BOSS RESOURCES LTD

# AUSTRALIA'S NEXT URANIUM PRODUCER

## CORPORATE PRESENTATION

11 MAY 2020



ASX: BOE | @BOSS_RESOURCES

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The information in this document relating to the Feasibility Study is extracted from the announcement entitled 'Honeymoon FS confirms Boss Resources as Australia's next uranium producer' dated 21 January 2020. The Company confirms that all the material assumptions underpinning the production targets, or the forecast financial information derived from the production targets, continue to apply and have not materially changed. The information in this document relating to the Mineral Resources is extracted from the announcements released to the ASX on 20 January 2016, 8 April 2016, 14 June 2016, 15 March 2017 and 25 February 2019. The information relating to the Exploration Results for the Jasons Deposit is extracted from the Company's announcements dated 6 December 2016, 8 December 2016, 14 December 2016 and 3 February 2017. The information relating to the results from the Field Leach Trial and Ion Exchange Pilot Plant have been extracted from the announcements released to the ASX on 19 June 2017, 31 July 2017, 13 September 2017, 4 and 26 October 2017, 1 and 15 November 2017. The information in these announcements has been compiled and/or reviewed by Dr Marat Abzalov, who is a Competent Person as defined in the 2012 edition of the "Australasian Code for Reporting Mineral Resources and Ore Reserves". Dr Abzalov has consented to the inclusion of the information in this presentation in the form in which it appears and confirmed that the form and context in which the Competent Person's findings are presented have not materially changed since initial release to the ASX.

The information relating to the Exploration Target is extracted from the announcements released to the ASX 8 December 2015 and 25 March 2019. The Exploration Target is conceptual in nature as 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 under the JORC Code 2012. The Exploration Target is not being reported as part of any Mineral Resource or Ore Reserve.

# **CORPORATE** OVERVIEW

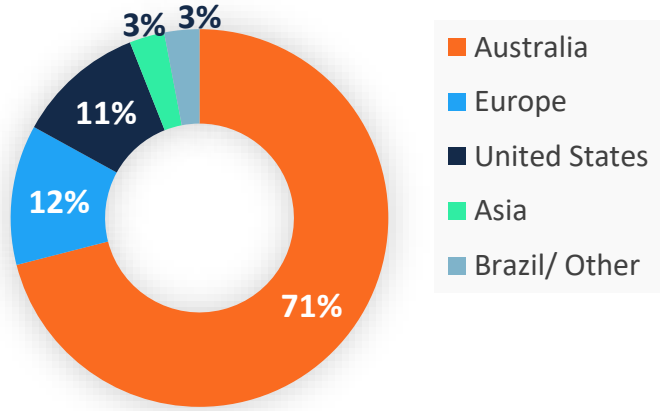
## BOARD OF DIRECTORS

| | |
|---|---|
| **Non-Executive Chairman** | Peter O'Connor |
| **Managing Director/ CEO** | Duncan Craib |
| **Technical Director** | Bryn Jones |
| **Non-executive Director** | Evan Cranston |
| **Non-executive Director** | Peter Williams |

## KEY METRICS (ASX:BOE)

| | |
|---|---|
| **Shares on issue** | 1,584 million |
| **Share price** | 6.6 cents |
| **Market cap** | A$105m |
| **Cash (+restricted)** | A$ 4.3m (+A$ 8.8m) |
| **Debt** | Nil |

## SHAREHOLDER LOCATION



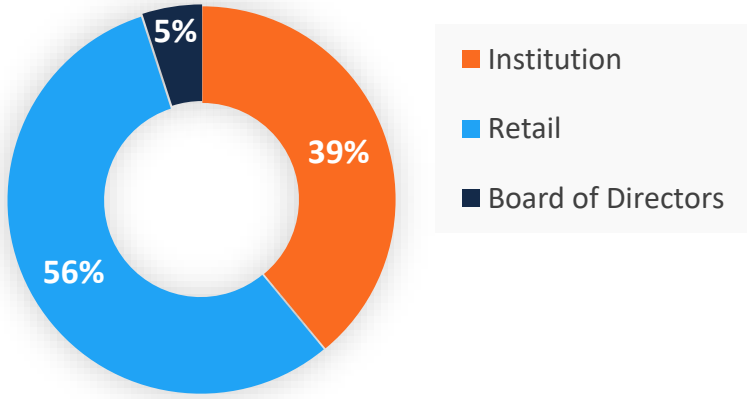

## STRATEGIC & MARKET ADVISER

| | |
|---|---|
| **Strategic Adviser** | Sashi Davies |

## ANALYST COVERAGE

| | |
|---|---|
| **Canaccord** | Larry Hill |
| **Euroz** | Steven Clarke |
| **Hartleys** | Aiden Bradley |

## SHAREHOLDER SUMMARY





# **HONEYMOON**
# RESTART PROJECT

# **PROJECT** OVERVIEW

## 1st WORLD JURISDICTION

- Located in South Australia, the premier and most advanced uranium state in Australia
- Tier 1 mining jurisdiction and destination of choice for utilities
- Port Adelaide has established uranium shipping routes for international markets

## OPERATIONAL READINESS

- A proven restart operation in care & maintenance, can quickly respond to market conditions
- 2mlbs per annum base case production, which can be expanded
- 71.6Mlb U3O8 JORC Resource
- Significant Exploration Target. 2,600km$^2$ underexplored uranium province

## PROJECT ECONOMICS

- Global first mover advantage, production within 12 months
- All-in Cost in lowest quartiles of ~ US$32 /lb
- All-in Sustaining Cost in quartiles of ~ US$27 /lb
- Low CAPEX outlay of US$62m
- Question of WHEN not IF uranium prices will rise

## FULLY PERMITTED

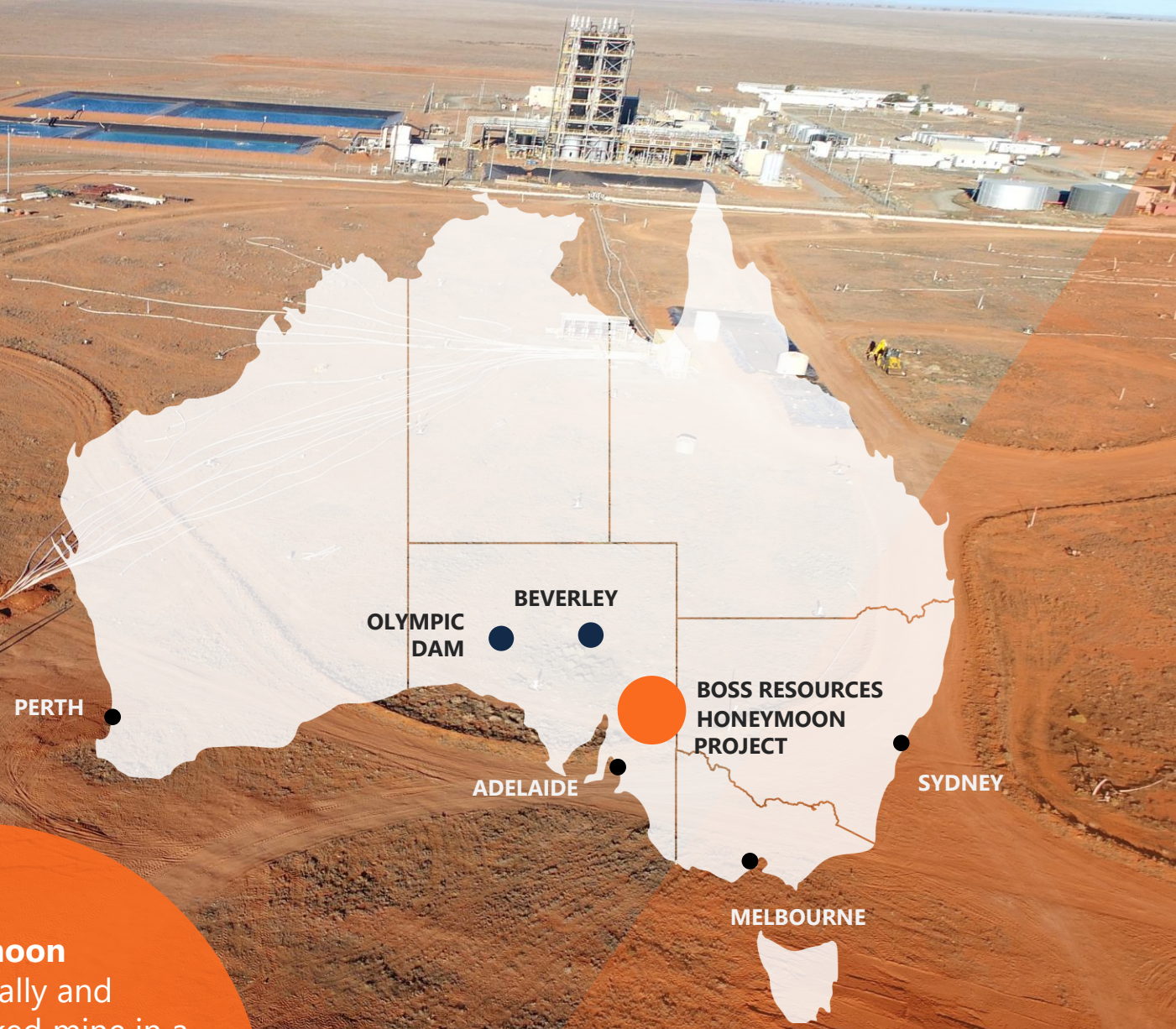
- 1 of only 4 fully permitted mines in Australia (3 reside in South Australia)
- Uranium export permit recently renewed
- Native Title agreements are all in place
- Operational permits and licences in place, lower risk on timing of start up

## EXPERIENCED TEAM

- MD/ CEO / Market Adviser ex-Husab Mine (Extract Resources / Kalahari Minerals)
- Technical Director ex COO of Laramide & Heathgate
- Board & management experienced in constructing & operating uranium mines
- Enviable long term supply relationships with utilities world wide

