

# Countdown to Production

Australia's next uranium producer

Macquarie Australia Conference 2023



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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.

## EFFECT OF ROUNDING

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## Investment Highlights

# On track for production in Q4 2023

## Fuelling a sustainable future

- **Fully funded, with A\$103M cash, zero debt, plus A\$100M strategic inventory,** to become Australia's next Uranium producer, with a global first mover advantage
- **Technically proven, low-cost re-start operation** in the uranium friendly jurisdiction of South Australia
- **Well positioned to take advantage of the current rising uranium market,** compelling market fundamentals
- **Fast track production to produce 2.45Mlbs U3O8 p.a. within 3 years**
- **Best in class development and operational team,** with proven track record of delivering results
- **Low operating cost of LOM** average AISC of US\$25.6/lb and Cash Costs of US\$18.50/lb
- **Significant upside beyond initial mine plan,** with ~50% of resource yet to be incorporated
- **Fully permitted** with all Native Title and Environmental Agreements in place, 3.3Mlb U3O8 p.a. Export Permit
- **Well positioned to build a strong multi-asset platform**



## Board of Directors

# Highly credentialed with proven track record in Uranium



Wyatt Buck

Non-Executive Chairman

Ex-Cameco 1991 - 2006  
GM of McArthur River & Key  
Lake Mill

Ex-Paladin 2006-2011  
Executive GM of Operations

Ex-First Quantum 2011-2021  
Global Operations Director



Duncan Craib

Managing Director & CEO

Ex-Kalahari Minerals/ Extract  
Resources 2008-2012  
CFO & Coy Sec

Ex-China General Nuclear/ Swakop  
Uranium 2012-2016  
Finance Director

MCA Uranium Forum Chair  
2021 until present



Jan Honeyman

Non-Executive Director

Ex-First Quantum 2006 – 2022  
Director of Human Resources

Ex-KBR Energy, Global Director,  
Talent Management



Bryn Jones

Non-Executive Director

Ex-Heathgate Resources,  
General Atomics 10 years

Ex-Laramide Resources  
COO 2015 - 2019





Wider Team

# Key Management & Consultants



Chief Financial Officer

Andre Potgieter

Strategy & Marketing

Sashi Davies

GM Operations

James Davidson

Project Manager

Jonathon Owen

GM Wellfield & Resources

Ben Jeuken

Geology Manager

Jason Cherry

NIMCIX Ion Exchange

Dr Merrill Ford





ASX 300 Boss Energy has liquid assets of \$203M

# Strong Balance Sheet and Zero Debt

Share Price Performance



## Key Metrics

	Shares (M)	Value (A\$M)
Ordinary Shares	353*	
<b>Market Capitalisation (A\$2.45/sh**)</b>		<b>864</b>
Physical Uranium		100
Cash (31 Mar 2023)		103
<b>Enterprise Value</b>		<b>661</b>

\* Excludes ~1.8m options with various exercise prices

\*\*As at 3 May 2023

1.25Mlb Strategic Physical Inventory provides offtake flexibility, strengthens balance sheet (~US\$29M book profit) and provides marketing advantages.





## Track record of achieving key milestones

# Key Milestones Achieved ~ from 2015 until today

Milestone	Date	Status
<b>Acquisition of Honeymoon Uranium Mine</b> - global resources of 16.6Mlb U <sub>3</sub> O <sub>8</sub>	Dec 2015	✓
<b>Scoping study</b> confirms low capital requirements and operating costs	Sept 2016	✓
<b>Pre-Feasibility Study</b> confirms significant potential for economic upside with resource expansion	May 2017	✓
<b>Field Leach Trial</b> - improved leach chemistry derives historic high tenors (>80mg/L U <sub>3</sub> O <sub>8</sub> ) <b>Ion Exchange process successfully proved</b> with excellent performance of selected resins	Nov 2017	✓
Boss acquires remaining 20% of Honeymoon project - <b>100% ownership</b>	Mar 2018	✓
<b>Mineral Resource upgrade</b> - global resource upgrade to 71.6 Mlb U <sub>3</sub> O <sub>8</sub>	Feb 2019	✓
Australian Government renews Honeymoon's <b>Export Permit for 3.3Mlb p.a. U<sub>3</sub>O<sub>8</sub></b>	Apr 2019	✓
<b>Feasibility Study confirms Honeymoon as Australia's next Uranium Producer</b> with global first mover advantage.	Jan 2020	✓
Comprehensive geological review of historic database while site activities were restricted due to COVID-19	2020	✓
<b>\$60M Capital Raising</b> - acquisition of 1.25Mlb U <sub>3</sub> O <sub>8</sub> strategic inventory	Mar 2021	✓
Enhanced Feasibility Study - incorporating <b>NIMCIX Ion Exchange columns, 2.45Mlbs</b>	Jun 2021	✓
<b>\$125M Capital Raising</b> – to fully fund development of the Honeymoon project	Mar 2022	✓
Front End Engineering Design completed	March 2022	✓
<b>Final Investment Decision to restart Honeymoon Uranium Mine</b>	June 2022	✓
<b>Honeymoon's Mine restart of production</b>	<b>Q4 2023</b>	Nearing completion





