalt targets with coincident Cu-Au-Co in soil anomalies and IP chargeability and resistivity signatures typical of sulfide bearing bodies;
- Large landholding in BC Cobalt Belt with 48km of untested geology analogous to the world class Bou-Azzer primary cobalt district in Morocco;
- Well credentialed management team with a proven track record of discovery and creating shareholder wealth.



# **Appendix: Corporate Snapshot**

A tight capital structure and funded for further exploration



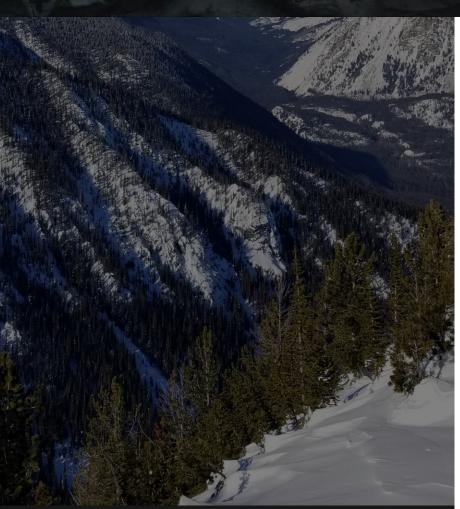


# Appendix: Board & Management Team

Proven track record of mineral discovery and corporate success



Board of Directors	5	
Hamish Halliday	Non-Executive Chairman	Geologist with over 20 years corporate and technical experience, founder of Adamus Resources Limited, a A\$3M float which became a multi-million ounce emerging gold producer.
Scott Williamson	Managing Director	Mining Engineer with a Commerce degree from the West Australian School of Mines and Curtin University, over 10 years experience in technical and corporate roles in the mining and finance sectors.
Andrew Radonjic	Technical Director	Mine Geologist and Mineral Economist with over 25 years experience with a focus on gold and nickel exploration, instrumental in three significant gold discoveries north of Kalgoorlie, Managing Director of Venture Minerals Limited and co-lead the discovery of the Mount Lindsay Tin-Tungsten-Magnetite deposits.
Steve Parsons	Non-Executive Director	Geologist with corporate and technical experience, a proven track record of mineral discoveries, corporate growth, international investor relations and creating shareholder wealth, founding MD of Gryphon Minerals Ltd which became an ASX 200 company with a multi-million ounce gold discovery in West Africa, currently Managing Director of Bellevue Gold Limited (ASX: BGL).
Management		
Michael Naylor	Joint Company Secretary	Chartered Accountant with over 20 years experience in corporate advisory and public company management, currently an Executive Director and / or Company Secretary of two highly successful battery metal resource companies located in Australia and Canada.
Jamie Byrde	Joint Company Secretary	Chartered Accountant with over 14 years experience in accounting, company secretarial and corporate advisory roles specialising in Financial Accounting and Reporting and Corporate Governance, currently the Company Secretary for Venture Minerals Limited and Alicanto Minerals Limited.
Dr Stuart Owen	Exploration Manager	BSc & PhD in Geology with over 20 years experience in mineral exploration, Senior Geologist in the team that discovered the Paulsens Mine (+1Moz) and as an Exploration Manager at Adamus discovered the Southern Ashanti Gold deposits (+2Moz) and at Venture discovered the Mt Lindsay Tin- Tungsten-Magnetite deposits.