# HONEYMOON
# RESTART PROJECT

- Three of Australia's four fully permitted uranium mines are in South Australia, 2 of which are In-Situ Recovery (ISR) operations
- An international Tier 1 mining jurisdiction of choice for uranium supply, providing diversification for utilities
- Federal and State government support
- Established shipping routes from Port Adelaide of 30 years so no risk of delay
- 1st world mining jurisdictions attract Tier 1 investment and skilled workforce, specialising in ISR uranium mines



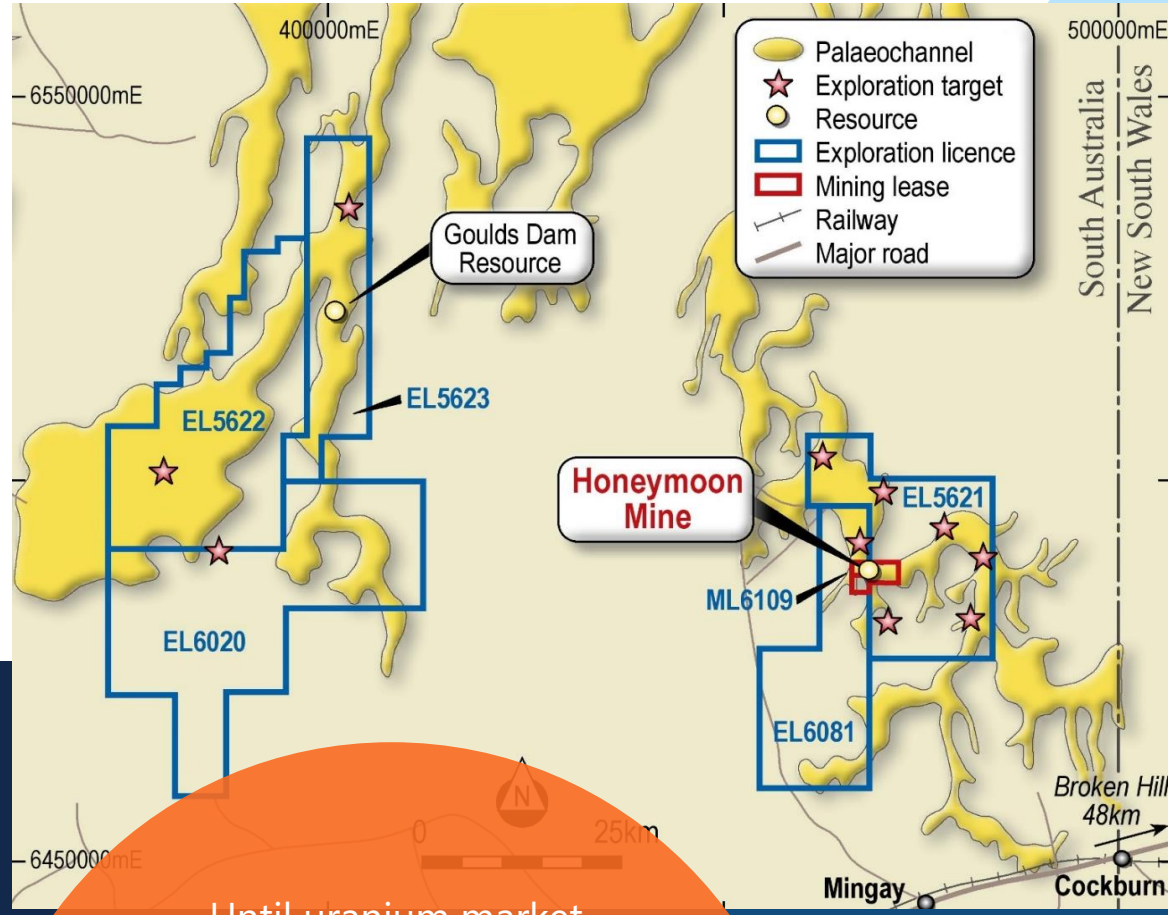

**Honeymoon**
Is a technically and financially de-risked mine in a geologically stable, uranium friendly environment.

# RESOURCES
# AND EXPLORATION UPSIDE

- 71.6Mlb U3O8 JORC Resource*
- Mining License 6109 contains 34 Mlb U3O8
- Average grade 620 U3O8 ppm
- Shallow mineralisation at 90-120m depth
- In-Situ Recovery (ISR) cheapest method of resource extraction
- Significant Exploration Target in addition to JORC Resource

| Classification | Million Tonnes | $U_3O_8$ ppm | Contained $U_3O_8$ (Mkg) | Contained $U_3O_8$ (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 |
| **Total** | **52.4** | **620** | **32.5** | **71.6** |

**Refer ASX announcement dated 25 February 2019*




Until uranium market conditions improve, exploration activities will **focus on low-cost and non-invasive geophysical techniques**, allowing for more focused drill ready programs.

# **EXPLORATION** UPSIDE

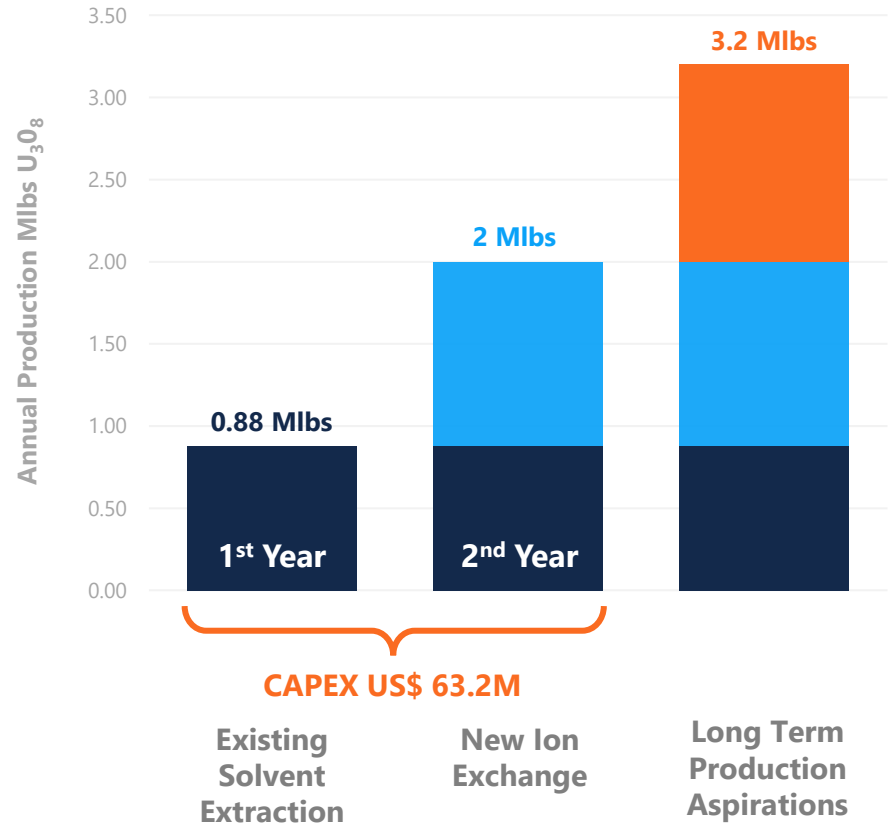
- **Exploration Target up to 190Mlbs**. In addition to the global Mineral Resource, the Exploration Target estimate for Honeymoon stands at 28Mt to 133Mt of mineralisation at a grade of 340ppm to 1,080ppm U3O8 for a contained 58Mlbs to 190Mlbs U3O8 (26,300 to 86,160 tonnes of contained U3O8), using a cut-off of 250ppm. 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.
- **5,000 Historic Drill Holes**. Much of the data used in the Exploration Target estimation process came from historical work undertaken around the project area between 1972 and 2003 by many different companies, comprising over 5,000 historic drill holes for analysis
- **Advanced but Cost Effective Exploration**. Boss Resources seeks to employ the most advanced and cost-effective multi-disciplinary exploration alternatives to conduct large-scale exploration while increasing project value for shareholders
- **Potential for Future Large Scale Discoveries**. We look forward to unlocking additional large-scale uranium mineralisation



# A$170m SITE INFRASTRUCTURE



# STAGED PRODUCTION APPROACH




Fully permitted to export 3.3Mlbs/ annum U3O8 equivalent

Fast-tracked production, within 12-months, with low capital outlay, to seize upon a rising uranium market

# **CURRENT WORK** PROGRAMS

**Current market conditions are moving toward Honeymoon's restart, as we have first mover advantage and will be Australia's next uranium producer when desired price is achieved.**

- Continued engagement with utilities to be included in off-market requests and more formal requests for supply proposals (RFP)
- Assessment of financing options
- Operational readiness to accelerate execution schedule
- Technical optimisation and cost reduction initiatives
- Continued brownfield exploration program
- Planning for Stage 3 expansion (3.2Mlbs/annum)
- Care & Maintenance activities to ensure the plant remains in excellent good condition
- Consideration of merger & acquisition opportunities