Restart development progress

# Honeymoon on Time & on Budget

## Strong progress for Q4 2023 production

- **All major long-lead tenders have been issued** and are under evaluation / execution
- **Orders for key critical equipment items have been placed**
- **123 procurement packages have been awarded ~ \$65M / 62% of CAPEX forecast of \$105M** (excluding \$8M contingency)
- **Wellfield construction** electrical, instrumentation, and piping materials on site and being installed
- **Installation of initial 86 of 86 pre-start wells successfully** drilled and cased. Integrity testing now in progress
- **Construction of the Water Treatment Plant underway**
- Preparatory works for the new **Ion Exchange columns commenced**
- **Electrical MCC, Substations and transformers** have all been awarded
- **Adelaide office opened**, Honeymoon site accommodation and administration block completely refurbished
- **Senior management and employees recruited**, GM appointed, workforce on site continues to grow, currently 62 employees in total



Previous produced and sold U308 globally

# Honeymoon Restart Uranium Mine Site

Water Treatment Plant

Production Well Fields

Drying Circuit

Ion Exchange

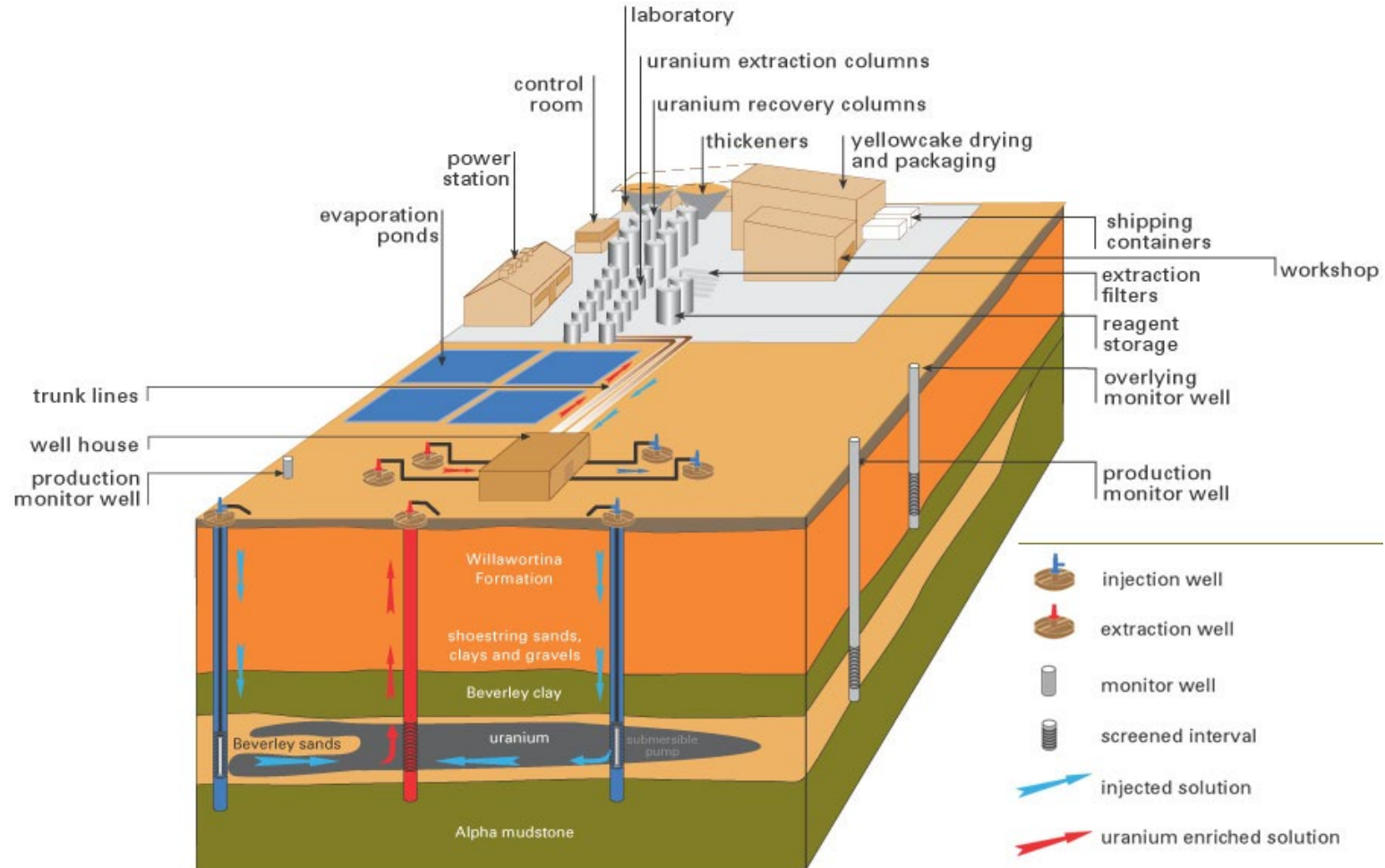




ISR is a proven cost effective and environmentally encouraged extraction process

# In-Situ Recovery (ISR) Mining

- ISR accounts for ~ 60% global uranium mined, used in Australia, Kazakhstan, USA
- Low impact in-situ recovery and ESG friendly mining method employed at Honeymoon site
- Unlike conventional mining, ISR results in minimal, temporary ground disturbance, no ground excavations.
- Barren leach liquor is injected through the uranium hosted ore body, to recover high grade pregnant liquor solution by production wells and pumped to the surface.
- Uranium is then extracted using ion exchange, precipitated out and dried to produce U<sub>3</sub>O<sub>8</sub>.



