

**BOSS**  
ENERGY LTD

# AUSTRALIA'S NEXT URANIUM PRODUCER

*BELL POTTER  
UNEARTHED CONFERENCE  
10 February 2022*

ASX: BOE | OTCQB: BQSSF |  @BOSS\_ENERGY



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The information in this document relating to the Enhanced Feasibility Study ("EFS") is extracted from the announcement entitled 'Updated Feasibility Study identifies lower costs and increased financial returns' dated 21<sup>st</sup> June 2021. Boss Energy confirms that all the material assumptions underpinning the production targets, and forecast financial information derived from the production targets, continue to apply and have not materially changed.

As the EFS utilises a portion of Inferred Mineral Resources, the ASX Listing Rules require a cautionary statement to be included in this presentation. The EFS is based on a Mineral Resources Estimate in accordance with JORC guidelines 2012 (ASX: 149% Increase in Measured and Indicated Resources at Honeymoon date 25 February 2019). The Company advises that the EFS uses a portion of Inferred Resources; in the first 3 years (less than 1%), in the first 5 years (5%) and over the 11-year life of mine (19%). The Company confirms that the use of Inferred Resources is not a determining factor to the Honeymoon Project's economic viability. There is a low level of geological confidence associated with Inferred Resources and there is no certainty that further exploration or evaluation work will result in the determination of Indicated Resources or that the production targets reported in this announcement will be realised.

## REFERENCE TO PREVIOUS ASX ANNOUNCEMENTS

The mineral resource estimate and exploration target in this announcement were reported by the Company in accordance with listing rule 5.8 and 5.7 (respectively) on 25 February 2019 and 25 March 2019, respectively. The Company confirms it is not aware of any new information or data that materially affects the information included in the previous announcement and that all material assumptions and technical parameters underpinning the estimates in the previous announcement continue to apply and have not materially changed.

In relation to the exploration target, this does not include areas of the existing mineral resource and the potential quantity and grade reported are conceptual only in nature. Insufficient exploration has been conducted to estimate a mineral resource and it is uncertain whether future exploration will lead to the estimation of a mineral resource in the defined areas.

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# THE OPPORTUNITY FOR BOSS

Opportunity to become Australia's next Uranium producer and build a Tier 1 operating platform

- **Ability to commence production <12 months from FID to produce 2.45Mlbs U3O8 p.a. within 3 years**
- **Low upfront capital cost of only US\$80M to restart enhanced operations**  
*(benefit from existing infrastructure with sunk cost of \$170m)*
- **Low operating cost of LOM** average AISC of US\$25.6/lb and Cash Costs of US\$18.50/lb
- **Significant upside beyond initial EFS mine plan**, with ~50% of resource yet to be incorporated
- **Located in tier one jurisdiction** of South Australia which has a strong history of uranium mining
- **Fully permitted** with all Native Title and Environmental Agreements in place, 3.3Mlb U3O8 p.a. Export Permit
- **Uranium is lowest carbon energy source & ISR least carbon intensive**, minimal disturbance mining method
- **Proven development and operating team in place**



# FIRST MOVER ADVANTAGES

Significant advantage being one of the first movers into production in the current rising Uranium market



## Front of line to secure strong long term contracts with Tier 1 Utilities

- Aligns timing with Utilities' requirements and provides confidence of supply



## Ability to capture maximum benefit of rising Uranium prices

- Long development lead times in Uranium industry mean late-comers may not capture full benefit or be able to secure the development capital
- Boss not dependent on high uranium prices – profitable at spot



## Mine life of 11 initial years, 36Mlb resource outside initial mine plan, and further exploration upside will see Boss produce through a number of Uranium cycles going forward



## Provides a strong initial platform to build further growth

- Able to secure best talent in uranium space
- Cash flow generation to fund organic and inorganic growth opportunities
- Potential to become a multi-asset producer with associated benefits



# URANIUM PRICE HISTORY

Increased activity in the spot market has led to a rapid increase in spot price



Source: TradeTech, Numerco, UxC, LLC: [www.uxc.com](http://www.uxc.com)



# CORPORATE OVERVIEW

## BOARD OF DIRECTORS

<b>Non-Executive Chairman</b>	Peter O'Connor	(NST)
<b>Managing Director &amp; CEO</b>	Duncan Craib	(Husab, Kalahari)
<b>Non-executive Director</b>	Bryn Jones	(Heagthgate, Laramide)
<b>Non-executive Director</b>	Wyatt Buck	(Cameco, PDN, FQM)