# HOW BOSS RESOURCES
## ADVANCED HONEYMOON

**EXECUTION**
2Mlb / ANNUM –
3.2Mlb U3O8
AIC < $32/lb



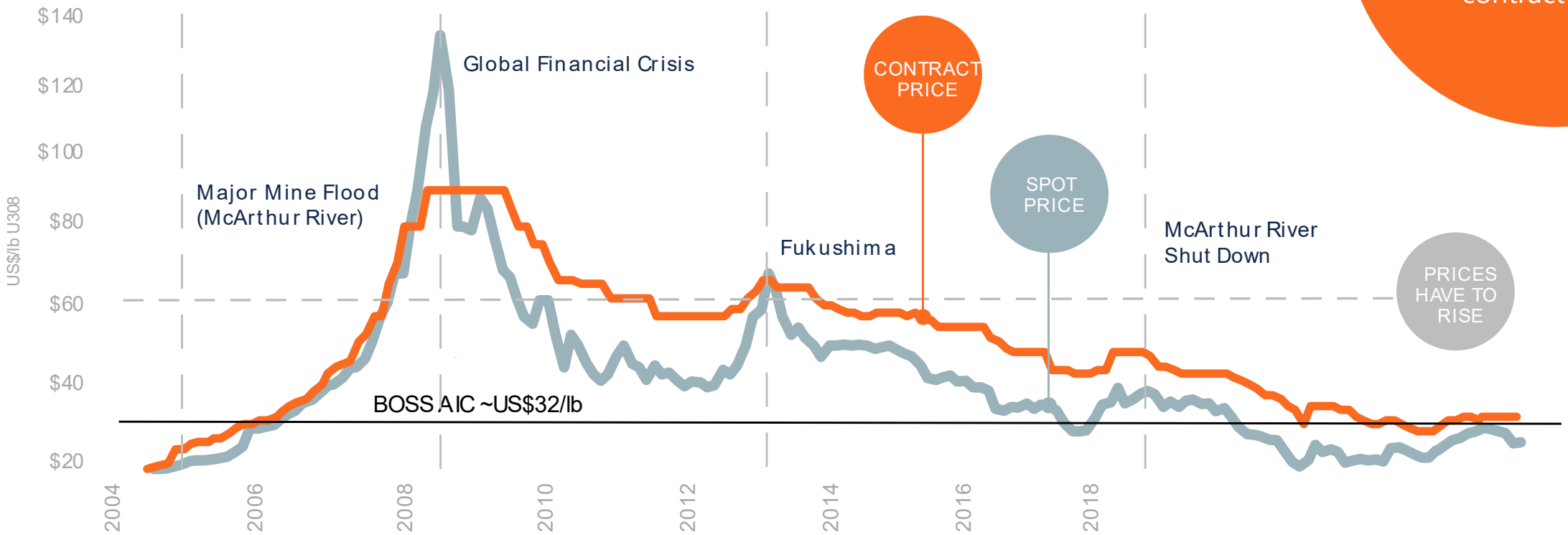


# HONEYMOON
# ECONOMICS

# **CONTRACT** PREMIUM TO SPOT PRICES

US$60lb incentive price required for majority of new uranium production to be economically viable

**Honeymoon AIC**
~ US$ 32lb
is lower than current spot and term contract prices




Source: Cameco

# FINANCIAL SENSITIVIES

Key financial summary with contract uranium price range of US$40/lb to US$60/lb at an exchange rate of A$1: US$0.68

| Financial Metric | Unit | US$40/lb | US$45/lb | US$50/lb | US$55/lb | US$60/lb |
|---|---|---|---|---|---|---|
| Revenue | $M | 813 | 910 | 1,006 | 1,103 | 1,200 |
| EBITDA | $M | 324 | 414 | 504 | 594 | 685 |
| Free Cash flow (Pre-tax) | $M | 154 | 244 | 334 | 424 | 514 |
| Free Cash flow (Post-tax) | $M | 119 | 185 | 248 | 311 | 375 |
| EBITDA margin (avg over LOM) | % | 39.86% | 45.53% | 50.11% | 53.89% | 57.06% |
| IRR (Pre-tax) | % | 22.10% | 32.80% | 42.90% | 52.63% | 62.11% |
| IRR (Post-tax) | % | 17.25% | 25.57% | 33.29% | 40.67% | 47.97% |
| NPV 8% (Pre-tax) | $M | 60 | 112 | 163 | 215 | 266 |
| NPV 8% (Post-tax) | $M | 39 | 77 | 113 | 149 | 185 |
| Capital Cost | $M | 63.2 | 63.2 | 63.2 | 63.2 | 63.2 |
| AISC[1] | $/lb $U_3O_8$ | 26.7 | 27 | 27.3 | 27.7 | 27.9 |
| AIC[2] | $/lb $U_3O_8$ | 31.7 | 32 | 32.3 | 32.6 | 32.9 |
| Total Project Payback post tax | years | 9.3 | 6 | 4.5 | 3.8 | 3 |

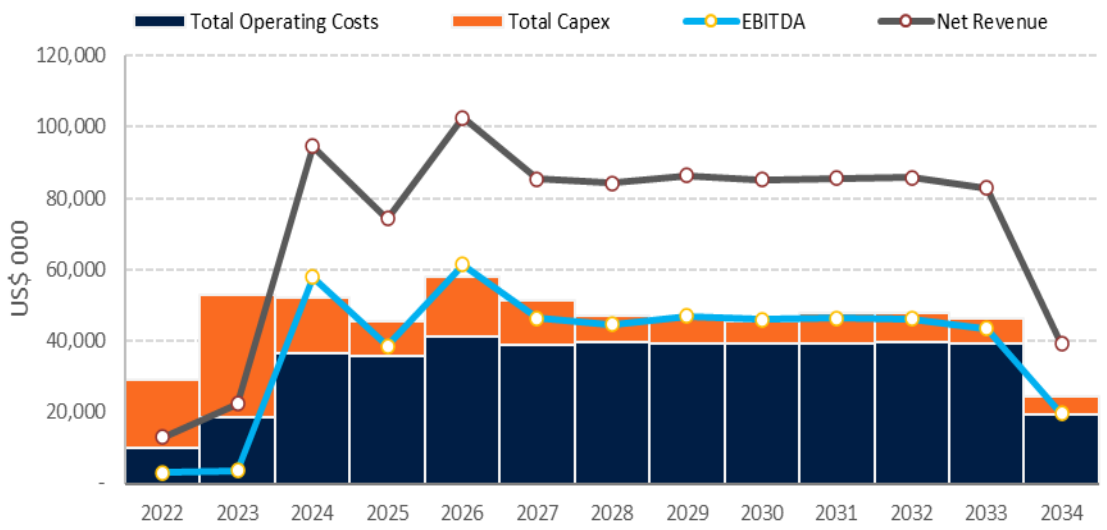
1 AISC = wellfield operating, processing, site G&A, freight, marketing, royalties and sustaining capital expenditure