**Wellfield construction electrical, instrumentation, and piping materials on site has been installed**







Gypsum pond earthworks



Gypsum pond lining being installed





## Boss owned 400T crane dismantling old SX columns for IX installation







IX tower height will be equivalent of 14 stories

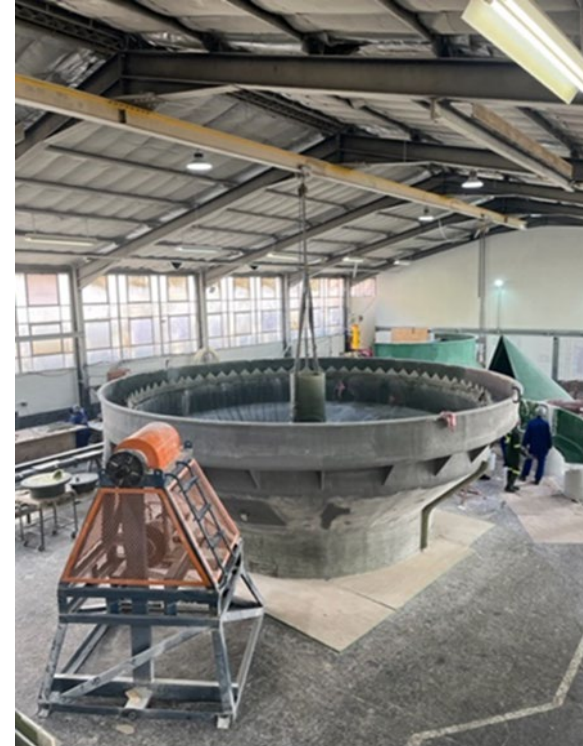




# Fabrication of the Ion Exchange columns



First Ion Exchange cylinder winding complete



Top sections of adsorption column



Elution Columns

**500 tonnes of fibreglass custom-designed for the IX Honeymoon processing plant**



~ 71.6Mlb U3O8

# JORC Resources

- 71.6Mlb U3O8 JORC Resource<sup>1</sup> at an average grade of 620ppm U3O8
- The Honeymoon Re-start Area (HRA) contains 36Mlb U3O8
- 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 U3O8

<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



Classification	Ore	Grade	Contained U <sub>3</sub> O <sub>8</sub>	
	(Mt)	(ppm 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>

