

31 DECEMBER 2019 QUARTERLY REPORT

Boss Resources Limited (ASX: BOE) (Boss or the Company) is pleased to provide shareholders with the quarterly activities report for the three-month period ending 31 December 2019.

HIGHLIGHTS

- **Outstanding Feasibility Study (FS)¹ confirms Boss Resources as Australia's next uranium producer**
 - Honeymoon can fast-track production within 12 months using A\$170m of historical infrastructure expenditure, giving it first mover advantage on a uranium market rally
 - FS base case, using a conservative US\$50/lb long-term U₃O₈ price, derives Net Present Value (pre-tax) (NPV_{8%}) of US\$163m (A\$240m²) and 42.9% Internal Rate of Return (pre-tax)
 - Estimate average all-in cost (AIC) of US\$32.3/lb U₃O₈ over life of mine (LOM), and an all-in sustaining cost (AISC) of US\$27.4/lb U₃O₈ over LOM (payback period of 4.5 years)
 - Honeymoon is fully permitted to export 3.3Mlbs/pa U₃O₈ equivalent³
 - FS limited to 36Mlb JORC Resource Restart Area⁴, a further 36Mlb sits outside this area plus an additional and significant Exploration Target⁵
 - FS demonstrates a very low upfront capital requirement to restart Honeymoon and become one of the lowest cost uranium producers globally
- **Eastern Region passive seismic data reviewed**
 - Completion of passive seismic cross sections reveals excellent correlation with other geophysical and drilling datasets in the estimation of basement depths
 - Strong indication of structural influence on palaeochannel formation and additional base metal mineralisation, as shown by ongoing development of regional structural models
- **Strong cash balance of A\$5.3 million at December quarter end**
 - Strong bank balance to fully fund 2020 operating expenditure. Plus, A\$8.8m environmental bond (restricted cash) held with South Australian government
 - Final A\$4m promissory note to the vendor of Honeymoon settled during Q4 CY2019
- **Appointment of ASX 100 director, Peter O'Connor, as the new Chairman of Boss Resources**

¹ The forecast financial information (and the production targets on which such forecast financial information is based) in this Quarterly Report was announced on 21 January 2020. All material assumptions underpinning the forecast financial information (and the production targets on which such forecast financial information is based) in the announcement on 21 January 2020 continue to apply and have not materially changed

² A\$:US\$ exchange rate A\$1:US\$0.68

³ Refer ASX announcement dated 8 April 2019

⁴ Refer ASX announcement dated 25 February 2019

⁵ Refer ASX announcement dated 25 March 2019

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This ASX announcement was approved and authorised by the Board of Boss Resources Limited.

Competent Persons Statements

Mineral Resources

The information in this report that relates to the Mineral Resources on the Honeymoon Project were initially reported by the Company to ASX on 20 January 2016, 8 April 2016, 15 March 2017 and 25 February 2019. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcements continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcements.

Exploration Target

The information contained in this announcement that relates to the Exploration Target was first reported by the Company to the ASX on 25 March 2019. The Exploration Target does not include areas of 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. The Company is not aware of any new information or data that materially affects the information included in the announcement. The Company confirms that the form and context in which the Competent Person's finding are presented have not been materially modified from the original market announcement.

Honeymoon Uranium Project, South Australia

Boss is an ASX-listed exploration and development company. The Company’s primary asset is its 100%-owned Honeymoon Uranium Project (**Honeymoon** or the **Project**) in South Australia, approximately 80km northwest of Broken Hill near the South Australian / New South Wales border. The previously operated mine is fully permitted, and Boss is planning a low capex restart to recommence uranium production within a very short lead time and become a globally competitive low-cost producer. Honeymoon is endorsed by the local Indigenous communities with Native Title agreements in place, while mining and uranium export permits (both State and Federal) remain valid for ML6109, within which the Project sits.

Boss’s Restart and Expansion plans have been split into three separate stages, of which Stage 1 and 2 are presented as the base case for the FS, completed in January 2020, showing that production can recommence within a 12-month period. Stage 1 development will focus on the restart of the existing solvent extraction (**SX**) plant, which has a nameplate capacity of 0.88Mlb/annum U₃O₈ equivalent. This involves recommissioning the recently operated plant (which produced and exported during 2011 – 2013), inclusive of several key low-cost modifications to rectify the processing issues encountered by the previous owners, Uranium One Australia Pty Ltd. In addition, the yellow cake drying facility will be upgraded from the existing dryers to high temperature kilns producing a calcined U₃O₈ product which has greater market appeal.