2 AIC = AISC + development and deferred capital expenditure

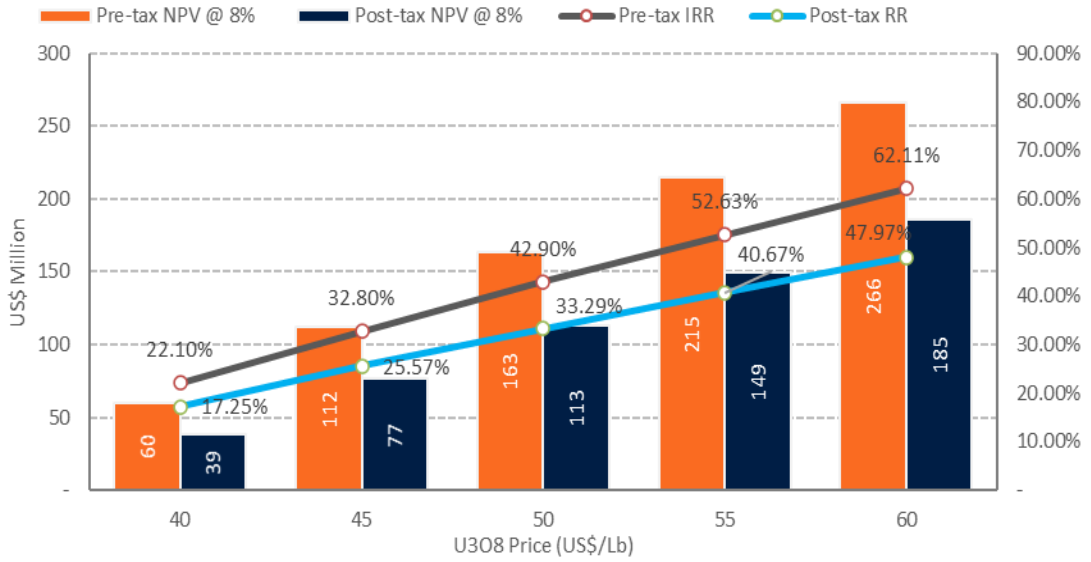
# HONEYMOON
# FINANCIAL RETURNS

**January 2020 Feasibility Study** assumes a base case uranium price of only US$50/lb

**Revenue, EBITDA, OPEX and CAPEX (US$ 000)**

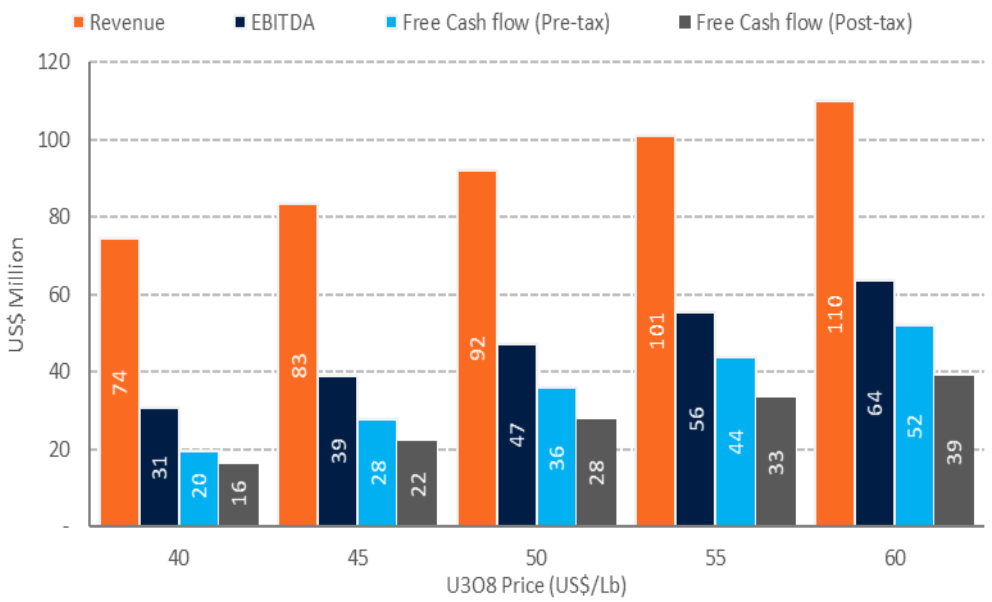



**Key Financial Return Metrics (US$ M)**

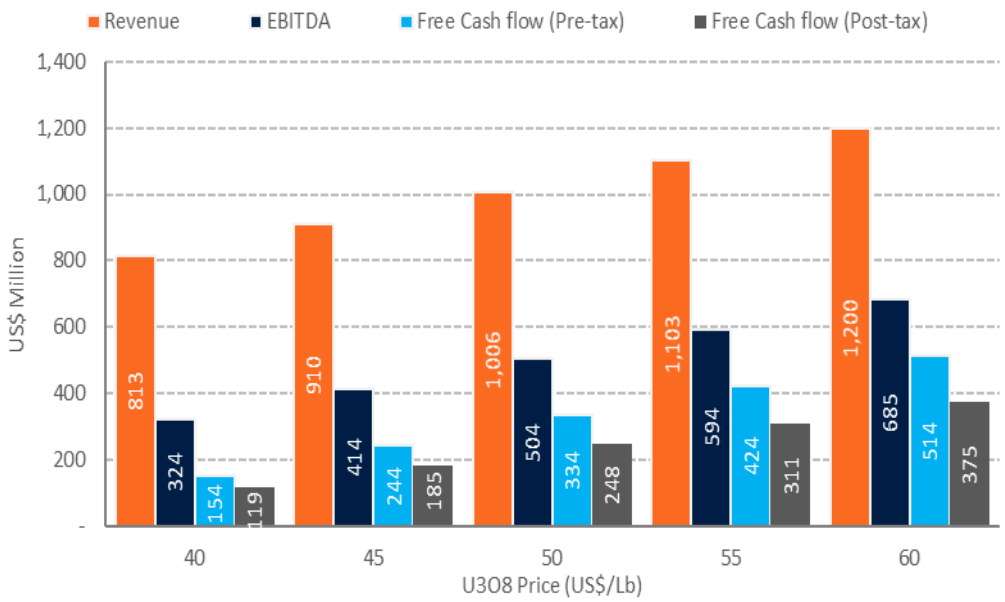


# HONEYMOON
# FINANCIAL RETURNS

**Key Financial Summary (US$ M) – Steady State Annual Average**

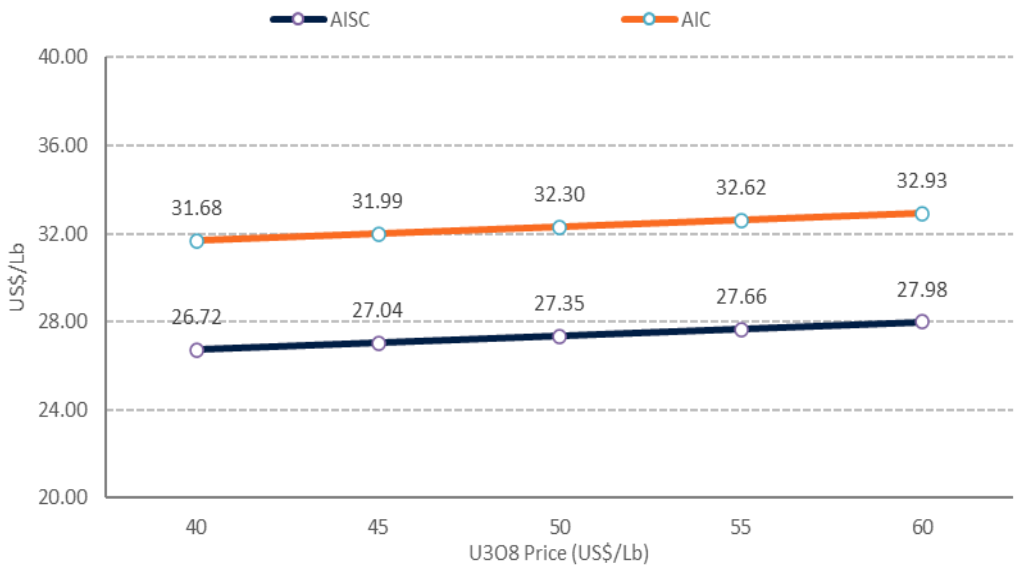



**Key Financial Summary (US$ M) – Life of Mine**



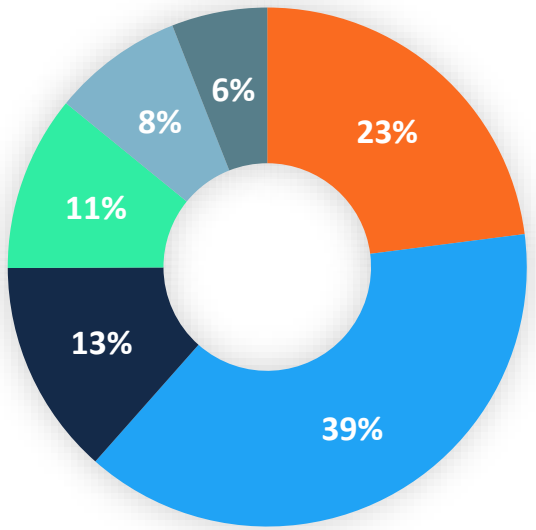
# HONEYMOON COSTINGS

## Cost Metrics (US$/Lb)

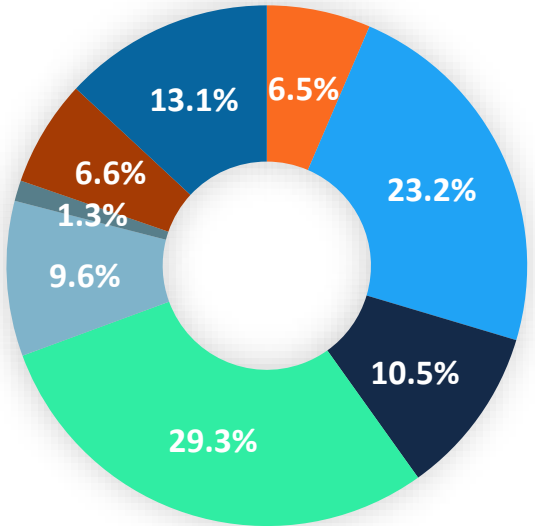


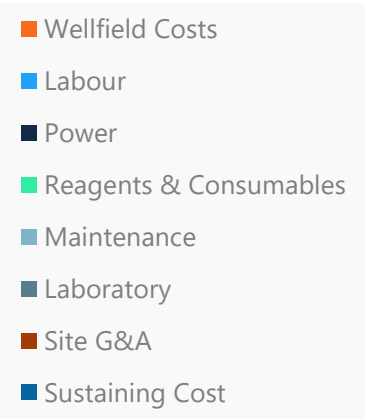