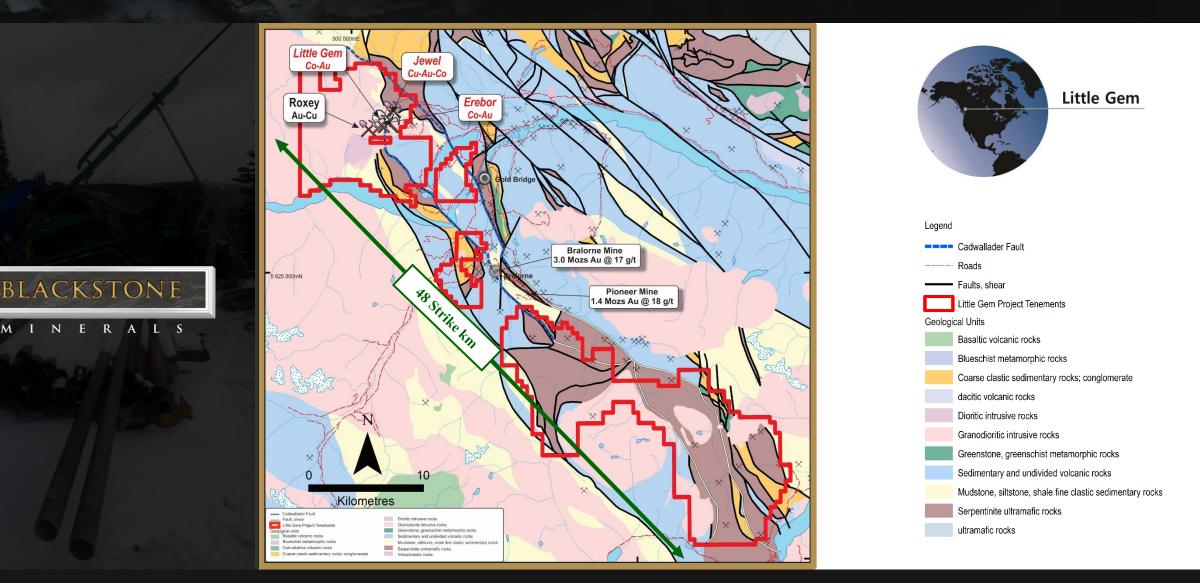
# **Appendix: BC Cobalt Project Location**

World class geology in a tier one mining jurisdiction



## **Appendix: BC Cobalt Belt Geological Setting**

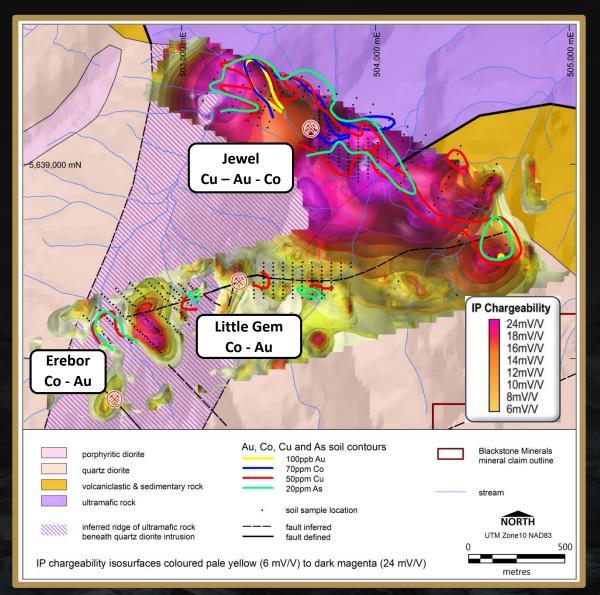
Dominant land position along strike from major historic gold mines