Stage 2 is an expansion strategy that will increase production to 2Mlb/annum U₃O₈ equivalent and involves the construction of a new Ion Exchange (**IX**) circuit. The expansion will also include additional processing infrastructure required to handle increased pregnant leach solution (**PLS**) flow rates and a new water treatment plant to manage increased calcium and sulphate levels in the leach liquors. Stage 3 is not considered in the base case FS, but is being investigated for ramp up of production capacity from 2Mlb/annum to in excess of 3Mlb/annum U₃O₈ equivalent as endorsed by Federal EPIP Act approvals.

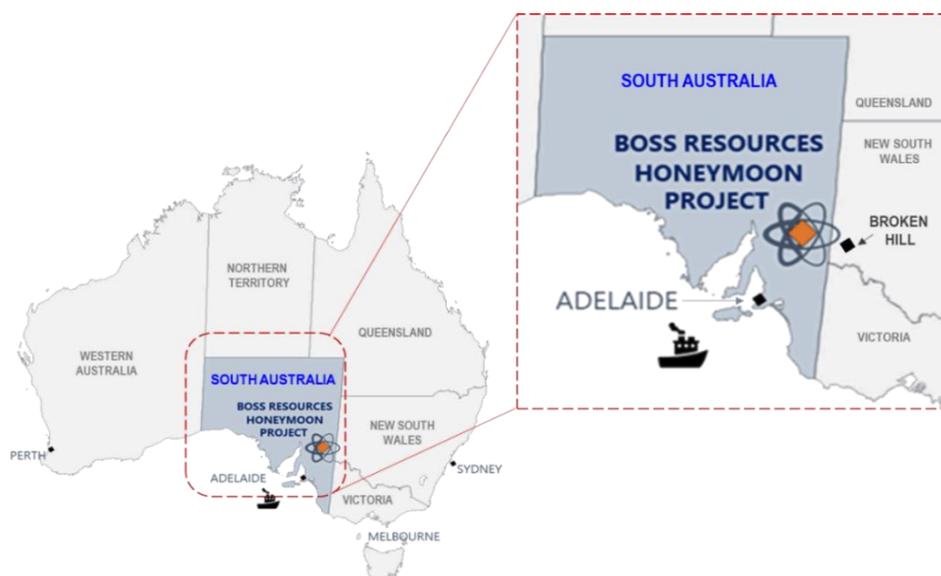


Figure 1: Location of Honeymoon

The base case for the FS was limited to the Restart Area, comprising 36Mlbs of JORC resource. Initial production will consist of wellfields previously developed by Uranium One, that are contained within the Measured and Indicated portions of the Mineral Resource on ML6109 in the Restart Area. As production ramps up, new wellfields will be developed. Boss will utilise modern well installation technology to precisely target the production zone and improve leaching performance.

A further 36Mlbs of JORC resource sits outside the Restart Area, with an additional Exploration Target of 28Mt to 133Mt of mineralisation at a grade of 340ppm to 1,080ppm U_3O_8 for a contained 58Mlbs to 190Mlbs U_3O_8 (26,300 to 86,160 tonnes of contained U_3O_8), using a cut-off of 250ppm. The Exploration Target would be exploited when the anticipated upswing in uranium fundamentals occurs. Note 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.

Boss anticipates the Stage 3 increase in production capacity to be achieved through the development of satellite operations on its Western tenements, with uranium-loaded resin then trucked to the Honeymoon plant. The Honeymoon plant would be modified with an additional IX column and downstream circuits to meet an increased production target as required by the market. The approach for Stage 3 will be confirmed once the source of the additional production has been better defined through exploration programs currently underway.

Honeymoon Feasibility Study completed

During the quarter, Boss announced results of Honeymoon's FS for the base case restart and expansion of its Honeymoon Project, based on:

- Stage 1 – Re-commission the existing SX facility and infrastructure including the various modifications required to improve performance, rectify problems identified during previous operations and preparing for Stage 2 expansion;
- Stage 2 – Supplement existing SX facility using a parallel IX process along with the expanded yellowcake drying and packaging capacity and modified raffinate / ground water treatment plant all to produce 2Mlb/annum U_3O_8 equivalent.

Outstanding FS results, based on a conservative U_3O_8 price of US\$50/lb, position Honeymoon as one of the world's most advanced uranium development projects that can be fast-tracked to re-start production in 12 months with low capital intensity to seize an anticipated rally in the uranium market.

Highlights include:

First Mover Advantage

- Honeymoon fully permitted to export 3.3Mlbs/annum U_3O_8 equivalent.
- Fast-tracked production, within 12-months, utilising A\$170m of historical infrastructure expenditure and existing plant which previously produced and exported uranium.
- Market forecasts indicate an improvement in the underlying U_3O_8 price. Honeymoon is one of a few advanced uranium projects ready to take advantage of market improvement.