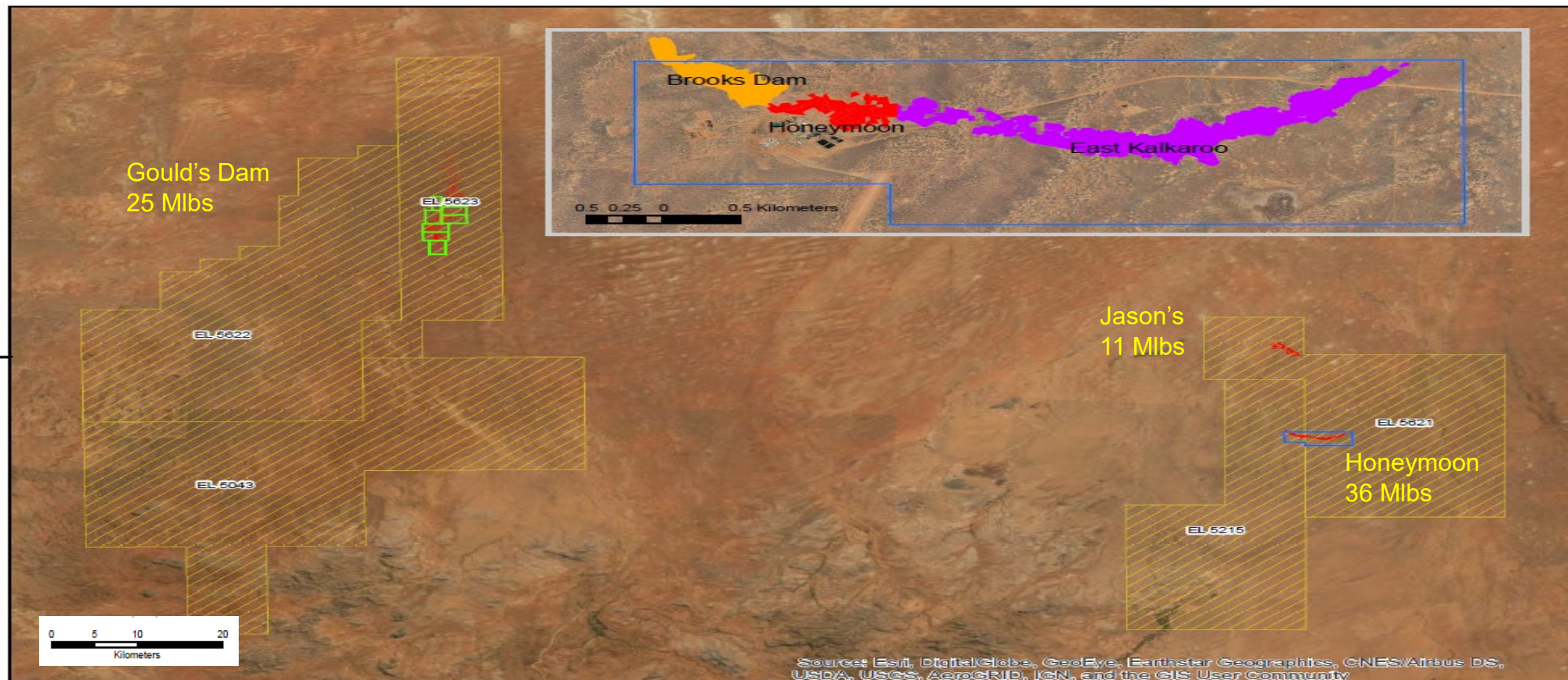




A further defined 36Mlbs sits outside of the Mining Licence.

Substantial Exploration Target of 58Mlbs to 190Mlbs at grades up to 1,080ppm U3O8

## JORC Resources ~ 71.6Mlb U3O8

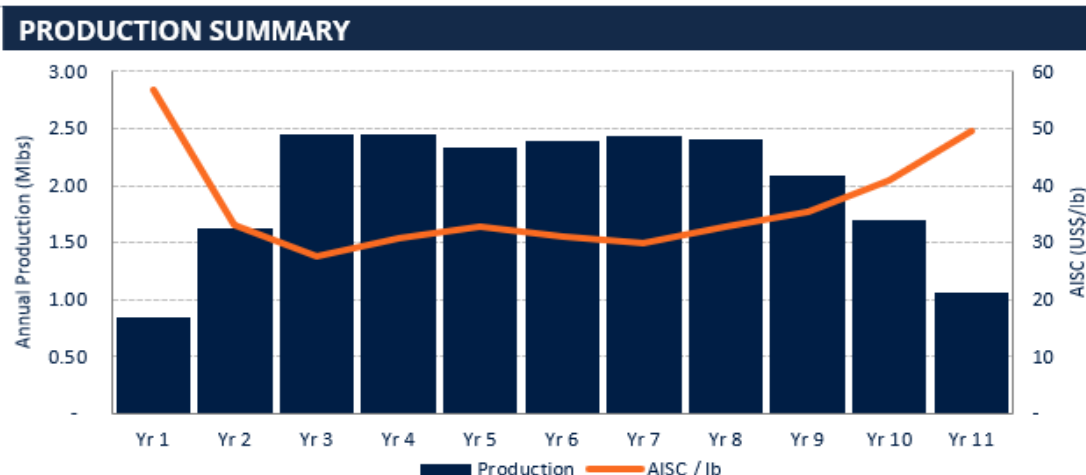




Honeymoon's low cost of production delivers robust financial returns (table excludes 1.25Mlbs held physical uranium)