## Life of Mine CAPEX (%)




## Life of Mine OPEX (%)

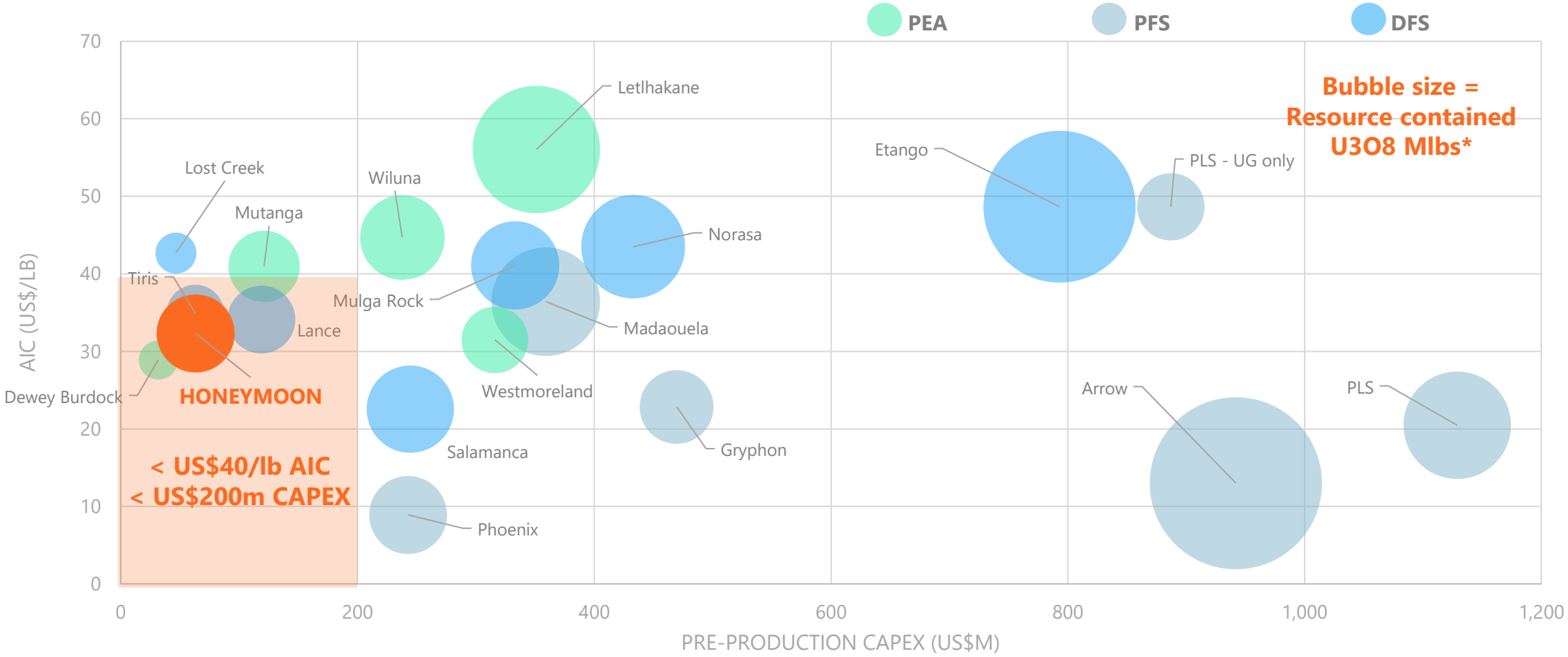




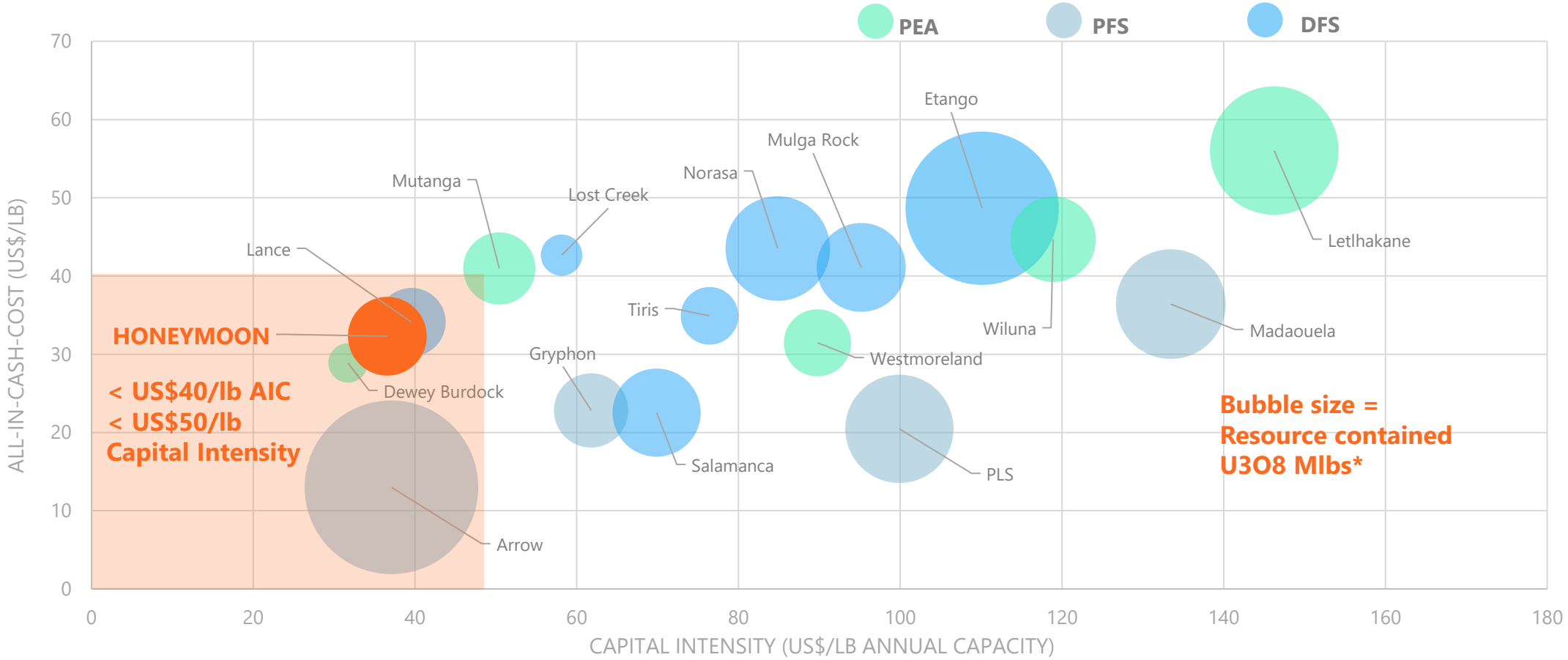
# **GLOBAL PEER** Comparisons of Development Projects

# CAPEX & ALL IN COST
## BY PHASES OF DEVELOPMENT




*Refer Appendix for further information on each Company and Project including full details of Mineral Resource by category.

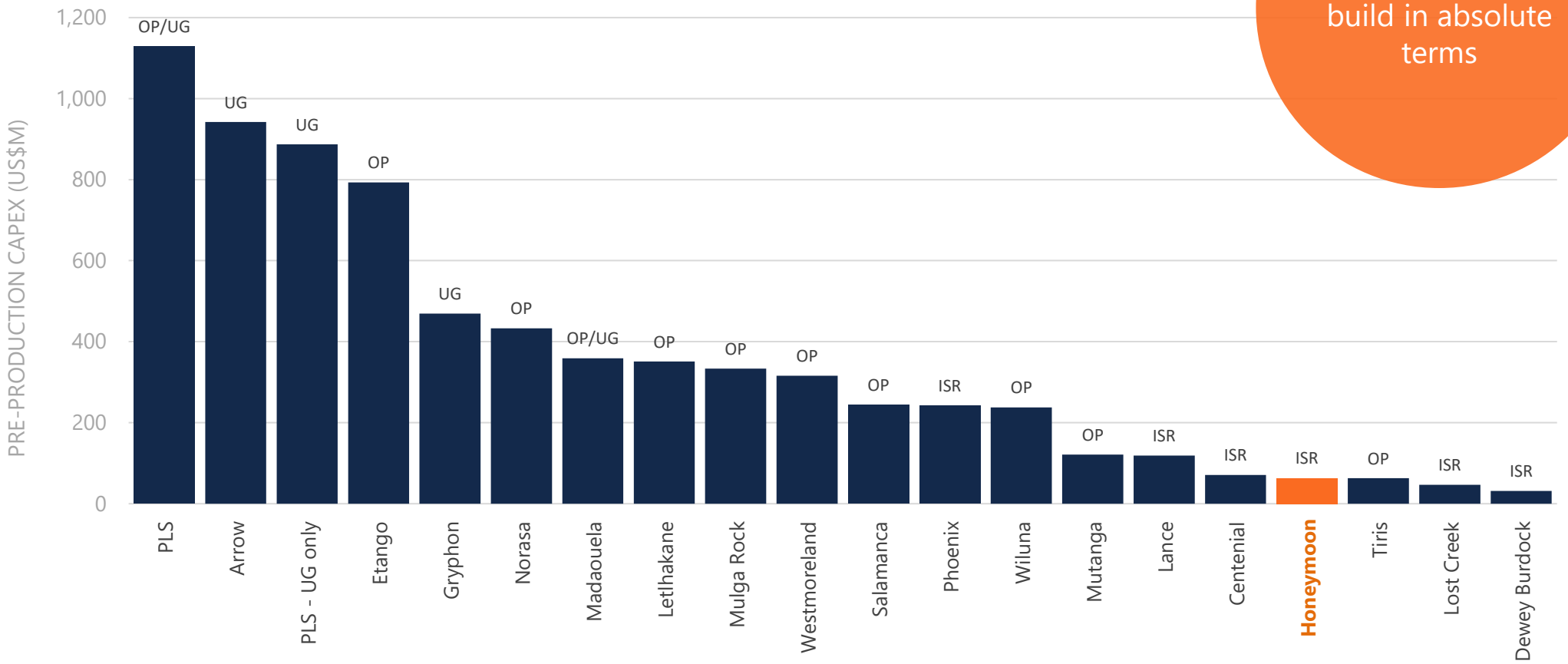
# CAPEX INTENSITY & ALL IN COST
## BY PHASES OF DEVELOPMENT




*Refer Appendix for further information on each Company and Project including full details of Mineral Resource by category.

# **PRE-PRODUCTION** CAPEX

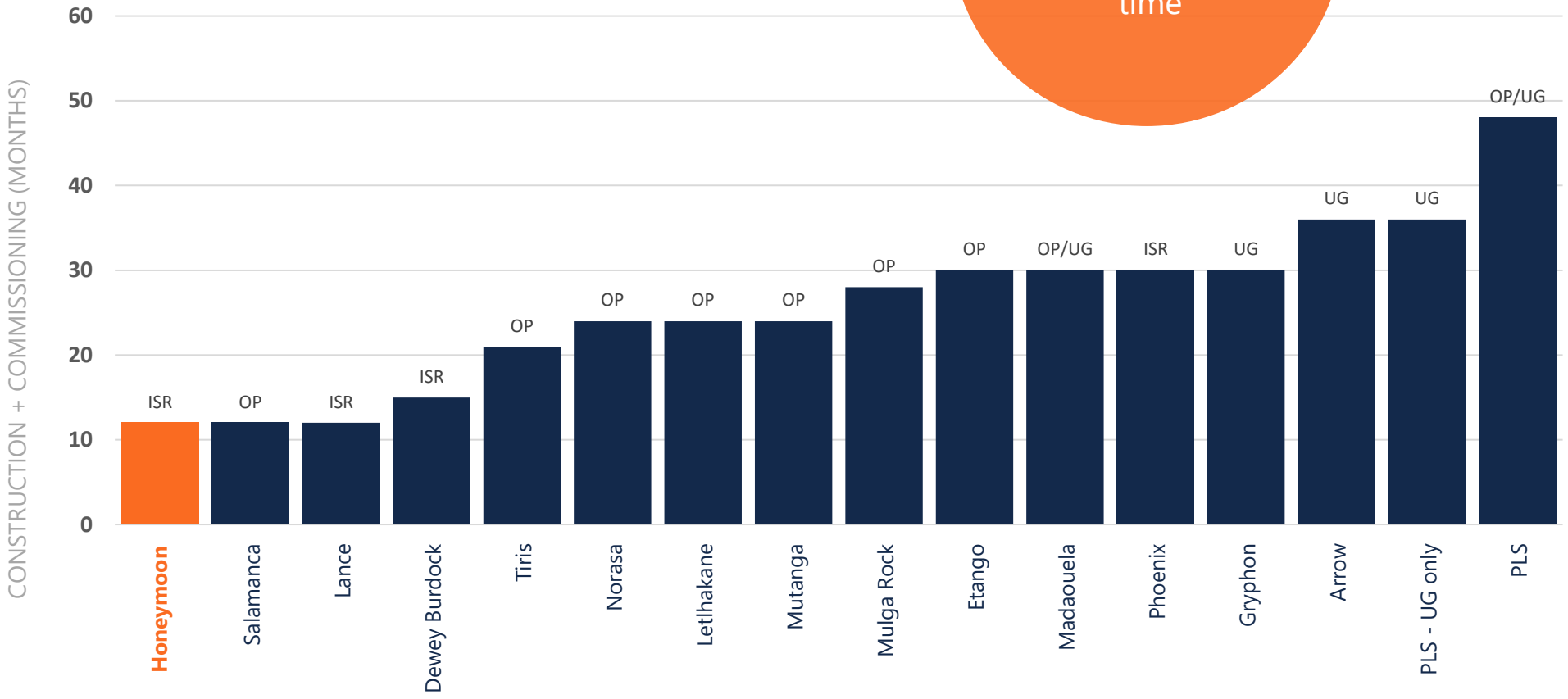
**Low capex** to build in absolute terms




Refer Appendix for further information on each Company and Project.