Demonstrated Growth Potential

- FS Base Case is limited to the Honeymoon Restart Area only, comprising 36Mlbs JORC resource with a restart plan comprising of: Stage 1 (refurbishing the existing SX plant with significant process improvement), and Stage 2 (adding an IX circuit), to achieve an annual production of 2Mlbs U₃O₈ equivalent.
- A further 36Mlbs of JORC resources sits outside the Restart Area, in addition to a defined exploration target range, providing Boss with genuine growth opportunities for Honeymoon's mine life and production profile.
- As the anticipated upswing in uranium fundamentals occurs, Boss will restart operations and exploit these additional resources to maximise shareholder value.

Strong Financial Results

- Estimated average AIC of US\$32.3/lb U₃O₈ and an AISC of US\$27.4/lb U₃O₈ over the LOM.
- FS base case NPV_{8%} of US\$163m (A\$240m) and 42.9% IRR (pre-tax) (at an average U₃O₈ price of US\$50/lb).

Low Capital and Operating Costs

- FS demonstrates a very low upfront capital requirement to restart Honeymoon and become one of the lowest cost uranium producers globally.
- Honeymoon base case scenario results, compared to the Preliminary Feasibility Study completed in 2017, include a ~71% increase in LOM to 12 years, and a ~7% decrease in upfront capital expenditure of US\$63.2 million (A\$92.9m) (excluding offsite power provider upgrades).

Ready for Restart

- FS is the final independent validation for Honeymoon's restart, having technically de-risked the asset and optimised the process flowsheet through multiple phases of test work and study.
- Strong bank balance, with no debt, to fully fund 2020 operations to optimise capital and operating expenditure.
- Boss will continue to engage with utilities for off-take and continuing commercial discussions.

Project Overview

Boss' FS provides a base case to fast-track uranium production from the Honeymoon Restart Area to achieve a 12-year LOM at 2Mlb/annum U₃O₈ equivalent, from only 35.7Mlb of the Project's global mineral resource (JORC 2012) of 71.6Mlb. A total of 94% of the Restart Area Measured and Indicated resource is located within the boundaries of ML6109, which has mining approval. ML6109 has a Uranium Mineral Export Permission for 3.3Mlb/annum U₃O₈ as renewed by the Australian Federal Government in April 2019. No new permitting is required on ML6109.

The FS indicates a technically sound and financially viable project, capable of generating more than A\$492 million in pre-tax free cash flow over the Project life (Table 1). Total pre-production capital is estimated at A\$92.9 million, including a project contingency of A\$8.1 million. The FS is based on in-situ recovery (ISR) mining with an average uranium tenor of 49 mg/l targeted over the LOM from the wellfields. All base case financial analyses were completed assuming an average US\$50/lb U₃O₈ price

over the LOM. Sensitivity analysis at a lower and higher industry referenced prices of US\$40/lb U₃O₈ and US\$60/lb U₃O₈ demonstrates downside and upside to the Project (Table 2). The Company considers a base sales price of US\$50/lb U₃O₈ over the LOM is reasonable given that current spot and term uranium prices are well below the price required to guarantee viability of a large proportion of the world's existing production. Uranium analysts predict that a long-term spot price in the mid US\$40's (anticipated from 2023) will incentivise restarts whilst a price closer to US\$60/lb will be needed for most new mines.

Table 1: Summary of Financial Outcomes (assuming a US\$50/lb U₃O₈ price)

Measure ⁵	Unit	A\$M	US\$M ⁴
Uranium Produced (Stage 1+2 LOM total)	Mlbs	20.74	
Gross Revenue (over LOM)	\$M	1,480	1,006
Free Cash flow (Pre-tax)	\$M	492	334
Free Cash flow (Post-tax)	\$M	365	248
EBITDA margin (avg over LOM)	%	50.11%	
IRR (Pre-tax)	%	42.90%	
IRR (Post-tax)	%	33.29%	
NPV 8% (Pre-tax) ¹	\$M	240	163
NPV 8% (Post-tax) ¹	\$M	166	113
Stage 1 & 2 Capital Cost	\$M	92.9	63.2
AISC ²	\$/lb U ₃ O ₈	40.2	27.4
AIC ³	\$/lb U ₃ O ₈	47.5	32.3
Total Project Payback (post tax, after production commences)	Years	4.5	

1. 8% discount rate applied
2. AISC = wellfield operating, processing, site G&A, freight, marketing, royalties and sustaining capital expenditure
3. AIC = AISC + development and deferred capital expenditure
4. A\$:US\$ exchange rate A\$1:US\$0.68
5. Refer ASX announcement 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 target, continue to apply and have not materially changed