# Financial Highlights

<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>



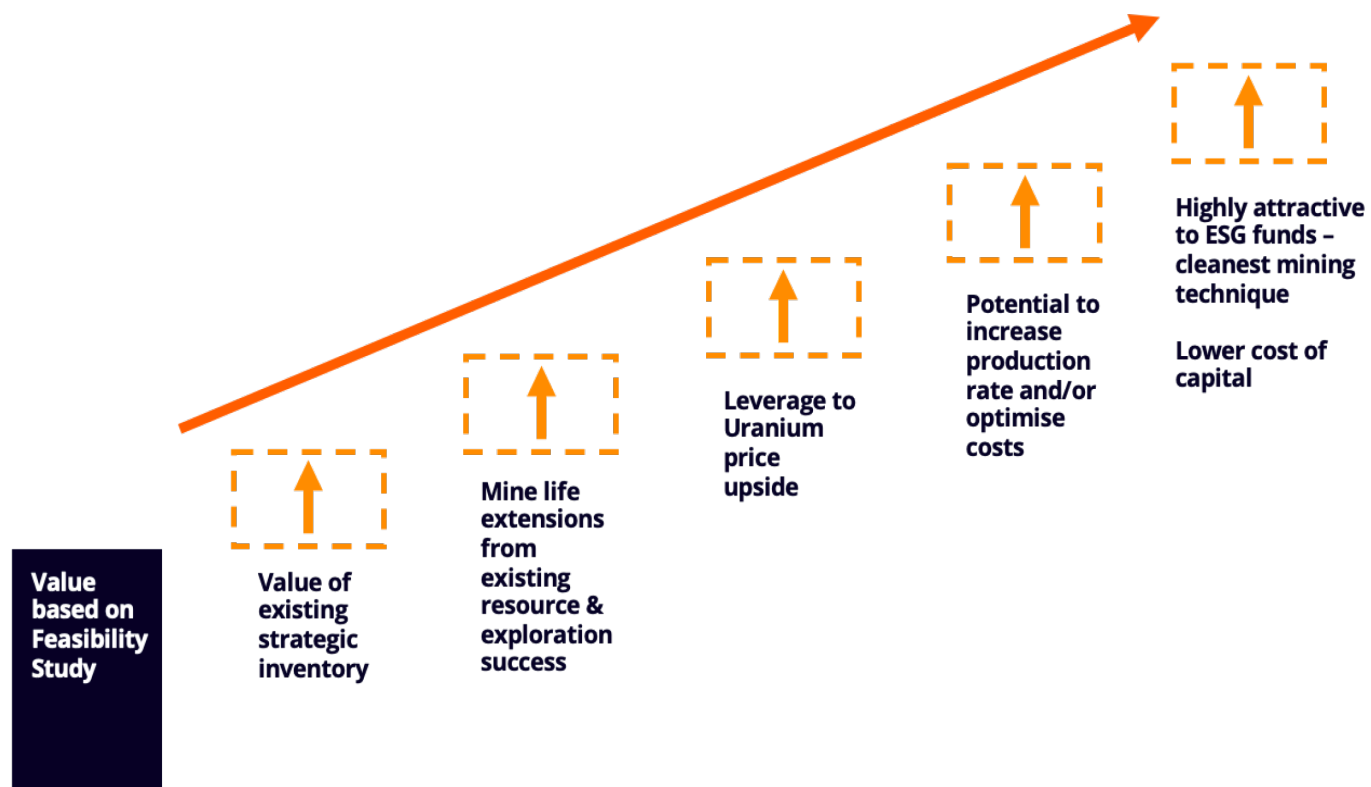
KEY STUDY OUTCOMES		FINANCIALS
Physical Summary		
Life of Mine	Years	11
U <sub>3</sub> O <sub>8</sub> Production	Mlb	21.81
Financial Summary		
NPV <sub>8%, Pre-tax</sub> (US\$60/lb)	A\$M	412
NPV <sub>8%, Pre-tax</sub> (US\$80/lb)	A\$M	729
IRR <sub>Ungeared, Pre-tax</sub>	%	47.1%
Revenue	US\$M	1,279
Free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





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

# Significant Upside Potential



*Not to scale and illustrative only*





# Boss Energy's ESG Focus

Instilling ESG values not only creates economic value, but long-term value for society by addressing its needs and challenges

- **Business Ethics & Corporate Governance**
- **Climate change & decarbonisation**
- **Health, safety and well-being**
- **Community & landholder** relationships
- **Environmental protection & contamination**
- **Radiation Protection**





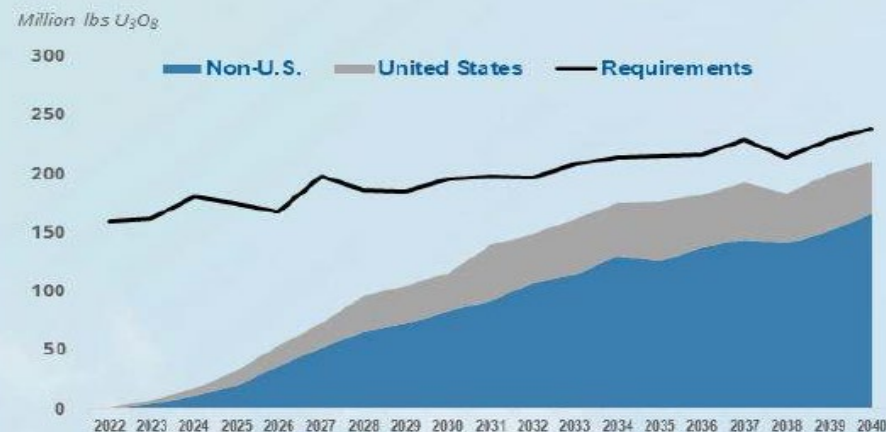
Strongest fundamentals in past 40 years

# Uranium Industry Update

- Sentiment at the World Nuclear Fuel Cycle Conference in the Hague during April was overwhelmingly optimistic. Demand for nuclear fuel is rising in the near, mid and long term on a global basis.
- Nuclear power is firmly entrenched as a critical part of the strategy to reduce carbon emissions and the debate is now on how fast the industry can build new reactors and introduce SMR's. The focus has changed from 'renewables' to 'net zero.'
- In the early 2000's utility inventory was low in the US but there was a large secondary supply overhang which could fill the primary deficit. In 2023 this overhang has been eroded and utility inventory balances are below optimum levels.
- In the early 2000's supply was needed to meet the growing nuclear program. Supply in 2023 is needed to meet the requirements of the current fleet, increased demand from life extension, and significant growth of new reactors.
- Production in 2023 is vulnerable to sanctions, shipping disruptions and supply chain risk.