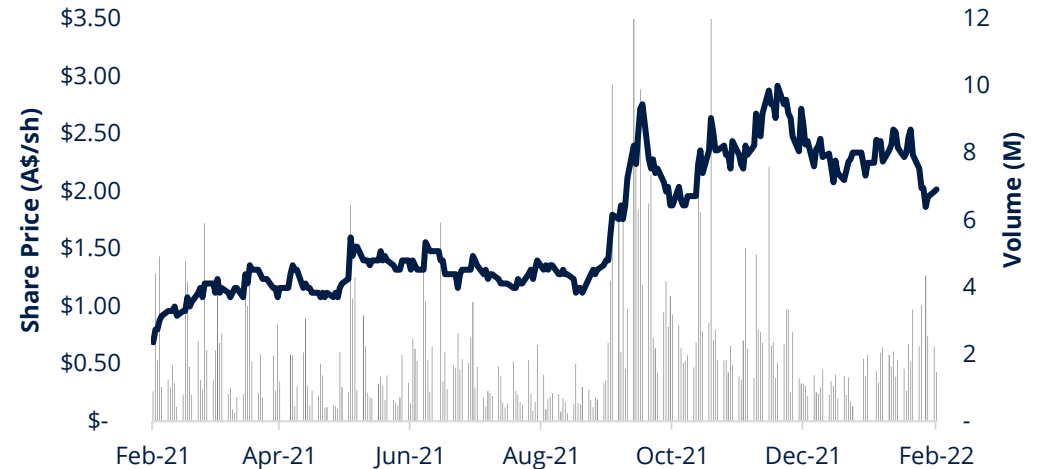
## KEY MANAGEMENT & CONSULTANTS

<b>Strategic Adviser</b>	Sashi Davies	(RTZ, EXT, Husab)
<b>Project Manager</b>	Jonathon Owen	(FQM)
<b>Processing Manager</b>	Trevor Robinson	(Husab)
<b>GM Wellfield &amp; Resources</b>	Ben Jeuken	(Heathgate, Uranium 1)
<b>Geology Manager</b>	Jason Cherry	(VMY, Uranium 1)

## BROKER & ANALYST COVERAGE

<b>Aitken Murray</b>	<b>Macquarie</b>
<b>Bell Potter</b>	<b>Sprott Capital</b>
<b>Canaccord</b>	

## SHARE PRICE PERFORMANCE



## KEY METRICS

	Shares (M)	Value (A\$M)
Ordinary Shares	286*	
<b>Market Capitalisation (A\$2.12/sh)</b>		<b>605</b>
Physical Uranium		79
Cash (31 <sup>st</sup> Dec 2021)		18
<b>Enterprise Value</b>		<b>508</b>

\*Excludes ~13.4m options with various exercise prices





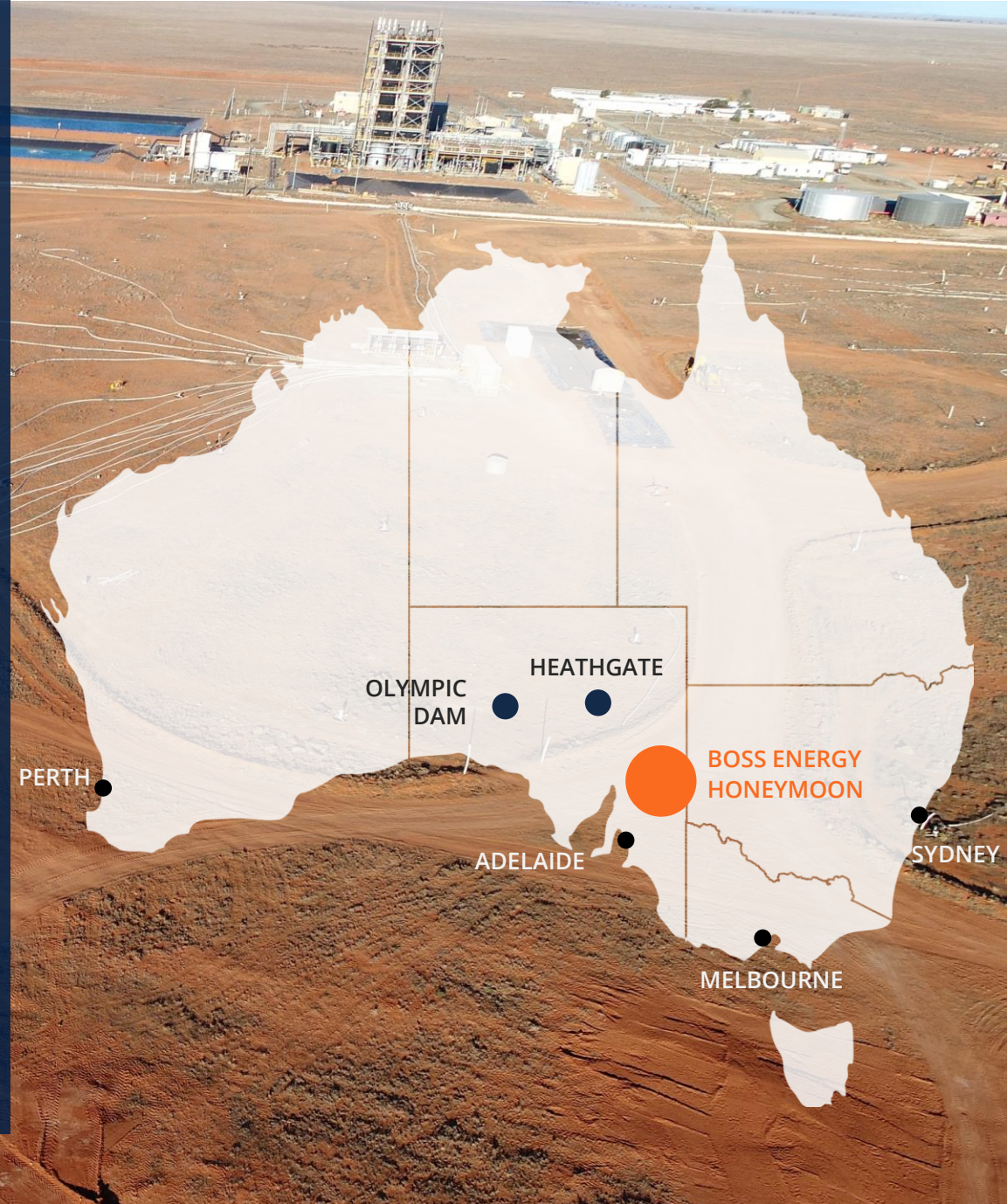
# JORC RESOURCES ~ 71.6Mlb U<sub>3</sub>O<sub>8</sub>