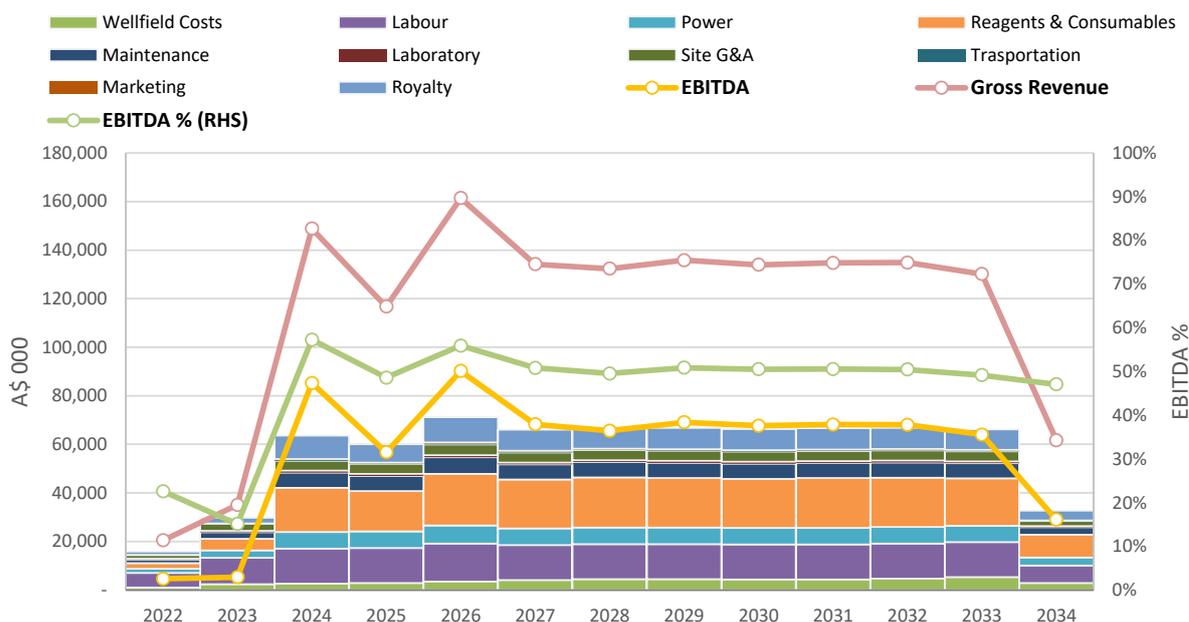


Figure 2: Project revenue and costs (A\$'000's) at a U₃O₈ price of US\$50/lb

About 35.7Mlb of the Project's global mineral resource of 71.6Mlb (using a 250ppm U₃O₈ cut-off) is outside the Restart Area. In addition, there are genuine resource growth opportunities from a defined Exploration Target, comprising 28Mt to 133Mt of mineralisation at 340ppm to 1,080 ppm U₃O₈ for 58Mlbs to 190Mlbs U₃O₈ (26,300 to 86,160 tonnes of contained U₃O₈), using a cut-off of 250ppm. Boss has used geophysical exploration techniques to identify new drill-ready targets. Subsequent drilling of these targets has the potential to significantly increase the global resource and expand Honeymoon's production profile and LOM.

Boss designed the FS to fast-track production from Honeymoon's existing SX plant within a 12-month period, following a decision to mine, to capitalise on any improved market fundamentals. It plans to increase production to 2Mlbs/annum U₃O₈ equivalent through the addition of the IX plant which will take approximately 20 months to design, construct and commission. The envisaged final stage of the production is to ramp up plant capacity from 2Mlbs/annum, with Honeymoon permitted to produce more than 3Mlb/annum U₃O₈ equivalent, contingent on market conditions and U₃O₈ price. Stage 3 does not form part of the current FS, but will be investigated when the source of additional uranium production has been better defined.

The FS has been evaluated at a long term US\$50/lb U₃O₈ price (**FS Base Case**). The Project is highly leveraged to the uranium price, as identified in Table 2, which displays comparable potential financial outcomes at U₃O₈ prices of US\$40/lb (**FS Downside**) and US\$60/lb (**FS Upside**). In the FS Upside scenario, the Project generates an additional A\$264m (+54%) in pre-tax cash flows while the pre-tax NPV increases by 63% to US\$266m (A\$392m).