## Utility Uncovered Uranium Requirements

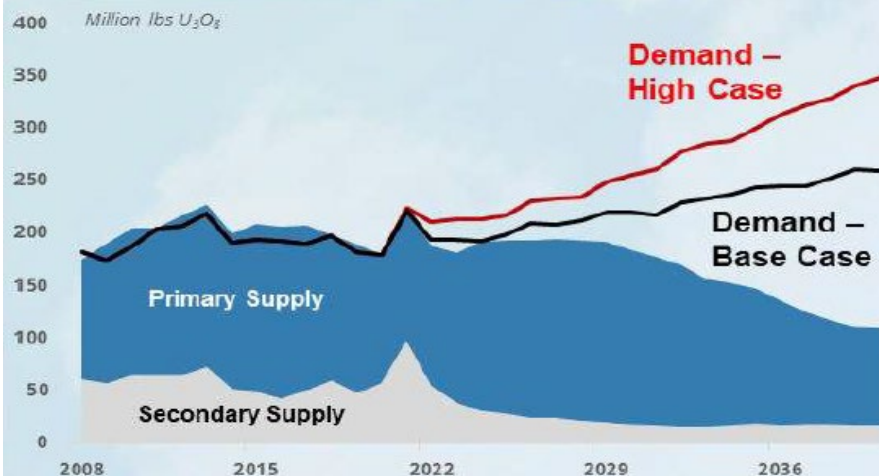
~ 2.3 Billion pounds through 2040



Source: UxC Q4 2022 Uranium Market Outlook

## Supply Outlook is Uncertain

Structural Primary & Secondary Supply Gap



Source: UxC Q4 2022 Uranium Market Outlook

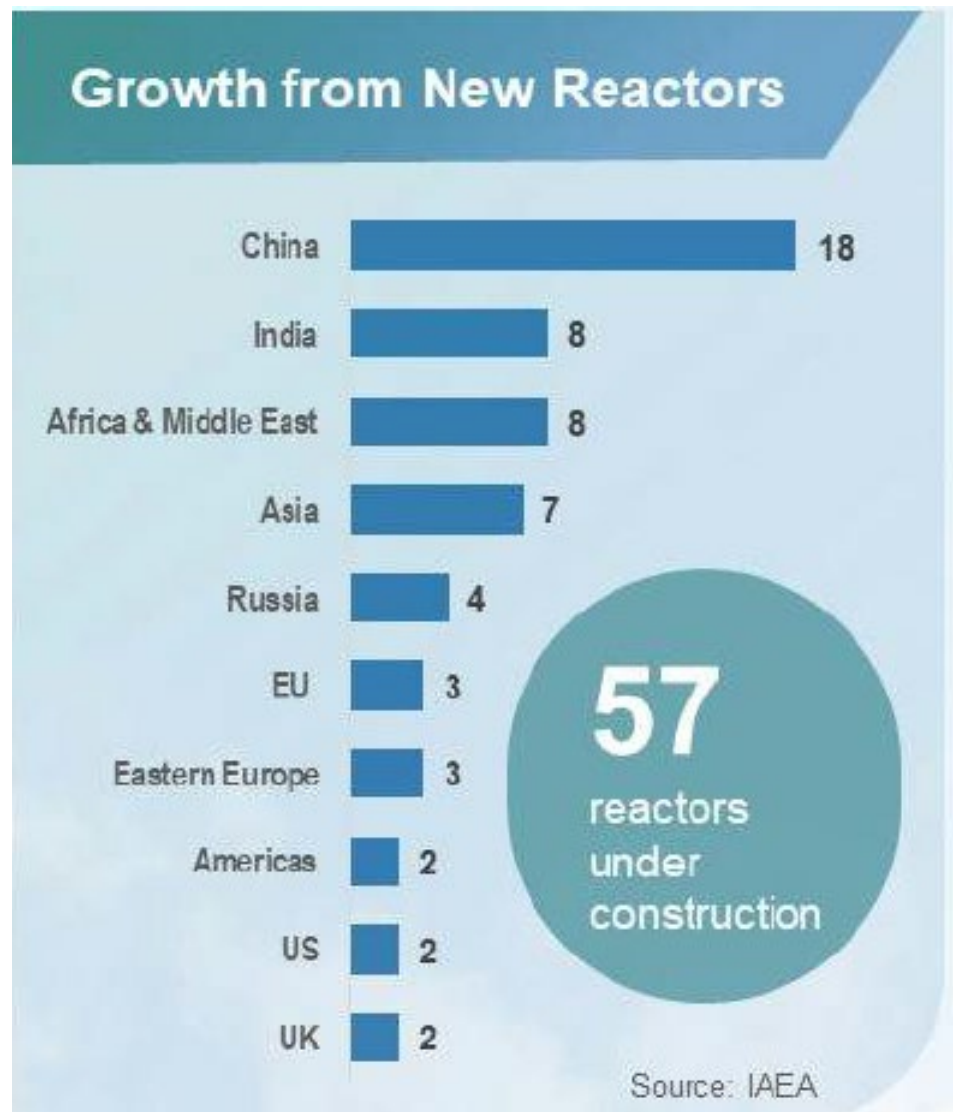




What's different this time?