- 71.6Mlb U<sub>3</sub>O<sub>8</sub> JORC Resource<sup>1</sup> at an average grade of 620ppm U<sub>3</sub>O<sub>8</sub>
- The Honeymoon Re-start Area (HRA) contains 36Mlb U<sub>3</sub>O<sub>8</sub>
  - ML 6109 sits on top of the HRA
  - Shallow mineralisation at 90 - 120m depth
- A further 36Mlbs sits outside the HRA on 2 satellite domains
- In addition to the JORC Resource, Honeymoon has a substantial Exploration Target<sup>2</sup> of 58Mlbs to 190Mlbs at grades up to 1,080ppm U<sub>3</sub>O<sub>8</sub>

Classification	Ore (Mt)	Grade (ppm U <sub>3</sub> O <sub>8</sub> )	Contained U <sub>3</sub> O <sub>8</sub> (kt)	(Mlb)
Measured	3.1	1,100	3.4	7.6
Indicated	18.4	630	12.0	25.5
Inferred	30.9	570	18.0	38.5
<b>Total</b>	<b>52.4</b>	<b>620</b>	<b>32.5</b>	<b>71.6</b>

<sup>1</sup> Refer ASX announcement 25 February 2019

<sup>2</sup> Refer ASX announcement 25 March 2019. The potential quantity and grade of the Exploration Target is conceptual in nature. There has been insufficient exploration to estimate a Mineral Resource and it is uncertain whether future exploration will result in the definition of a Mineral Resource





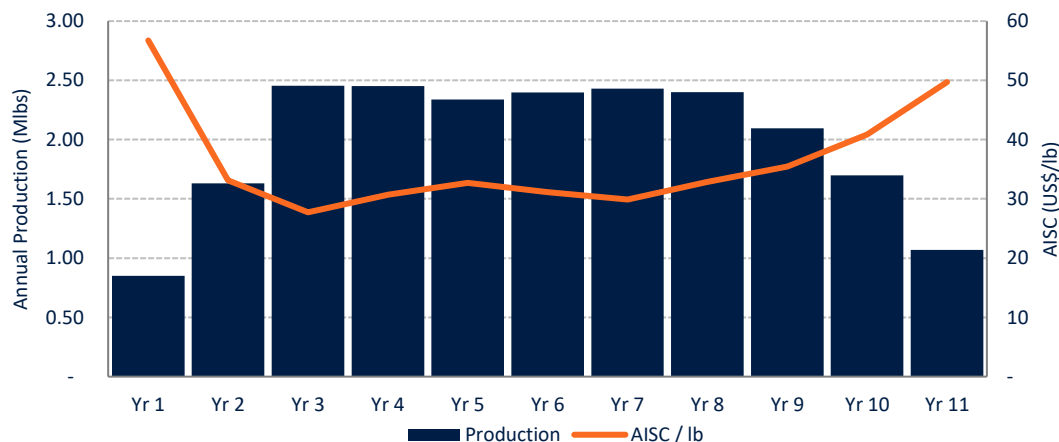


# EFS FINANCIAL HIGHLIGHTS

Honeymoon's low cost of production delivers robust financial returns

<b>US\$1.28B REVENUE</b>	<b>US\$25.62/lb AISC</b>
<b>62% EBITDA Margin</b>	<b>Low US\$80M Capital Cost</b>