Table 2: Key Financial Summary and Sensitivities with U₃O₈ prices of US\$40/lb, US\$50/lb, US\$60/lb

Financial Metric ³	Unit	FS Downside US\$40/lb		FS Base Case US\$50/lb		FS Upside US\$60/lb	
		A\$	US\$	A\$	US\$	A\$	US\$
Revenue	\$M	1,196	813	1,480	1,006	1,764	1,200
EBITDA	\$M	477	324	742	504	1,007	685
Free Cash flow (Pre-tax)	\$M	227	154	492	334	756	514
Free Cash flow (Post-tax)	\$M	175	119	365	248	551	375
EBITDA margin	%	39.86%		50.11%		57.06%	
IRR (Pre-tax)	%	22.10%		42.90%		62.11%	
IRR (Post-tax)	%	17.25%		33.29%		47.97%	
NPV 8% (Pre-tax)	\$M	88	60	240	163	392	266
NPV 8% (Post-tax)	\$M	57	39	166	113	273	185
NPV 6% (Pre-tax)	\$M	113	77	286	194	459	312
NPV 6% (Post-tax)	\$M	78	53	202	138	323	220
AISC ¹	\$/lb	39.3	26.7	40.2	27.4	41.1	27.9
AIC ²	\$/lb	46.6	31.7	47.5	32.3	48.4	32.9
Total Project Payback	yrs	9.3		4.5		3.0	

1. AISC = wellfield operating, processing, site G&A, freight, marketing, royalties and sustaining capital expenditure
2. AIC = AISC + development and deferred capital expenditure
3. Refer ASX announcement 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 target, continue to apply and have not materially changed

The FS was compiled with the assistance of several independent and reputable Australian-based engineering companies, industry experts and qualified Boss personnel.

More detail on the Honeymoon FS is available in the ASX Announcement dated 21 January 2020.

Analysis of 2019 Passive Seismic Survey Results

Boss Resources seeks to employ the most advanced, low-cost, non-invasive and multi-disciplinary exploration alternatives to conduct large-scale exploration while continuing to increase project value for shareholders.

Since completion of the 2019 field programs, exploration work has involved the review of the passive seismic data in conjunction with all other available datasets, particularly airborne EM (**AEM**) and drilling. In December 2019, independent geophysical consultant, Resource Potentials Pty Ltd, completed the final processing for the passive seismic program. Results were compared with estimated basement depths from historical AEM cross-sections and drilling data, revealing excellent correlation between all three datasets. Additionally, the ongoing comprehensive review of all available historic exploration and geological databases has resulted in the development of a working, regional-scale, 3D structural model that strongly supports the influence of faults on palaeochannel development and morphology around the Project area. This review work has also revealed multiple, high-grade zinc intercepts from various generations of drilling into the basement bedrock that warrants further investigation before reporting.

Boss looks forward to providing an update of results in Q1 2020.

Corporate

Cash reserves

During the quarter, the Company settled the final promissory note repayment of A\$4m to the vendor of Honeymoon while receiving a A\$0.36m refund under the Federal Government's Research and Development Tax Incentive Scheme relating the FY19. This resulted in the Company's available cash and cash equivalents totalling A\$5.3m for the quarter ended 31 December 2019. Note, the reported cash balance excludes an environmental bond of A\$8.8m held with the South Australian government, which the Company treats as restricted cash.

Appointment of Peter O'Connor as new Chairman of Boss Resources

On 21 January 2020, the Company announced the appointment of Peter O'Connor as 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 the sale of IMS to BNP Paribas in 2008, he was deputy chairman of FundQuest UK Ltd, with \$10 billion under management. FundQuest globally had \$35 billion of assets under management from 2008-2010.

Mr O'Connor has been a Non-Executive Director of ASX 100 company Northern Star Resources Ltd (ASX: NST) since 2012, during which NST has grown its market cap significantly to over \$9 billion. He is also a Non-Executive Director of Blue Ocean Monitoring Limited.

Results of Annual General Meeting

Boss Resources' held its Annual General Meeting of Shareholders on 11 November 2019. All resolutions presented were passed on a show of hands.

SCHEDULE OF MINING TENEMENTS

The following information is provided pursuant to Listing Rule 5.3.3 for the quarter ended 31 December 2019.

Tenement Name	Location	Licence Number	Interest
Yarramba	South Australia	EL5621	100%
South Eagle	South Australia	EL6081	100%
Gould's Dam	South Australia	EL5623	100%
Katchiwilleroo	South Australia	EL5622	100%
Glenorchy (Ethiudna)	South Australia	EL6020	100%
Gould's Dam	South Australia	RL83-85	100%
Honeymoon Mine	South Australia	ML6109	100%

There were no mining tenement acquisitions or divestments during the quarter.