# Uranium Industry Update

- 437 reactors in operation 393GWe, 57 reactors under construction (66GWe), 103 planned (106GWe) and 341 proposed (377GWe).
- Base case consultant nuclear forecasts increasing from 393GWe to 490GWe by 2035
- Cumulative supply from new mines of 460m lbs will be needed by 2035 to meet the gap between demand and supply from existing mines and secondary supplies.
- There are sufficient projects identified to supply demand but their development on a timely basis will depend on price and availability of funding.
- A paper by UxC highlighted the implications of these regional imbalances on uranium quoting a need for 33 to 44 million lbs of U3O8 to compensate for the reduction in uranium supplies from Russia, increased demand from higher western tails assays and a severe curtailment of underfeeding;

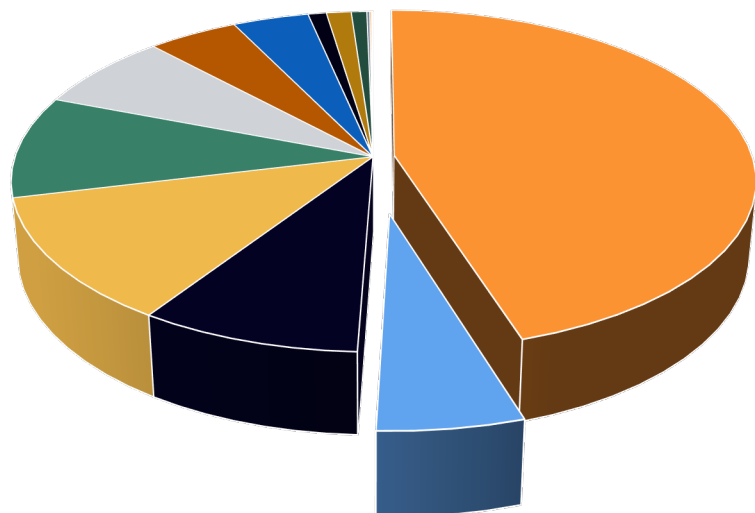






Production in 2023 is vulnerable to sanctions, shipping disruptions and supply chain risk. Impact of utilities imposing their own limits on Russian supply or 'self-sanctioning' is causing regional imbalances with near term shortages of enrichment and conversion services.

## Vulnerable Uranium Supply



- Kazakhstan
- Canada
- Ukraine
- Pakistan (est.)
- Russia
- Uzbekistan (est.)
- India (est.)
- Brazil
- Australia
- Niger
- South Africa (est.)
- USA
- Namibia
- China (est.)
- Iran (est.)