## PRODUCTION SUMMARY



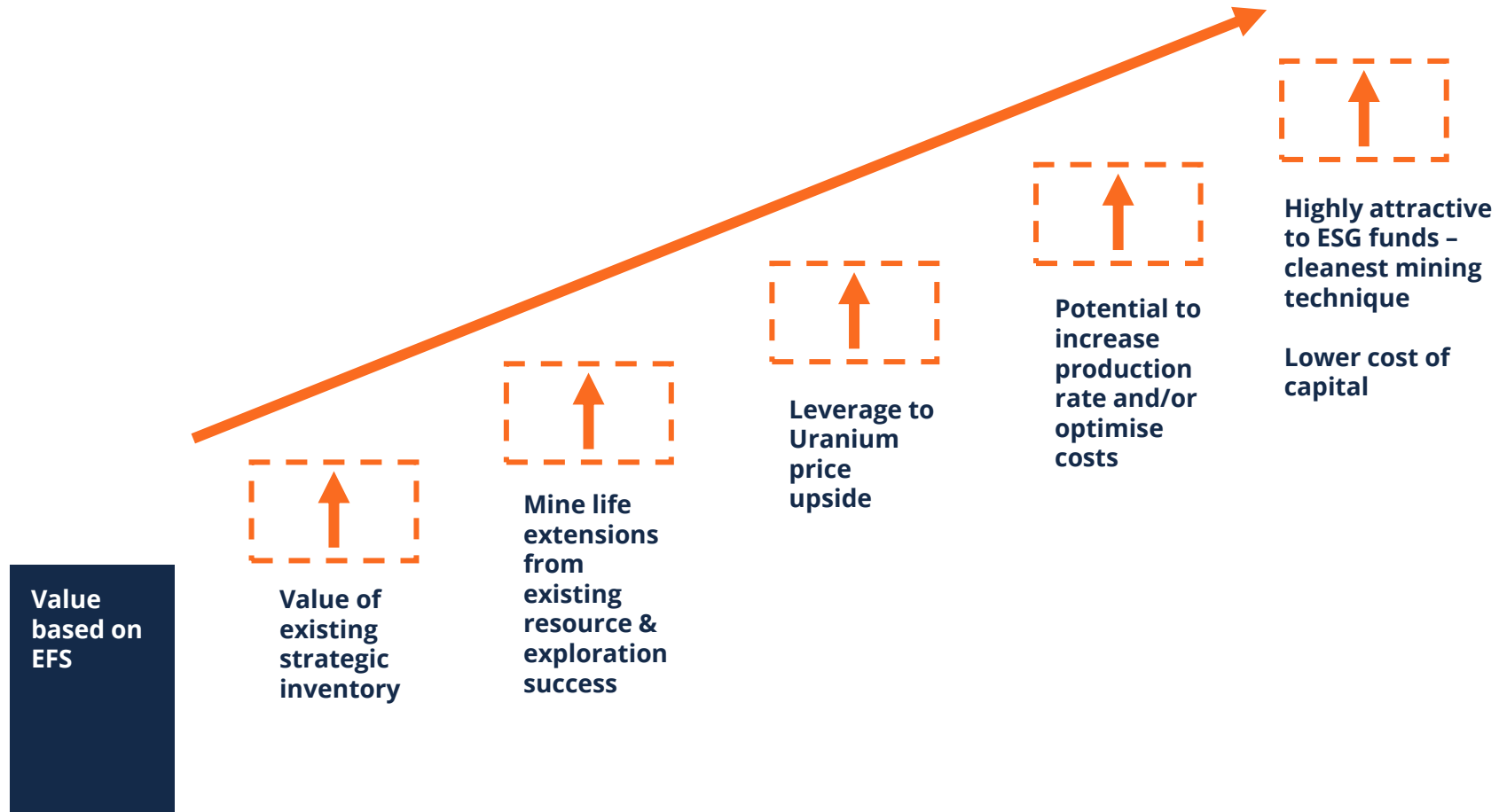
KEY STUDY OUTCOMES		2021 EFS
<b>Physical Summary</b>		
Life of Mine	Years	11
U <sub>3</sub> O <sub>8</sub> Production	Mlb	21.81
<b>Financial Summary</b>		
NPV <sub>8%, Pre-tax</sub> (US\$60/lb)	A\$M	412
NPV <sub>8%, Pre-tax</sub> (US\$80/lb)	A\$M	729
IRR <sub>Ungeared, Pre-tax</sub>	%	47.1%
Revenue	US\$M	1,279
Free Cash Flow (Pre-tax)	US\$M	580
EBITDA Margin	%	62%
<b>Operating Costs</b>		
Cash Cost	US\$/lb U <sub>3</sub> O <sub>8</sub>	18.5
All In Sustaining Cost	US\$/lb U <sub>3</sub> O <sub>8</sub>	25.6
All In Cost	US\$/lb U <sub>3</sub> O <sub>8</sub>	31.9
<b>Capital Costs</b>		
Re-start	US\$M	60.2
Additional IX Columns	US\$M	19.8
<b>Total</b>	<b>US\$M</b>	<b>80.0</b>





# SIGNIFICANT UPSIDE POTENTIAL

Substantial scope to add significant value and mine life beyond initial EFS mine plan



*Not to scale and illustrative only*



## IN-SITU RECOVERY ESG BENEFITS

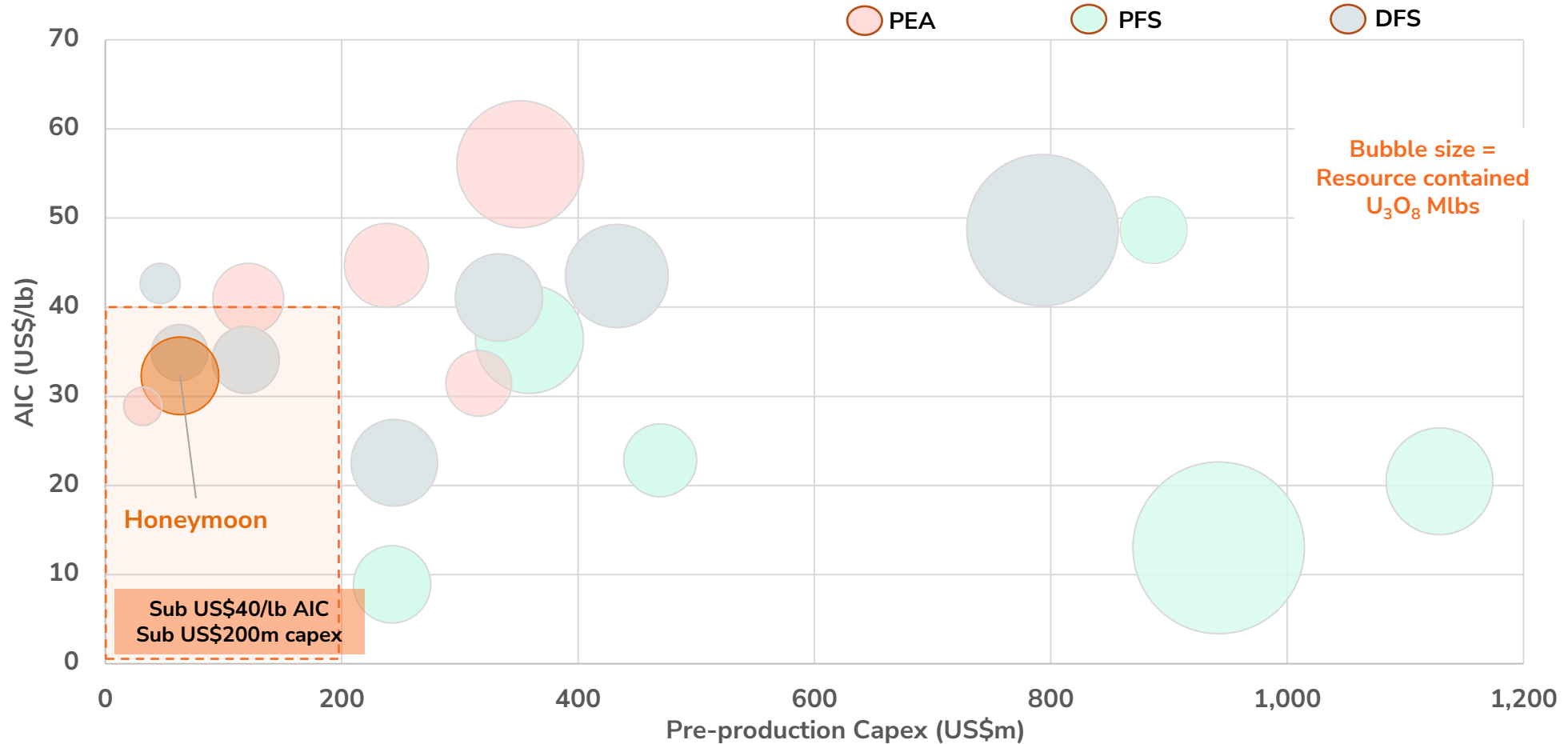
ISR mining has 19-28% lower energy requirements and produce just 17-32% GHG emissions compared to conventional mining