# CONSTRUCTION AND COMMISSIONING

**Competitively short** construction time




Refer Appendix for further information on each Company and Project.



# THE CASE
# FOR NUCLEAR

# URANIUM:
# STRONG MARKET FUNDAMENTALS

## OPPORUNITY

- Strong fundamentals supporting a positive price outlook
- Uranium supply and demand fundamentals are rebalancing in an accelerated fashion
- Lack of viable alternatives to provide massive amounts of clean and reliable power

## RISING DEMAND

- Demand has exceeded global production in almost every year since 1990
- Highest nuclear power growth in past 25 years
  - 442 Operable reactors in 31 countries
  - 53 Units under construction
  - 110 Reactors planned
  - 330 Reactors proposed

## REDUCED PRODUCTION

- Uranium production is now in deficit to demand
- Significant long term supply shortage is emerging
- Spot prices below production costs and hedges falling off

## CUTTING SUPPLY

- Dramatic cuts to global uranium supply
- US$ 60lb incentive price required for majority of new uranium production to be economically viable
- US$ 40lb minimum incentive price required for majority of idled mines to restart

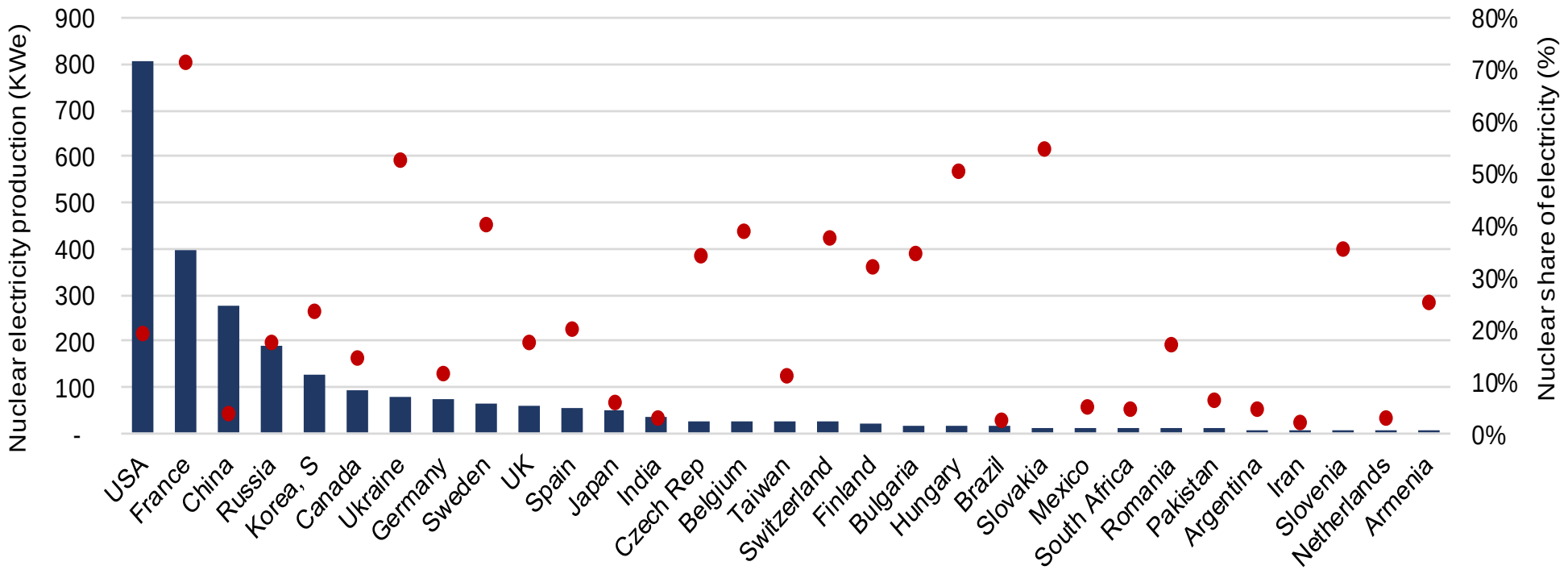
## BARRIERS TO ENTRY

- No new production can be built economically at current prices
- Lack of funding for new exploration
- Permitting requirements increasingly difficult with long time lags

