# Minerals Explorer in South Korea

#### Gold Coast Showcase 13 June 2012



Stonehenge

METALS LTD

ASX:SHE

### Forward-looking and Competent Person Statement



Certain statements contained in this presentation constitute forward looking statements. Such forward-looking statements involve a number of known and unknown risks, uncertainties and other factors which may cause the actual results, performance of achievements of Stonehenge Metals Limited (the Company) to be materially different from actual future results and achievements expressed or implied by such forward-looking statements. Investors are cautioned not to place undue reliance on these forward-looking statements.

This presentation may describe Measured, Indicated and/or Inferred Resources. Inferred Resources have a greater amount of uncertainty as to their existence and greater uncertainty as to their economic feasibility. It cannot be assumed that all or any part of any Inferred Resource will ever be upgraded to a higher category. The potential quantity and grade of the Daejon Uranium Project Conceptual Exploration Targets is conceptual in nature and there has been insufficient exploration to define a Mineral Resource and it is uncertain if further exploration will result in the determination of a Mineral Resource.

Exploration is an inherently risky proposition and investors are advised that most exploration projects fail to identify economic resources. The Company has at present not confirmed the economic viability of any resources at the project.

The Company plans further drilling programs and studies with the objective of confirmation of any deposits and ultimately completing a feasibility study to demonstrate the economics of the resources.

The information contained in this ASX release relating to Mineral Resources has been compiled by Mr. Michael Andrew of Optiro Ltd. Mr. Andrew is a Member of The Australian Institute of Mining and Metallurgy. Mr. Andrew has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Persons as defined in the 2004 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Andrew consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

#### **Corporation Information**



#### **Corporate Structure**

- Shares on Issue: 424,597,785
- Market Cap: ~A\$16 million
- Cash Reserves: ~A\$ 4 million
- Debt: Nil



#### Top 20 hold 45%

## **Company Structure**





#### **Directors and Management**



#### **Directors**

- Warren Staude Chairman
- Richard Henning Managing Director
- Bevan Tarratt Non Executive Director
- **Bob Cleary** Non Executive Director

#### Management

- Young Yu Chief Executive, Korea
- **Tony Chamberlain** Manager, Operations and Metallurgy
- Alex Aaltonen Chief Geologist

#### South Korea – Country Summary





#### **Demand for Power is Increasing**



#### Global annual electricity consumption



#### Korean annual electricity consumption



#### Korea Requirements





Stonehenge Metals aiming to supply 25% of South Korea's domestic uranium

#### **Uranium Demand**





#### **Uranium Demand**





#### **Uranium Demand**





#### The Majors are Moving



## **bhpbilliton** predicts 154 mlbs shortfall in supply in the next 20 years



invests strongly in the uranium sector putting \$300m into ERA; and outbids Cameco for Hathor Exploration



announces the need to double inventory by 2020



## Security of Supply becoming Paramount





#### Seoul set to sharply boost energy self-sufficiency (Korea Times, 16th February, 2012)

**Summary**: South Korea on Thursday announced an ambitious plan to nearly triple its self-supply rate of oil and natural gas amid pressure to cut its crude imports from Iran. The country's so-called self-sufficiency rate of oil and natural gas stood at 13.7 percent of its total consumption as of the end of last year, falling a tad short of its earlier target of 14 percent, according to the Ministry of Knowledge Economy.

Along with its efforts to improve its energy self-sufficiency, the country will work to increase its self-supply of six key mineral resources that have been identified critical to the country's economy from the current 29% to 43% in 2020.

They are bituminous coal, **uranium**, iron ore, copper, zinc and nickel.

South Korea aims to directly control 43% of its uranium requirements by 2020

## South Korea Understands Uranium





#### **Project Location**





- Daejon Project largest known uranium resource in South Korea
- 65 Mlbs contained uranium (Inferred Resource) with significant upside exploration target 17-39Mlbs U<sub>3</sub>O<sub>8</sub> at Yokwang
- Daejon: focus of current work
- 25-year mining rights
- Opportunity to provide Korea with 25% of Uranium requirement annually

Prospect	Classification	Tonnes(Mt)	Grade V2O5 (ppm)	Contained U <sub>3</sub> O <sub>8</sub> (Mlbs)
Yokwang	Target	15 - 59	300-500	17-39Mlbs

<sup>1</sup>The potential quantity and grade of the exploration target is conceptual in nature and there has been insufficient exploration to define a Mineral Resource. It is uncertain if further exploration will result in the determination of a Mineral Resource

#### **Daejon Project**





#### Daejon Project – Chubu Adit





#### **JORC Compliant Resources**



#### **Daejon Project: Inferred Resource**

Prospect	Classification	Tonnes (Mt)	Grade eU <sub>3</sub> O <sub>8</sub> (ppm)	Contained U <sub>3</sub> O <sub>8</sub> (Mlbs)
Chubu	Inferred	46	330	34
Yokwang	Inferred	39	310	26
Kolnami	Inferred	7	340	5
Total		92	320	65

- Key goal to upgrade resource by:
  - Continuing re-evaluation of existing core / data files
  - Collect samples from core for comprehensive chemical analysis
  - Complete rigorous geological interpretation and resource estimation
  - Identify priority drill targets