- **Low impact in-situ recovery (ISR)** mining method employed on Honeymoon
- **ISR has 19-28% lower energy requirements and produce just 17-32% GHG emissions** vs conventional mining
- **ISR, unlike conventional mining,** results in minimal, temporary ground disturbance within mining areas
- **Honeymoon is advancing to IX technologies,** improving groundwater quality, during and after mining
- **Routine environmental assessments** are undertaken on Honeymoon as part of a strict monitoring program
- **Government quarterly and annual reporting** demonstrates little to no impact to the environment
- **BOE has partnered with Heathgate Resources and CSIRO** on a new groundwater monitoring system



# CAPEX & ALL IN COST

Well positioned vs other projects in terms of operating cost and capital intensity



Source: Sternship Advisers research





## **SUMMARY**

Focused on building long term shareholder value

- **Poised to become next Uranium producer in Australia**
- **Quality low-cost project in lowest carbon energy source using cleanest ESG-friendly mining technique**
- **First mover advantage provides ability to maximise benefit from rising market**
- **Scope to add significant value and mine life beyond initial EFS mine plan**
- **Long term strategy to build a strong multi-asset platform, leveraging best-in-class operating team**



# APPENDIX



# BOSS ENERGY - BOARD OF DIRECTORS

Highly credentialed team with a proven track record in the uranium industry



**Peter O'Connor**

Non-Executive Chairman

Mr O'Connor has extensive global experience in the funds management industry and has worked with public and private companies in developed and emerging economies. He was co-founder, director and deputy chairman of IMS Selection Management Ltd, which had \$10 billion under management or advice from 1998-2008. Following this, he was deputy chairman of FundQuest UK Ltd, with \$10 billion under management.

Mr O'Connor was a Non-Executive Director of ASX 100 company Northern Star Resources Ltd (ASX: NST) from 2012 to 2021, during which NST grew its market cap significantly to >\$10 billion. He is also a Non-Executive Director of Blue Ocean Monitoring Limited.



**Duncan Craib**

Managing Director & CEO

Mr Craib (CA) has held senior executive roles with international mining operations in Australia, United Kingdom, Namibia, and China. For the past 14 years Mr Craib's career has been dedicated to the uranium industry.

Prior to commencing with Boss Energy, Mr Craib served as Finance Director to Swakop Uranium Ltd and was heavily involved in the US\$2.5 billion development and construction of its world class Husab uranium mine in Namibia. Its principal shareholder CGN, is the largest nuclear power operator in China and largest nuclear power constructor world-wide. Husab was commissioned in 2016, upon which Mr Craib was recruited to join Boss Energy.



**Bryn Jones**

Non-Executive Director

Adelaide-based Mr Jones (MMinEng) is an industrial chemist and a Fellow of the Australian Institute of Mining and Metallurgy (AusIMM), with more than 20 years of experience in the Australian uranium industry. He has worked in all aspects of the mining cycle, particularly in uranium in-situ recovery (ISR) and mine development and production.

Mr Jones spent nearly 10 years in roles with ISR uranium producer Heathgate Resources, the owner and operator of the Beverley Uranium Mine in South Australia, Australia's only other producing ISR uranium mine. Mr Jones was previously the Chief Operating Officer of Laramide Resources (ASX/TSX: LAM). Laramide has a portfolio of uranium US-based assets, and Australian project interests.



**Wyatt Buck**

Non-Executive Director

Mr Buck's Uranium experience began with Cameco Corporation, where he was employed for 15 years between 1991-2006 in various roles, culminating as GM of the McArthur River Uranium Mine and Key Lake Mill, the largest Uranium mining operation in the world.

Mr Buck held senior operational roles with Paladin Energy Ltd (ASX: PDN) as General Manager and Managing Director of the Langer Heinrich Uranium Project in Namibia. From 2009 to 2011, Mr Buck was Executive GM Operations at Paladin with direct operational responsibility for its Langer Heinrich and Kayelekera Uranium projects. From 2011, Mr Buck acted as Operations Director with First Quantum Minerals (TSX: FM), overseeing mining operations in Finland, Spain, Turkey, Australia and Mauritania.





# BOSS ENERGY – OPERATING TEAM

Highly credentialed team with a proven track record in the uranium industry

## Sashi Davies

Strategic & Marketing

Ms Davies has more than 35 distinguished years of experience in the international uranium sector. She has extensive marketing expertise and an in-depth uranium knowledge base, having developed long-lasting relationships with international utilities and off-takers. Most recently, she was GM and Director of CGN Global Uranium Ltd and Head of Marketing for Extract Resources Ltd.