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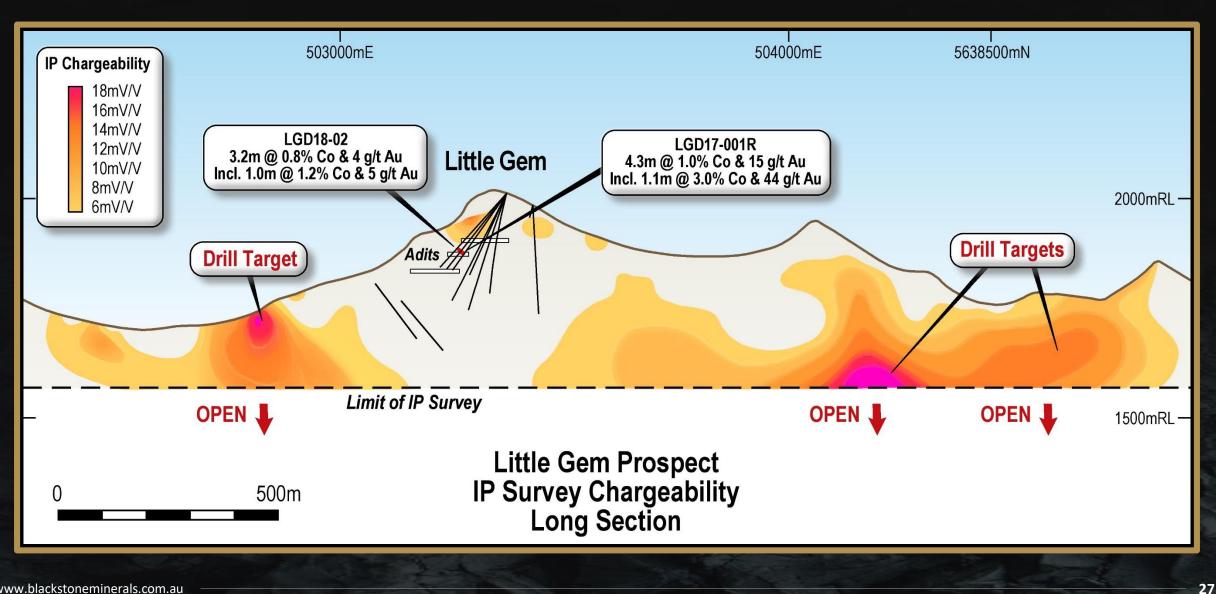
## Appendix: Copper, Gold and Cobalt Soil Contours at BC Cobalt Project

Multiple new targets with Copper, Gold and Cobalt soil anomalies coincident with IP signatures typical of sulfide bearing bodies



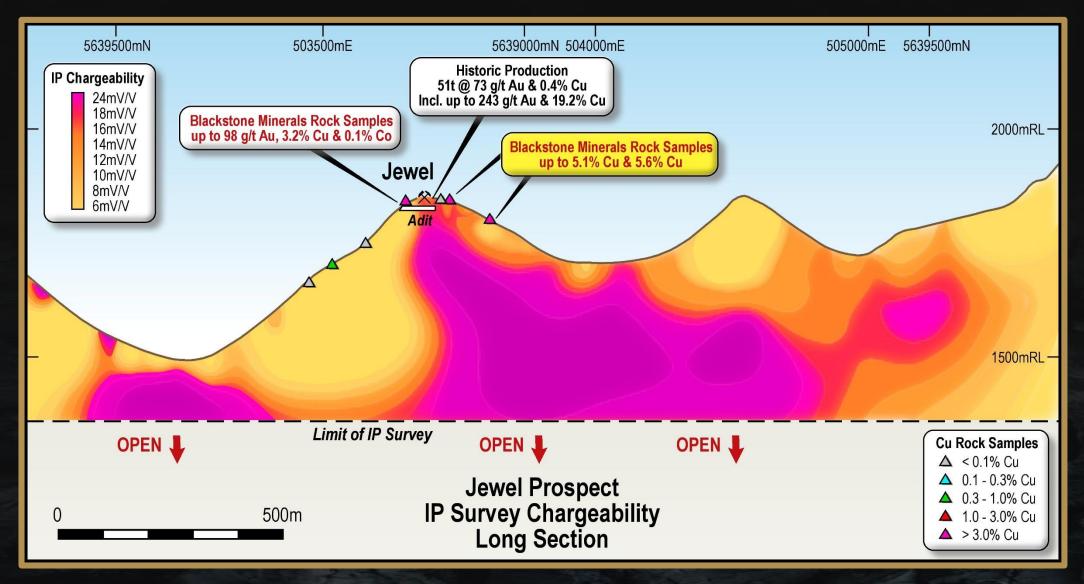
## **Appendix: IP Survey Chargeability Contours at Little Gem Prospect**

IP Survey confirms multiple new targets with Chargeability and Resistivity signatures typical of sulfide bearing bodies



## **Appendix: IP Survey Chargeability Contours at Jewel Prospect**

IP Survey confirms multiple new targets with Chargeability and Resistivity signatures typical of sulfide bearing bodies



BC Cobalt geology is analogous to the world class Bou-Azzer primary Cobalt district

- Bou-Azzer in Morocco has Co-Ni Arsenide deposits with Au & Ag and is currently one of the world's only operating primary cobalt mines;
- Structurally controlled and concentrated mainly within quartz-carbonate veins along boundaries of Neoproterozoic Serpentinised mantle peridotites, quartz diorite and Precambrian volcanic rocks;
- More than 50 deposits in the district, mined over 75 years with production of over 100kt of cobalt, 1,000's of tonnes of silver and tens of tonnes of gold;
- Current production of ~2ktpa of cobalt at an estimated head grade of 1.3% cobalt and up to ~3-4 g/t gold, total current resources and reserves of 17,800 tonnes of cobalt.