### Kazakhstan 45%

Uranium production exported out of Russian ports

### Namibia 12%

Captive supply – 2 operating mines are majority owned by China state

### Australia 9%

Only one state, South Australia, has producing uranium mines

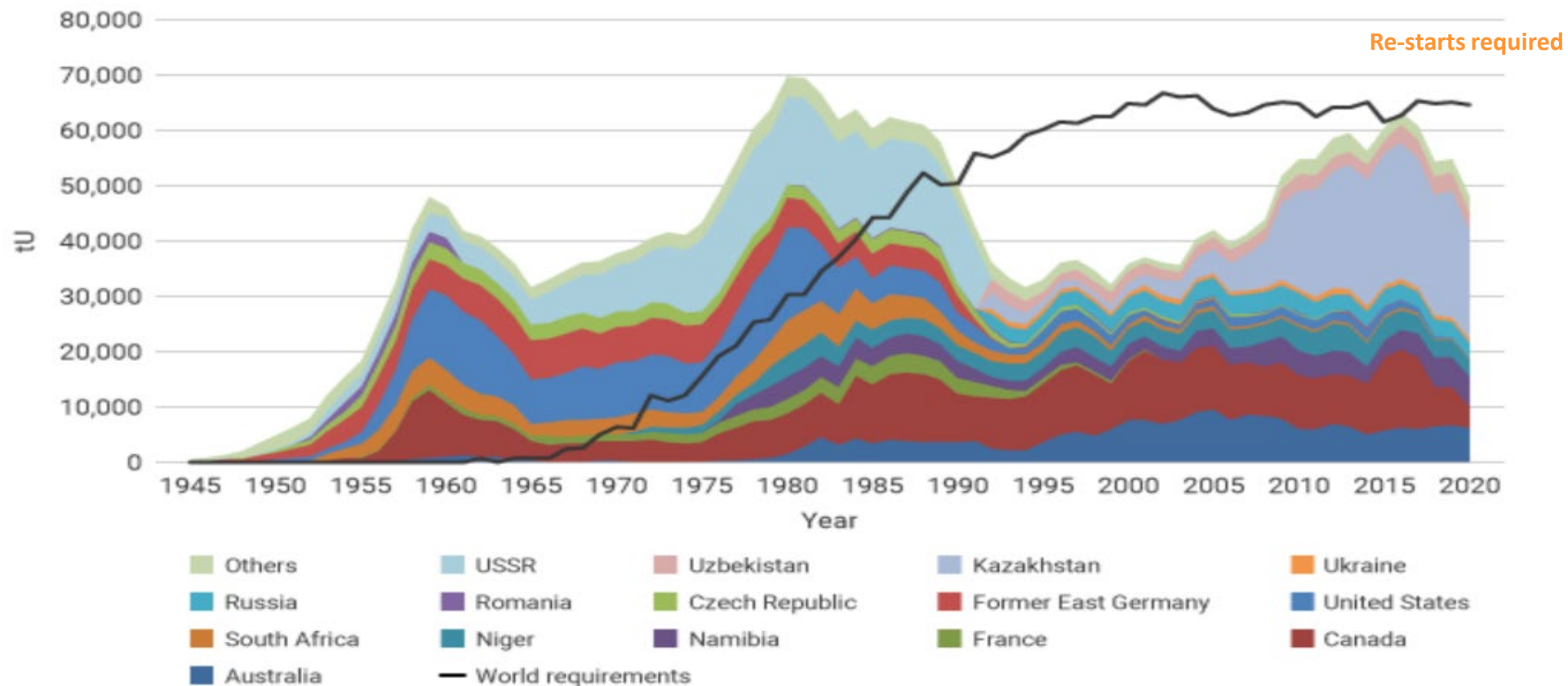
### Russia 5%





Production does not respond quickly to price – spot increased from 2004/5 and peaked in 2007 but production increased post 2010 and peaked in 2017 when spot was at its lowest point since the peak.

## Compelling Market Fundamentals

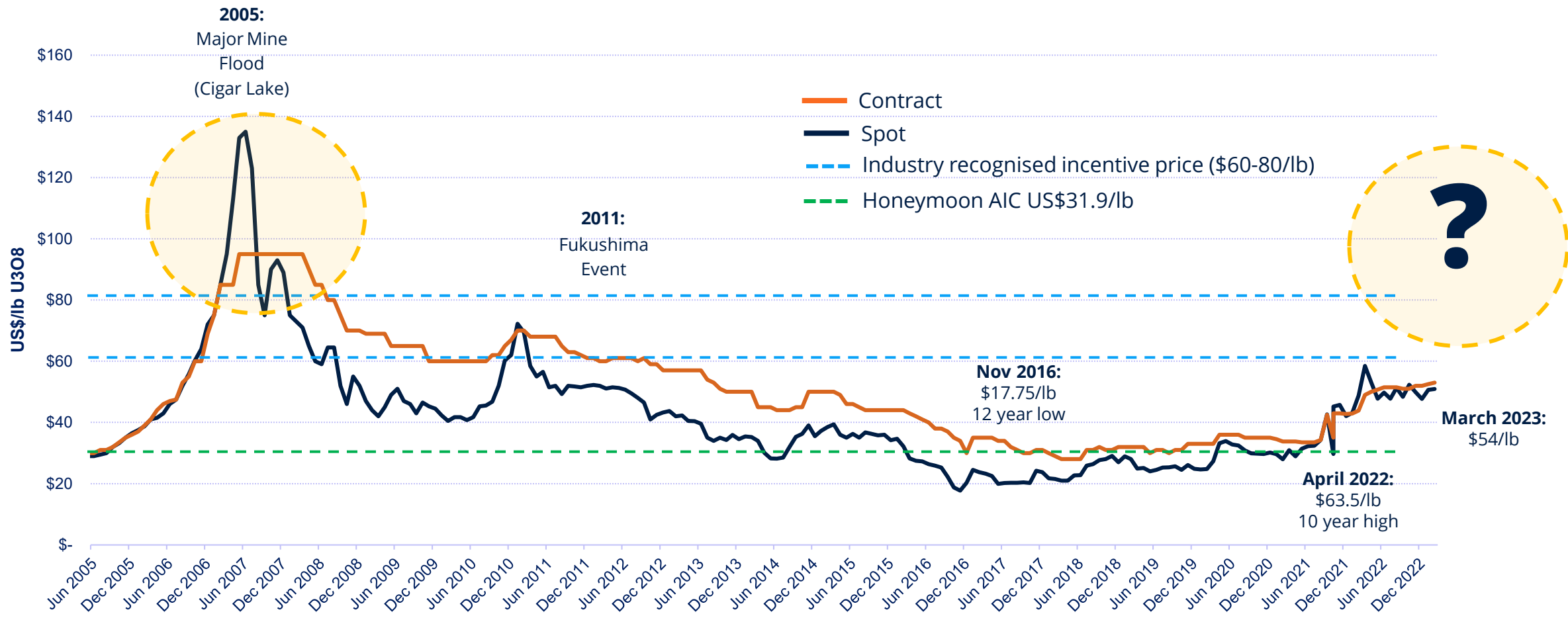






Since 2020 the uranium market has risen 94% in Spot Prices and 50% in Term Prices

# Uranium Price History







# Key Upcoming Newsflow

Strongly positioned to deliver on project outcomes to meet growing market demand



**Advancement of ESG framework** to align Boss annual report information to leading ESG standards



**Solvent extraction column removal**, and upgrade of the front-end of the processing plant



**Wellfield cold commissioning**



**Entering into long-term contracts** – only favorable terms to lock in robust margins. Boss is not reliant on offtake for development funding.



**Completion of recruitment for operational readiness**



**Exploration drilling to further define satellite resource deposits** of Jasons and Gould's Dam



**First Quantum exploration drill results targeting copper** and other base metals





# Honeymoon Restart Project

Keep in touch

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