In April 2020, Ms Davies was appointed to the World Nuclear Fuel Markets (WNFM) Board of Governors. The WNFM was established in 1974 to promote international commerce in nuclear fuel materials. WNFM membership comprises about 76 companies representing around 21 countries, and is dedicated to facilitating trade of nuclear materials and increasing the availability of accurate, timely and useful price information to the industry.

## Jon Owen

Project Manager

Mr Owen has extensive global experience in project management and development, including 10 years with First Quantum Minerals as a Project Manager on the African Sentinel Copper/Nickel development and more recently in handing over the Cobre Panama Copper/Gold processing plant.

Working in all aspects of the project lifecycle from feasibility to handover for 25+ years, Mr Owen brings a strong focus on self-perform project execution and efficient EPCM utilisation, with >12 years at Outotec managing in the project and engineering offices in Australia and Africa.

## Trevor Robinson

Processing Manager

Trevor has over 35 years of professional experience. His expertise is in the evaluation, design, construction, commissioning and management of metallurgical projects: including uranium, nickel, gold, and copper. His expertise is in study management, design and commissioning of complex hydrometallurgical plants for several delivery companies as a design engineer, discipline lead, project manager, and functional manager. Trevor's significant uranium experience includes NIMCIX ion exchange commissioning and operation in Namibia which is very relevant to Honeymoon. Additional uranium experience has been gained at Olympic Dam, Ranger and Rossing.

## Ben Jeuken

GM Wellfield and Resources

Ben Jeuken, has been appointed General Manager – Wellfield and Resource. Based in South Australia, Mr Jeuken is well known and highly regarded by industry peers in the practical management of groundwater for mining projects specifically In-Situ Recovery (ISR) uranium mining. His considerable experience includes technical engagements on neighbouring ISR uranium producer Heathgate Resources, the owner and operator of the Beverley and Beverley North Uranium Mines located 260km to the west of Honeymoon, and consulting to the International Atomic Energy Agency in developing uranium mining groundwater remediation guidelines.

## Merrill Ford

NIMCIX Ion Exchange

Dr Merrill Ford is an independent metallurgical consultant. He educated as a chemical engineer in South Africa, in mineral process design at Imperial College, London and gained his Ph.D. from the University of Witwatersrand. He spent several years in the field of uranium extraction metallurgy, the design of NIMCIX columns for IX systems, the development of resin-in-pulp technology for gold and uranium and the modelling of uranium leaching.

He joined ANSTO in March 2003 as Manager Special Projects, and from July 2008 until April 2016 he was Manager Metallurgy for Paladin Energy, becoming an independent consultant in 2016. As an independent consultant to the uranium industry Merrill has provided input to feasibility and operational studies for a number of uranium clients, including Cameco, Paladin, Energy Metals, and Swakop Uranium.

## Jason Cherry

Geology Manager

Based in South Australia, Mr Cherry, an experienced uranium exploration geologist of 17 years, has worked on various mining styles of uranium mineralisation, with several years on Honeymoon where he was intricately involved in discovering new uranium resources including the satellite deposits Jasons and Goulds Dam. Mr Cherry subsequently applied his mineral exploration and management experience with uranium companies Vimy Resources and Toro Energy.



# 1.25Mlb U<sub>3</sub>O<sub>8</sub> STRATEGIC PHYSICAL INVENTORY

Boss' investment in strategic uranium inventory complements the Honeymoon Project

Boss paid US\$30.15/lb for inventory in March 2021. At 4 February 2022, spot price of \$43/lb = US\$16.1M book profit.



## OPTIMISE RESTART TIMING

- Provides restart optionality
- Exercise patience in a rising price environment - platform to maximise shareholder value
- Enhanced visibility to uranium price movements



## OFFTAKE FLEXIBILITY

- Boss presents as an attractive counterparty
- Retain off-take contract execution flexibility
- Potential to sell into offtake(s) either before Honeymoon's restart, during commissioning or into the future
- Remain fully leveraged to future price increases



## STRENGTHEN BALANCE SHEET

- Strengthens the balance sheet - leverage to the uranium price
- Delivers optionality - ability to use inventory as collateral to support Honeymoon's future funding requirements
- Provide initial funding towards Honeymoon's re-start capital requirements



## ALIGNED WITH HONEYMOON

- De-risks contract delivery during commissioning phase
- Uranium inventory equates to 6 months of steady state production
- Purchase price lower than Honeymoon's average all-in cost (AIC) of production ~US\$32/lb