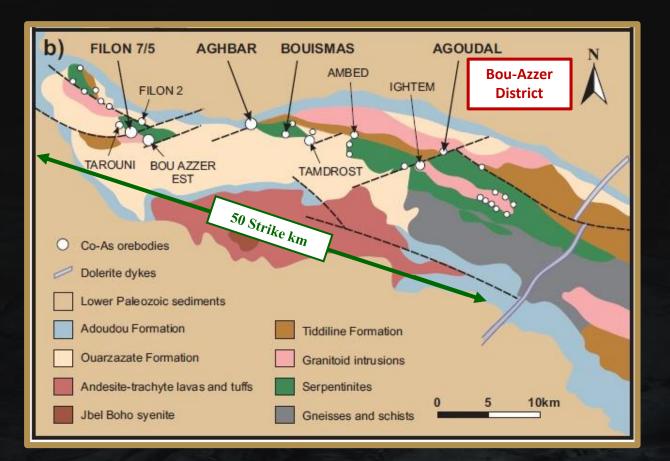


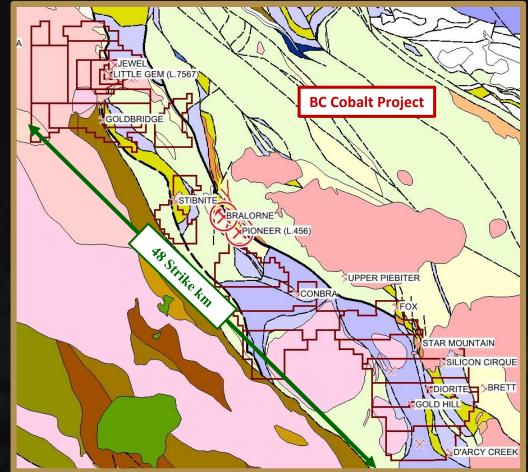
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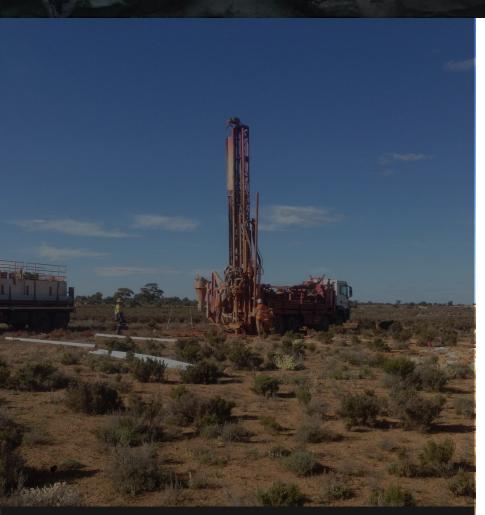
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## **Appendix: Bou-Azzer District vs BC Cobalt Project**

Bou-Azzer is a world class mining district with over 50 Cobalt deposits and 75 years of Cobalt production and the Bridge River Mining Camp is a world class mining district which has never been explored for cobalt or base metals