# **NUCLEAR** CAPACITY

**USA and France continue to dominate** overall reactor demand with 32% and 15% of nuclear capacity

**Nuclear electricity production and nuclear share of total electricity by country**

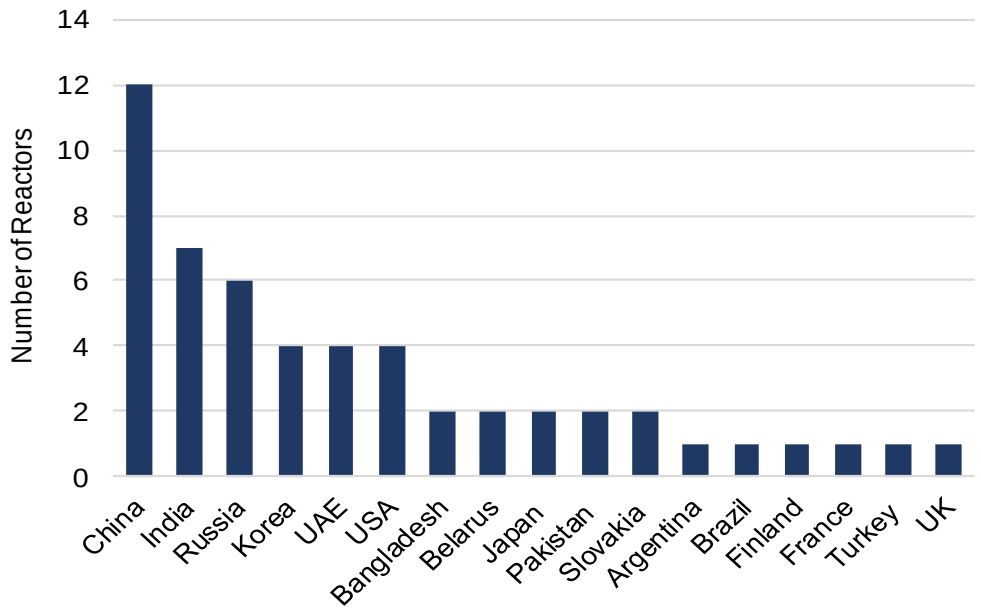



Source: World Nuclear Association, Canaccord Genuity Uranium Sector Note

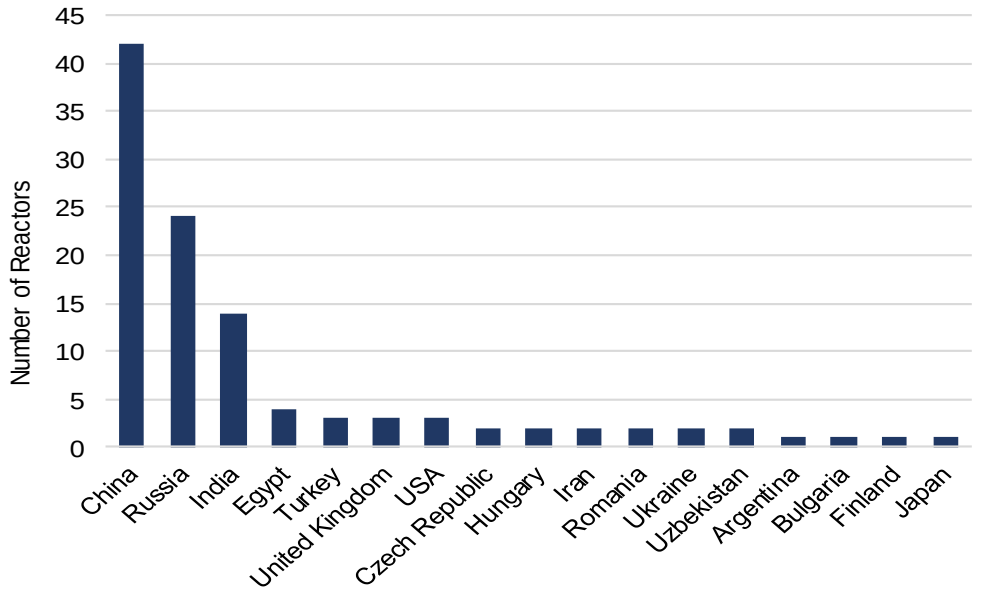
# **NUCLEAR** CAPACITY

**China is leading the increase** in reactor buildouts, in addition to India and Russia.

**Nuclear reactors under construction**




**Nuclear reactors planned**

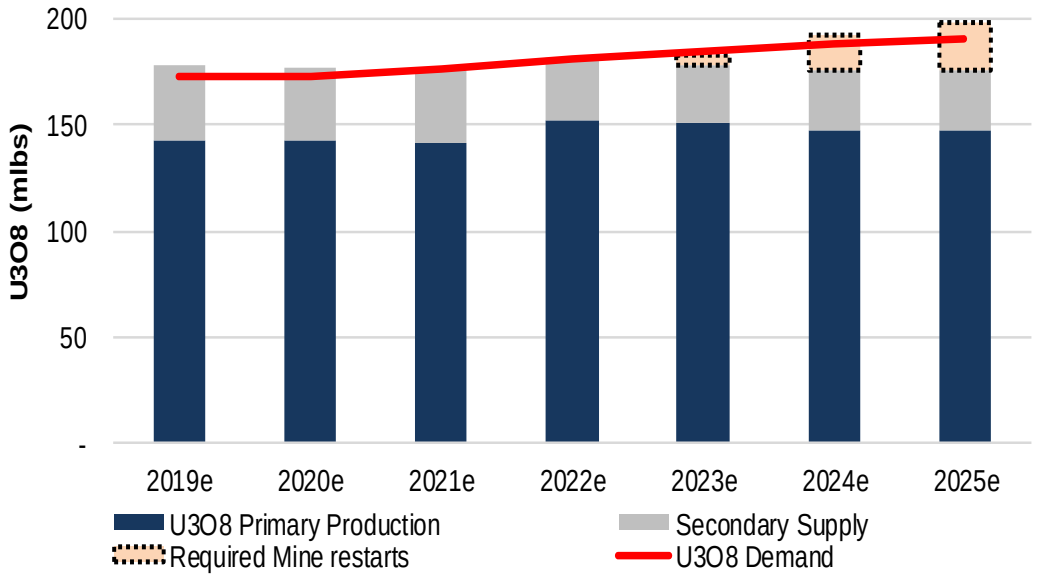



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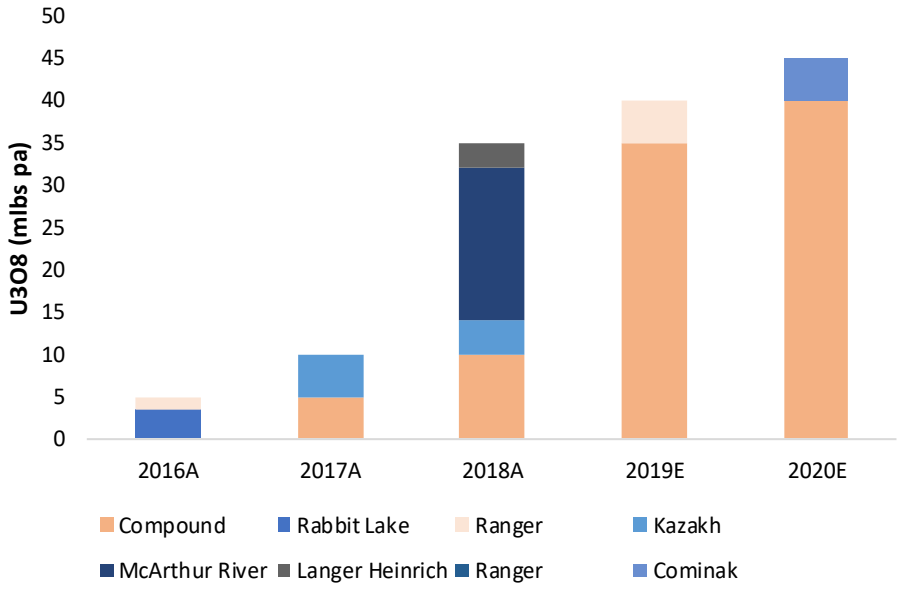
# SUPPLY AND DEMAND

**Low uranium prices have curtailed supply.** Contract prices must rise to incentivise new production meeting known demand

**Supply Demand forecast**




**Closures represent ~25% of supply base**

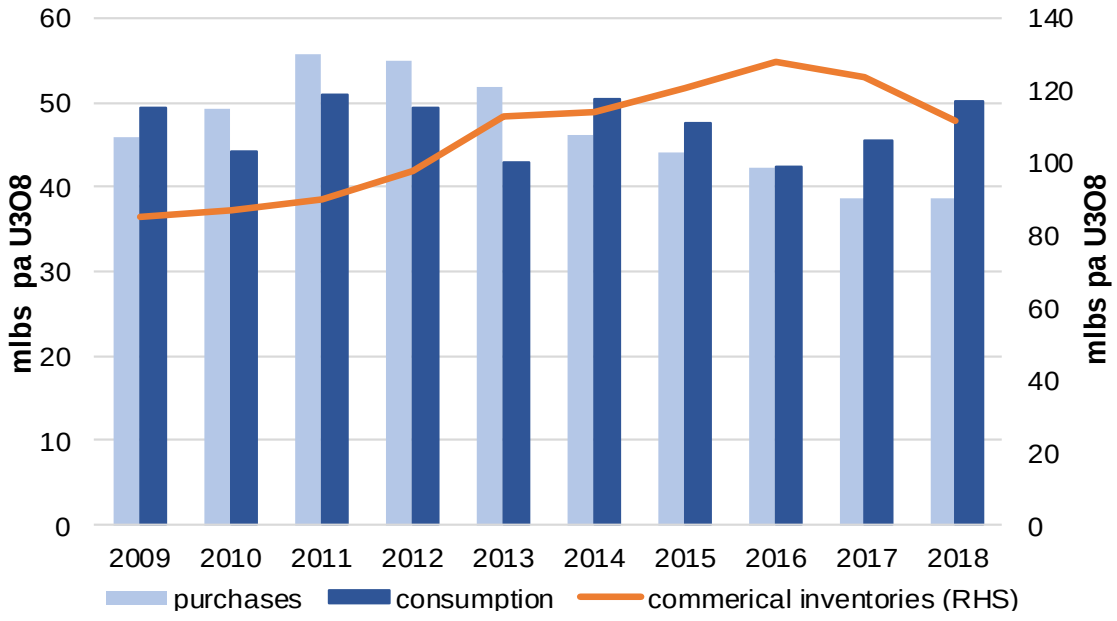



Source: SNL, UxC, WNA, IAEA, Company Reports, Canaccord Genuity estimates

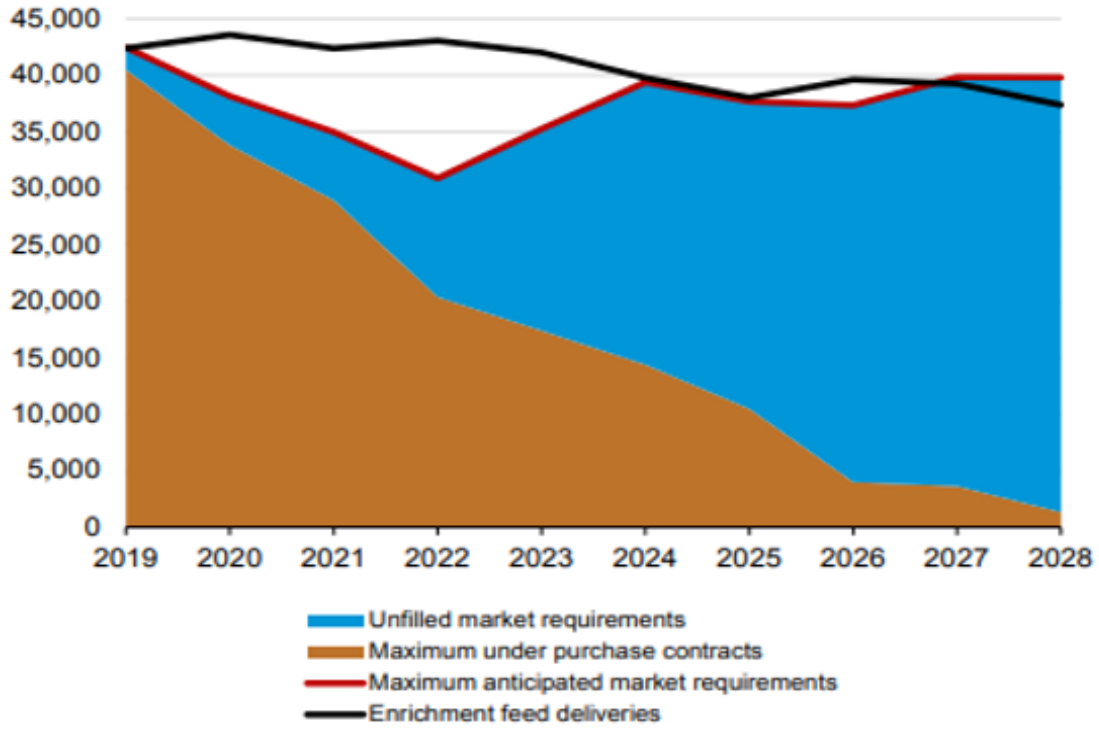
# **CONTRACT** COVERAGE NEEDED

**Satisfying utility consumption** by drawing down inventories and buying from the spot market is not sustainable

**US inventories are being drawn down**




**US utilities will have to cover soon**

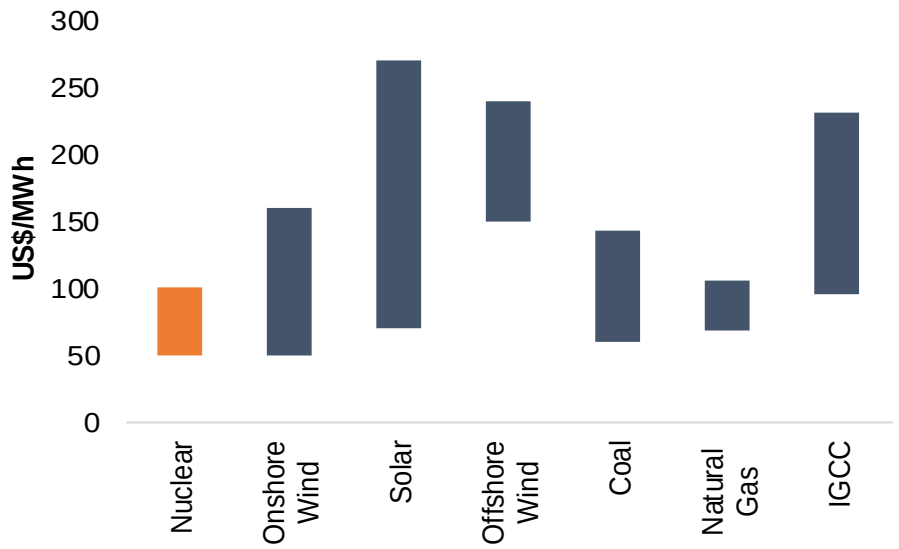



Source: USA Energy Information Administration (EIA), , Canaccord Genuity Uranium Sector Note