## MARKETING ADVANTAGES

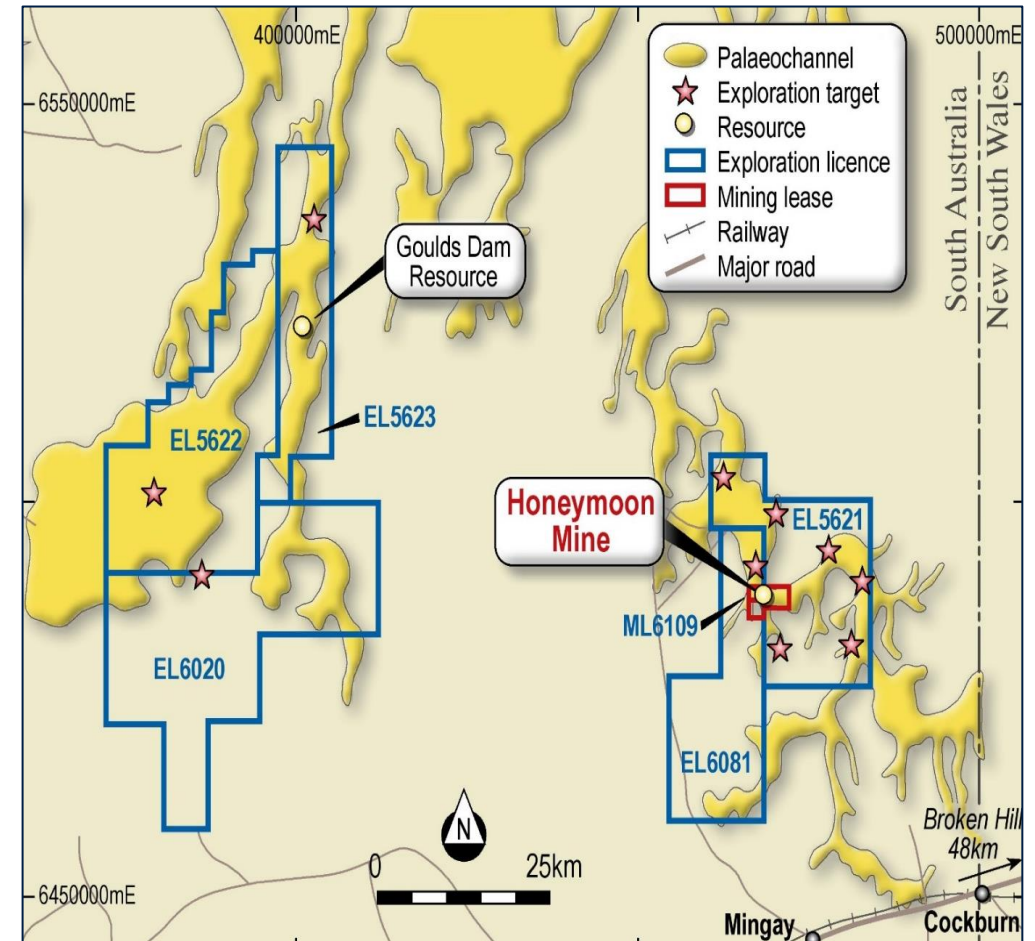
- Significant benefits for uranium marketing
- Strengthening the marketing infrastructure and in-house management expertise for the purchase and trading of uranium
- Ability to layer contracts over time - first mover advantage amongst ASX peers



# GROWING THE U<sub>3</sub>O<sub>8</sub> INVENTORY

Solid base with significant exploration upside

- Boss has a two-pronged strategy for creating shareholder value. This involves preparations for the start of production and cashflow, which will make Boss Australia's next uranium producer, and to grow the uranium inventory through exploration.
  - (i) Target the greenfields exploration targets to further advance current identified zones of potential high-grade mineralisation; and
  - (ii) Upgrading the satellite JORC resources of the Jason's and Gould's Dam Deposits.
- Exploration strategy has significantly expanded the global JORC resource at Honeymoon from 16.6Mlbs to 71.6Mlbs (~433% increase) since project acquisition in Dec. 2015
- Engineering designs allow for the plant to be expanded when the Company exploits known satellite deposits and greenfield exploration potential
- Export Permit of 3.3Mlbs U3O8 p.a. can be increased



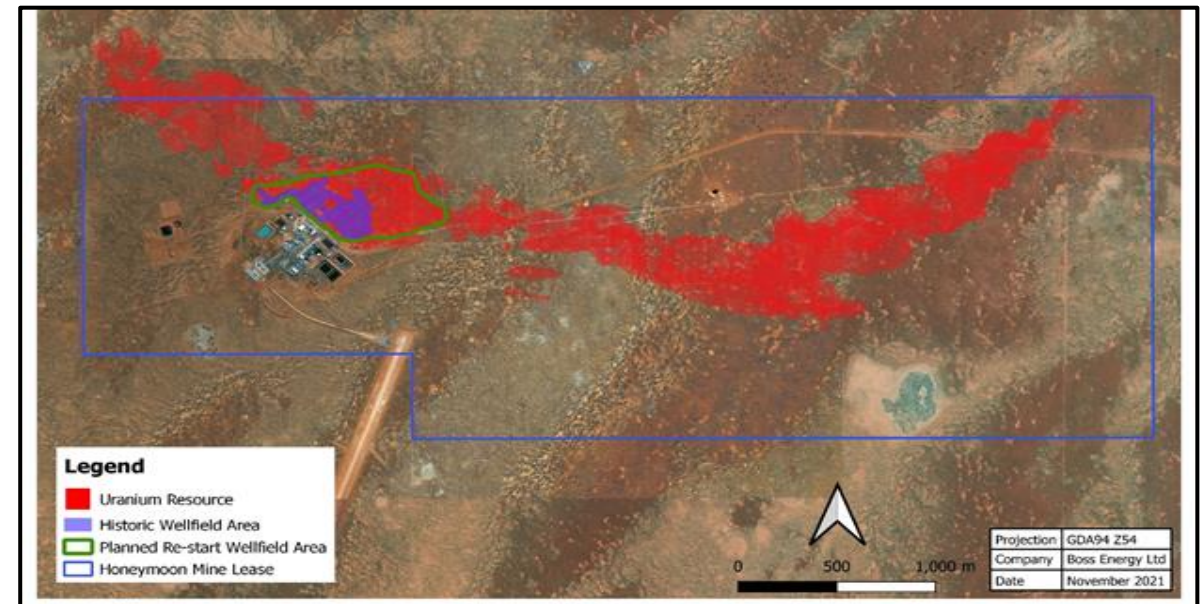
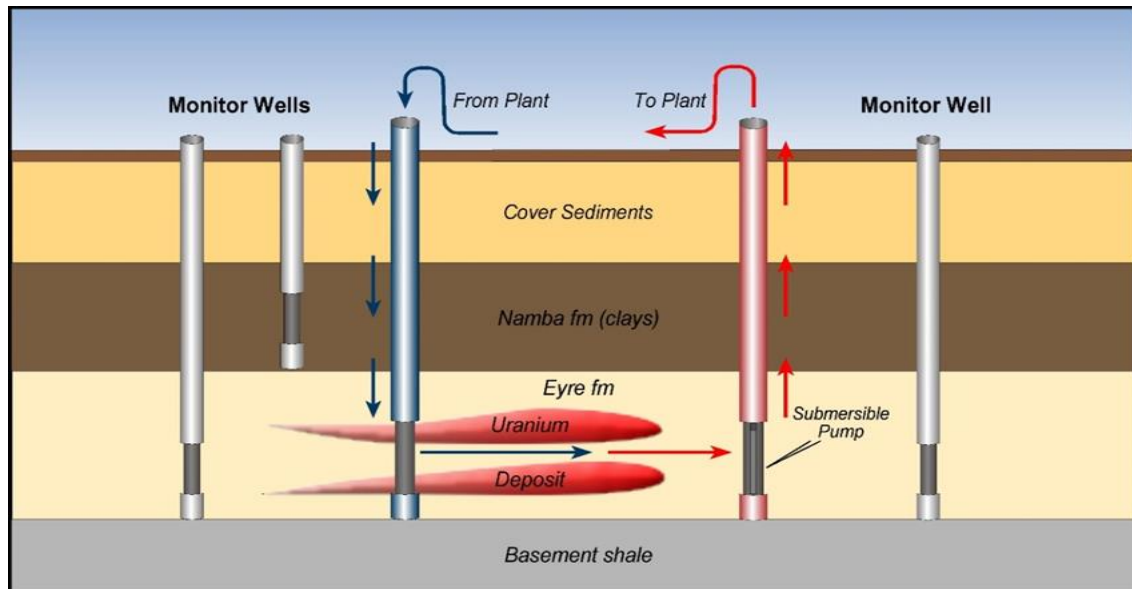