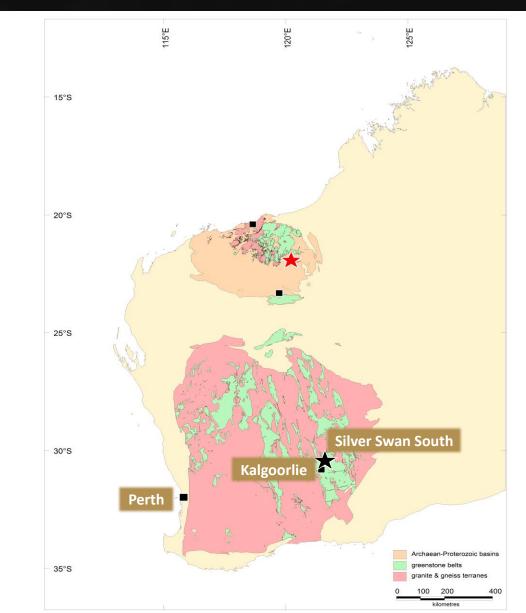




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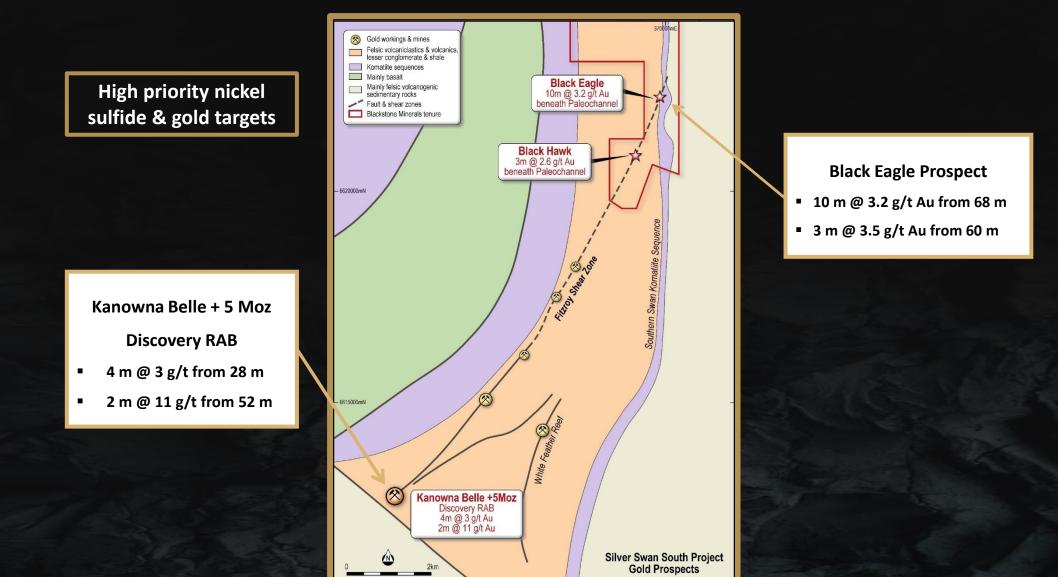
# **Appendix: Silver Swan South Project**

Nearby world class gold and nickel mines



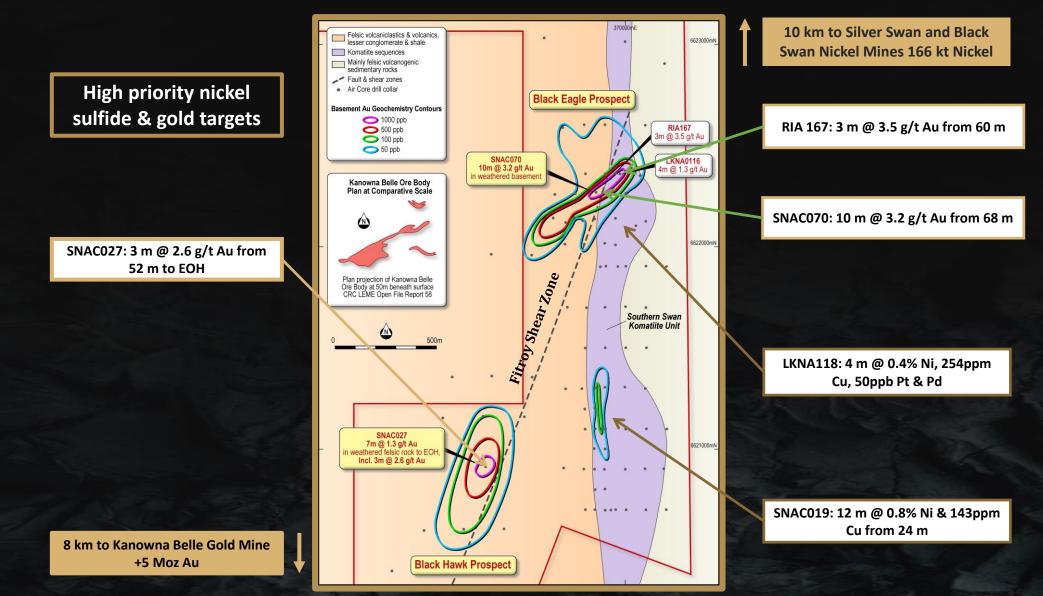
## **Appendix: Silver Swan South Emerging Gold Discovery**