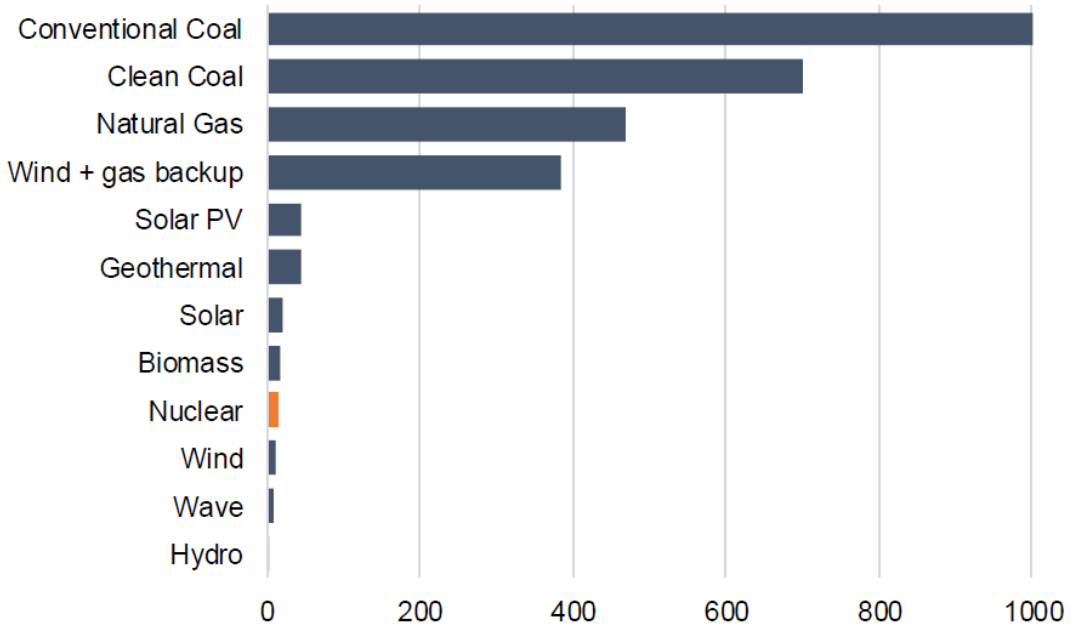
# **NUCLEAR ENERGY** COSTS & $CO_2$

**Nuclear energy remains one of the most cost competitive sources of energy**, with lowest $C0_2$ emissions

**Levelised unit cost and $C0_2$**




**$C0_2$ emissions by energy type (kg $C0_2$/kWh)**




Source: Nuclear Energy Agency, Canaccord Genuity Uranium Sector Note



# APPENDIX

**Source:** SS: Scoping Study, PEA: Preliminary Economic Assessment, PFS: Preliminary Feasibility Study, DFS: Definitive Feasibility Study or Feasibility Study. All study outputs from technical reports on the respective company's websites. Exchange rates used A$:US$0.68 and C$:US$0.75. All Mineral Resource, Ore Reserves and Study findings have been reported on a 100% equity basis.

# GLOBAL PEER COMPARISONS REFERENCE TABLE

| Company | Project | Country | Development Phase | Year of Study | Mining Method | Study price $/lb | Construction months | Capex $m | Opex C1 US$/lb | Opex AISC US$/lb | Opex AIC US$/lb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Boss Resources | Honeymoon | Australia | FS | 2020 | ISR | 50 | 12 | 63 | 21.07 | 27.40 | 32.30 |
| Berkeley Energia | Salamanca | Spain | DFS | 2016 | OP | 39-67 | 12 | 245 | 15.39 | 17.31 | 22.54 |
| Aura Energy | Tiris | Mauritania | DFS | 2019 | OP | 60 | 21 | 63 | 25.43 | 29.81 | 34.91 |
| Vimy Resources | Mulga Rock | Australia | DFS | 2018 | OP | 60 | 28 | 333 | 27.93 | 34.00 | 41.09 |
| Forsys metals | Norasa | Namibia | DFS | 2015 | OP | 65 | 24 | 433 | 34.72 | 37.85 | 43.50 |
| Bannerman Resources | Etango | Namibia | DFS | 2015 | OP | 75 | 30 | 793 | 38.00 | 41.64 | 48.65 |
| Peninsula | Lance | US | DFS | 2018 | ISR | 49 | 12 | 119 | 15.59 | 31.77 | 34.10 |
| Ur Energy | Lost Creek | US | Production | 2016 | ISR | - | - | 47 | 37.83 | 37.83 | 42.67 |
| Denison | Phoenix | Canada | PFS | 2018 | ISR | 29-45 | 30 | 243 | 3.33 | 4.85 | 8.90 |
| Denison | Gryphon | Canada | PFS | 2018 | UG | 50 | 30 | 469 | 11.70 | 13.42 | 22.82 |
| Goviex Uranium | Madaouela | Niger | PFS | 2015 | OP/UG | 70 | 30 | 359 | 24.50 | 31.49 | 36.40 |
| Fission Uranium | PLS | Canada | PFS | 2019 | OP/UG | 50 | 48 | 1,129 | 6.77 | 8.28 | 20.46 |
| Fission Uranium | PLS - UG only | Canada | PFS | 2019 | UG | 50 | 36 | 887 | 7.18 | 10.45 | 48.65 |
| NexGen Energy Ltd | Arrow | Canada | PFS | 2018 | UG | 50 | 36 | 942 | 4.38 | 9.13 | 12.98 |
| A Cap Resources | Letlhakane | Botswana | SS | 2015 | OP | 81 | 24 | 351 | 40.00 | 47.92 | 56.04 |
| Toro Energy | Wiluna | Australia | PEA | 2014 | OP | 70 | 24 | 238 | 31.10 | 37.26 | 44.69 |
| Goviex | Mutanga | Zambia | PEA | 2017 | OP | 50 | 24 | 121 | 31.10 | 36.37 | 40.95 |
| Laramide | Westmoreland | Australia | PEA | 2016 | OP | 65 | - | 316 | 23.30 | 24.57 | 31.47 |
| Azarga Uranium | Centenial | US | PEA | 2010 | ISR | 65 | - | 71 | 34.94 | 34.94 | 42.20 |
| Azarga Uranium | Dewey Burdock | US | PEA | 2019 | ISR | 55 | 15 | 32 | 10.46 | 26.66 | 28.88 |

**Source:** SS: Scoping Study, PEA: Preliminary Economic Assessment, PFS: Preliminary Feasibility Study, DFS: Definitive Feasibility Study or Feasibility Study. All study outputs from technical reports on the respective company's websites. Exchange rates used A$:US$0.68 and C$:US$0.75. All Mineral Resource, Ore Reserves and Study findings have been reported on a 100% equity basis.

# GLOBAL PEER COMPARISONS REFERENCE TABLE

| Company | Project | Country | Measured Grade (ppm) | Mlbs U3O8 | Indicated Grade (ppm) | Mlbs | Inferred Grade (ppm) | Mlbs | Resource (M+I+I) Mlbs | Resource Grade ppm U3O8 | Ore Reserve (P+P) Mlbs | Ore Grade ppm U3O8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boss Resources | Honeymoon | Australia | 1,100 | 7.6 | 630 | 25.5 | 570 | 39 | 71.6 | 620 | - | - |
| Berkeley Energia | Salamanca | Spain | 597 | 12.3 | 516 | 47.5 | 395 | 30 | 89.3 | 514 | 54.6 | 408 |
| Aura Energy | Tiris | Mauritania | 355 | 3.6 | 334 | 7.0 | 344 | 28 | 38.5 | 345 | 8.1 | 336 |
| Vimy Resources | Mulga Rock | Australia | 1,100 | 13.0 | 790 | 33.0 | 432 | 45 | 91 | 570 | 42 | 845 |
| Forsys metals | Norasa | Namibia | 200 | 7.0 | 196 | 108.0 | 200 | 11 | 126 | 200 | 90.7 | 200 |
| Bannerman Resources | Etango | Namibia | 194 | 14.4 | 188 | 150.2 | 182 | 106.1 | 270.7 | 186 | 130.1 | 195 |
| Peninsula | Lance | US | 489 | 3.9 | 466 | 11.9 | 470 | 38.1 | 53.9 | 473 | - | - |
| Ur Energy | Lost Creek | US | 480 | 8.0 | 440 | 5.2 | 440 | 6.4 | 19.7 | 458 | - | - |
| Denison | Phoenix | Canada | - | - | 191,000 | 70.2 | 58,000 | 1.1 | 71.3 | 191,000 | 59.7 | 191,000 |
| Denison | Gryphon | Canada | - | - | 17,000 | 61.9 | 12,000 | 1.9 | 63.8 | 17,000 | 49.7 | 18,000 |
| Goviex Uranium | Madaouela | Niger | 1,200 | 31.4 | 1,400 | 79.4 | 1,300 | 27.7 | 138.42 | 1,360 | 51.3 | 923 |
| Fission Uranium | PLS | Canada | - | - | 21,000 | 102.4 | 12,200 | 32.8 | 135 | 16,940 | 90.5 | 14,200 |
| Fission Uranium | PLS - UG only | Canada | - | - | 10,200 | 21.0 | 12,300 | 32.3 | 53.3 | 11,470 | 8.236 | 6,300 |
| NexGen Energy Ltd | Arrow | Canada | - | - | 40,300 | 256.6 | 8,600 | 91.7 | 347.7 | 31,950 | 234 | 30900 |
| A Cap Resources | Letlhakane | Botswana | - | - | 323 | 42.2 | 321 | 148.2 | 190.4 | 321 | - | - |
| Toro Energy | Wiluna | Australia | 579 | 6.2 | 520 | 60.4 | 368 | 17.4 | 84 | 482 | - | - |
| Goviex | Mutanga | Zambia | 400 | 4.8 | 300 | 10.4 | 300 | 44.9 | 60 | 284 | - | - |
| Laramide | Westmoreland | Australia | - | - | 880 | 36.0 | 800 | 15.9 | 51.9 | 869 | - | - |
| Azarga Uranium | Centenial | US | - | - | 900 | 10.4 | 900 | 2.3 | 17.7 | 1,130 | | |
| Azarga Uranium | Dewey Burdock | US | 1,320 | 14.3 | 720 | 2.8 | 550 | 0.7 | 17.8 | 1,135 | - | - |

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