### Vanadium Overview



#### Daejon Project: Vanadium target<sup>1</sup>

Prospect	Classification	Tonnes(Mt)	Grade V2O5 (ppm)	Contained V2O5 (Mlbs)
Chubu	Target	70 – 90	250-350	385-695

<sup>1</sup>The potential quantity and grade of the exploration target is conceptual in nature and there has been insufficient exploration to define a Mineral Resource. It is uncertain if further exploration will result in the determination of a Mineral Resource

- Upgrade definition by:
  - Continuing reconnaissance surveying
  - Identify priority drill targets
  - Assay historical diamond drill core
- Vanadium Market:
  - Vanadium demand forecast to grow by 6% pa
  - Current global market 65,000tpa V<sub>2</sub>O<sub>5</sub>
  - Vanadium price US\$6.5/lb V<sub>2</sub>O<sub>5</sub>

### Yokwang Large Exploration Upside





- Yokwang offers significant exploration upside
- Yokwang has a current exploration target<sup>1</sup> of 17-39Mlbs U<sub>3</sub>O<sub>8</sub>
- Additional resource upside along strike
- Exploration tenements extended to secure area
- Mine modelling indicates
  12 years of open cut ore at strip ratio of 2.5:1
- Drilling targets identified

<sup>1</sup>The potential quantity and grade of the exploration target is conceptual in nature and there has been insufficient exploration to define a Mineral Resource. It is uncertain if further exploration will result in the determination of a Mineral Resource

## KIGAM Core Storage Facility

- 36,000 metres of mineralised historical core stored at KIGAM
- Inspected 26 of the 225 historical drill cores
- Negotiating access to cut and assay the core to confirm U, V and Mo grades
- Assay results are expected to increase the confidence level of the existing JORC inferred uranium resource
- High grade mineralised areas will be identified for follow-up drilling





## Exploration Program Summary



- Undertake exploration drilling campaigns at Chubu and Yokwang
- Increase uranium resource and locate high grade zones
- Deliver maiden vanadium resource
- Access historical core at KIGAM to increase confidence of global resource for uranium and vanadium
- Investigate occurrence and grade of Graphite at Gwesan



## Flowsheet Development Uranium-Vanadium Metallurgy



#### Uranium Extraction

- Uranium present as uraninite (UO<sub>2</sub>)
- Dilute acid tank leach at pH 2.0 for 1-2 hours
- 10-20 kg/t H<sub>2</sub>SO<sub>4</sub> & 20-40 kg/t peroxide (30% w/w)

#### Vanadium Extraction

- Vanadium has equal in-ground value when compared to uranium
- 70% extraction equates to net opex of US\$14 / lb U<sub>3</sub>O<sub>8</sub>
- Vanadium mineralisation more refractory than uranium

- = Simple metallurgy
- = >90% uranium extn.
- = Low reagent consumption

- = Vanadium can not be ignored
- Vanadium recovery important to project economics
- = More intensive processing required to extract

## Flowsheet Development Tank Leach



- Modified tank leach process being evaluated
- Consistently achieving 50% vanadium and >90% uranium extraction
- AMEC Minproc has completed a process review:
  - Need to recycle excess acid from vanadium leach
  - Confirm if vanadium re-precipitation is occurring above 1.0 g/L
  - Investigate whole ore roasting prior to leaching



## Flowsheet Development Ore Beneficiation



- Roasting of ROM ore may provide significant benefits:
  - Ore contains 10-40% carbon
  - Increase head upgrade from 320 to 460ppm  $U_3O_8$  @ 30% carbon
  - No fuel required as carbon will burn
  - Removal of carbon will lower grinding index, ie low mill power
  - More importantly reagent consumption should decrease, OpEx.
  - Capex will decrease overall as plant will be about 20-30% smaller



#### Environmental Permitting Approvals Process and Baseline Monitoring



- Korean Mining Act requires two stage approval process:
  - I. Environmental Scoping Document (ESD)
  - II. Environmental Impact Statement (EIS)
- Environmental Pre-scoping Study awarded to ERM
- First season of baseline monitoring data has been collected (need all four seasons before submission of EIS)
- Environmental Radiation Management Plan (ERMP) implemented
- Future baseline monitoring work will include:
  - Ground water monitoring bores to be installed across project area
  - Baseline radiation survey of proposed mining area
  - Social Impact Study to commence

#### **Commitment to Best Practice**





- Stonehenge has engaged a team that is highly experienced in managing uranium projects
- Team has in depth experience in uranium exploration, project evaluation / design / construction and operation
- The Company's personnel have been involved in the development / operation of other world class projects

#### Summary



- Continue to advance the Daejon project towards development
- Steady news flow expected over coming 12 months
  - ✓ Exploration drill results from Yokwang & Chubu
  - ✓ Uranium resource upgrade
  - ✓ Maiden vanadium resource
  - ✓ Firm up process flowsheet
  - ✓ Generate scoping level capital and operating estimate
  - ✓ Commence environmental approvals process



## Stonehenge

Level 8, 225 St George's Tce Perth, Western Australia 6000

'Stonehenge aiming to meet 25% of Korea's domestic uranium fuel requirements'