Along strike of the world class Kanowna Belle Gold Mine (+5 Moz gold endowment)



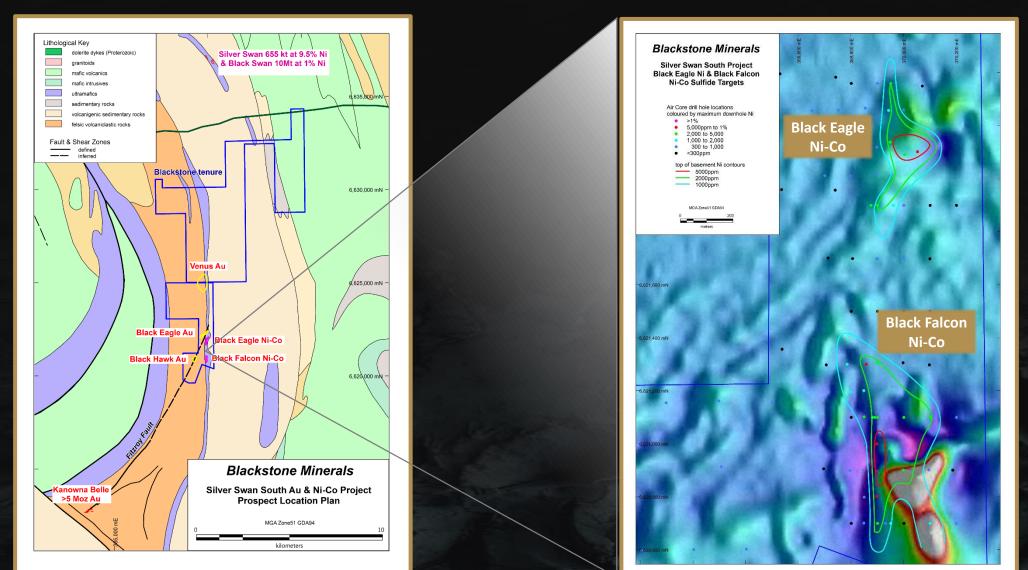
## **Appendix: Silver Swan South Gold & Nickel Targets**

Actively exploring for gold and nickel sulfides



## **Appendix: Silver Swan South Nickel-Cobalt sulfides**

Nickel-Cobalt Sulfide targets at the Silver Swan South Project near Kalgoorlie, Western Australia



# Forward Looking Statement & Competent Person Statement

This presentation may contain certain forward looking statements and projections regarding:

- estimated, resources and reserves;
- planned production and operating costs profiles;
- planned capital requirements; and
- planned strategies and corporate objectives.

Such forward looking statements/projections are estimates for discussion purposes only and should not be relied upon. They are not guarantees of future performance and involve known and unknown risks, uncertainties and other factors many of which are beyond the control of Blackstone Minerals Limited. The forward looking statements/projections are inherently uncertain and may therefore differ materially from results ultimately achieved.

Blackstone Minerals Limited does not make any representations and provides no warranties concerning the accuracy of the projections, and disclaims any obligation to update or revise any forward looking statements/projects based on new information, future events or otherwise except to the extent required by applicable laws.

The information in this report that relates to Exploration Results is based on information compiled by Mr Andrew Radonjic, who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Andrew Radonjic is a full-time employee of the company. Mr Andrew Radonjic 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 Andrew Radonjic consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

### No New Information or Data

This presentation contains references to Exploration Results and Exploration Targets, all of which have been cross referenced to previous market announcements made by the Company. The Company confirms that it is not aware of any new information or data that materially effects the information in the said announcement.



### M I N E R A L S

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