# IN-SITU RECOVERY SCHEMATIC

ISR is a proven cost effective and environmentally encouraged extraction process

- ISR accounts for ~ 60% global uranium mined, and is used in Australia, Kazakhstan, USA
- The ISR process involves the installation of multiple wells in a specific pattern over the orebody
- The leaching wellfield for Boss Energy's restart of the Honeymoon Mine implements industry-standard, proven, injection and extraction well construction methods specifically developed for the ISR industry.
- The design enables the wellfields to optimise the quantity of the uranium mineralisation to be leached and the efficiency of the leaching process.







# HONEYMOON MINE SITE

Sunk Infrastructure Cost of \$170M)

WATER  
TREATMENT  
PLANT

PRODUCTION  
WELL  
FIELDS

CONTROL  
CENTRE

ADMIN  
BUILDINGS

CAMP

PRODUCTION  
FACILITY

WORKSHOP

PLS  
PONDS





# LEARNINGS FROM HISTORICAL PRODUCTION

Issues from historical Uranium One production understood and able to be addressed by Boss

Uranium One process	
Issue	Reasons
Leach fluid stability	pH 2
	Low Fe
	Large bleed treatment
High operating costs	SX only
	High pH / low Fe
	Unstable leachate
Low uranium production	SX only
	Complex operation
Product quality	Organic contamination in SX
	Fe contamination
	Low wash capacity
	Vacuum dryer (UO <sub>4</sub> )
Environmental outcomes	Potential for solvent loss to wellfield

BOE process	
Changes	Impacts
pH 1.5	Increased silica stability
Fe 1.5g/l	Sulphate is “tied-up” and suppresses gypsum formation
Groundwater pre-treatment	Cost effective Ca and Cl removal
Uses IX only	Lower unit operating costs
Revised leach chemistry	Faster leaching and higher feed grade
Stable leachate	Lower wellfield maintenance
Modular NIMCIX	Enable much higher throughput with lower footprint
Simple operation	Less operators per unit production
Eliminated	Improved product safety and marketability
Fe does not load on IX	Lower probability of Fe rejection
Introduced two stage re-pulp	Improved product wash efficiency
Calcine (U <sub>3</sub> O <sub>8</sub> )	Higher packing density Improved customer acceptance
Eliminated	Lower environmental risk and impact





# URANIUM MARKET FUNDAMENTALS

Multiple macroeconomic factors converging in support of a near term price recovery



**The uranium recovery is underway**

After an extended period of low prices



**Net zero carbon emissions**

Stimulating global growth



**Increasing electrification**

Global government policies committed to change



**Lack of alternatives**

To provide clean, reliable, base load power



**US\$60/lb incentive price**

Required for majority of new mines to be viable



**Inventories have fallen rapidly**

SPUT has removed over 20Mlbs, COVID production impacts, strategic purchases and demand growth impacts



**Primary production is declining**

>45Mlb U<sub>3</sub>O<sub>8</sub>p.a. removed since 2016



**Demand for uranium is rising**

Strong nuclear power growth; China 70GW by 2025



**Utility & fuel buyer engagement is growing**

Considered a lead indicator for broader demand



**Strong outlook for nuclear**

Procurement of 1.4Blb U<sub>3</sub>O<sub>8</sub> <10yrs





# HONEYMOON RESTART PROJECT

**KEEP UP TO DATE WITH US:**

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