

30 JUNE 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 30 June 2019.

HIGHLIGHTS

- **Strong cash balance of A\$10.5 million at June quarter end**
 - Additional R&D reimbursement anticipated of \$1.15 million Q3 CY2019
- **Honeymoon Phase 1 Re-start Strategy completed with further expansion improvements**
 - Testwork & trade-off studies examining processing options deliver data required for Definitive Feasibility Study (DFS) flowsheet development
 - Final DFS flowsheet for Honeymoon Re-start and expanded production confirmed
 - DFS underway, scheduled completion Q4 CY2019
- **Australian Government renews Boss’ uranium export permit**
 - Mineral Export Permit (MEP) issued to Boss for export of natural uranium from Honeymoon to countries meeting Australia’s uranium export policy
 - Honeymoon is one of only four Australian uranium operations of scale to hold a MEP
 - Planned Re-start is fully permitted
- **Roll-out of new, cost-effective exploration technique trials**
 - Completion of an initial orientation survey using passive seismic geophysical method as a means of discovering new economic uranium deposits
 - Results confirm the passive seismic survey system to be a low-cost, non-invasive and a highly effective exploration alternative to fast track resource and paleochannel definition
 - Boss rolling-out passive seismic surveys to an initial 10 regional exploration targets
- **International uranium expert Bryn Jones appointed as Technical Director**
 - Industrial Chemist Bryn Jones previously held key operational positions at Australia’s only other operating ISR uranium mine operated by Heathgate Resources during its formative commissioning and production years.
 - Extensive uranium experience covering the whole mining value chain – exploration, evaluation, due diligence and design to permitting, construction, operation and rehabilitation

- Mr Jones has been involved with metallurgical processing and optimisation studies of Boss' Honeymoon Project since 2016 and will provide technical direction on the DFS and future development of Honeymoon Uranium Project.

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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 announcement.

Completion of Phase 1 Re-start Strategy

During the quarter Boss completed its proposed trade-off studies and as such, the first phase of its three-phase Re-Start Strategy for Honeymoon. The Company was pleased to report that Phase 1 was completed on time and within budget. The studies confirm NIMCIX as the preferred ion exchange technology and defined the final process flowsheet for Honeymoon's expansion.

DRA Global in Perth, Western Australia, completed the studies based on the results of earlier ANSTO Minerals (ANSTO) optimisation testwork programs. The three studies included:

- Equipment selection and costing for various ion exchange (IX) technologies;
- Confirmation of the configuration and costs associated with a nano-filtration stage originally proposed to treat the IX eluate; and
- A cost estimate of the ANSTO-patented alternate elution process to allow production of a higher-grade uranium eluate directly from IX, using an intermediate conversion stage. Results from the studies helped Boss further define the optimal process and will be included in the DFS examining the Honeymoon Re-start, due for completion Q4 2019.

With Phase 1 of the Honeymoon Re-start Strategy complete, Boss has now commenced Phase 2, which is expected to be completed in Q3 2019, with Phase 3 following shortly after. The complete Re-start Strategy is as follows:

Phase 1: Generation of final input data required for Honeymoon DFS. This included a drilling program to deliver a measured and indicated resource, an optimisation program to deliver further cost savings and/or process improvements, and a preliminary execution plan, updated cost estimate and schedule for re-start of the existing solvent extraction (SX) plant.

Phase 2: Completion of a DFS and permitting updates. The DFS engineering works; process, engineering design and cost estimation, will use the results from the Phase 1 studies along with the outputs of the wellfield design, derived from the updated mineral resource, to deliver an independent feasibility study report.

Phase 3: The third phase covers the detailed execution planning, operational readiness inclusive of the SX plant recommissioning plan, in conjunction with the ion exchange plant detailed design.

On completion of the three-phase strategy, Boss will be in the position to proceed to mine, assuming a specified global uranium price has been achieved to satisfy the targeted IRR and NPV return to shareholders. In-situ recovery (ISR) mining is a cost effective and environmentally acceptable method accounting for 50% of world uranium mined.

The Honeymoon Uranium Project combines ISR with IX production to support operations in the lowest cost quartile of world-wide producers. Boss' proposed production strategy to deliver 3.2Mlb U₃O₈ equivalent per year from Honeymoon is based on the following stages:

- Stage 1:** Re-start of the existing operation; which will involve the use of existing wellfields, and re-starting the existing SX plant with minor modifications to rectify identified operational issues. Construction of the IX plant will commence;
- Stage 2:** Ramp up of plant capacity to 2Mlb/annum U₃O₈ equivalent using the combined SX / IX system¹;
- Stage 3:** Ramp up plant capacity from 2Mlb/annum to ~3.2Mlb/annum U₃O₈ equivalent (after validating the IX technology) through the addition of further IX columns¹.

Highlights of Phase 1 Results include²:

- Phase 1 testwork and trade-off studies examining processing options deliver data required for Honeymoon DFS flowsheet development
- Study confirms NIMCIX ion exchange equipment as the preferred system for Honeymoon
- Cost estimates for NIMCIX equipment in-line with the Pre-feasibility results
- Alternate elution process identified to further increase the uranium tenor in the feed liquor, reducing reagent consumption and operating costs
- Final DFS flowsheet for Honeymoon re-start and expanded production confirmed
- Honeymoon DFS underway and on track for completion in Q4 CY2019

Phase 1 trade-off studies and testwork have successfully delivered the required inputs for the flowsheet development in the DFS.

Renewal of Mineral Export Permit

During the quarter the Company received a new Mineral Export Permission (MEP/402/UOC/OO5C) from the Australian Government, allowing Boss to export natural uranium from the Honeymoon Uranium Project. Under the permit, Boss is able to export uranium to countries meeting Australia's uranium export policy, namely those observing the Treaty on the Non-Proliferation of Nuclear Weapons and other safeguards requirements as specified.

In approving the permit, Federal Resources Minister Senator Matthew Canavan considered regulation 9 of the Customs (Prohibited Exports) Regulations 1958 and Australia's approach to safeguard requirements.

¹ Refer PFS Boss Resources ASX Announcement 31 May 2017. The Company confirms that all the material assumptions underpinning the production targets, and the forecast financial information derived from the production targets, as disclosed in that announcement continue to apply and have not materially changed.

² For full results of Phase 1 please see Boss Resources ASX Announcement dated 3 April 2019.



Figure 1: Three of Australia's four fully permitted uranium mines are in South Australia: Olympic Dam, Honeymoon and Beverley with the Four Mile Deposit.

The new MEP also includes environmental conditions, consistent with the Honeymoon Uranium Project's previous export permissions. The permit requires Boss to advise the government of any changes to Honeymoon which may lead to new or revised environmental requirements. Honeymoon's receipt of a MEP makes it one of only four fully permitted uranium mines in Australia. Three of these, being Olympic Dam, Honeymoon, and Beverley with Four Mile are located in the premier uranium mining state of South Australia. SA has proven safe uranium handling and transportation systems (> 30 years record) and hosts one port (Port Adelaide) of only two Australian ports approved for uranium exports.

The renewal of the export permit is a major step towards re-starting production at Honeymoon, given uranium is Australia's most heavily regulated commodity.

Boss is in the advantageous position of being able to sign term agreements to export uranium in parallel with considering the decision to move forward with production. The Company is in discussions with utilities to enter into off-take agreements which it is considering in concert with the uranium price. This is a rare advantage for the Company, given in many instances, production may start several years after the decision to mine and only having obtained necessary permitting in supportive market conditions.

2019 Exploration Activities – Passive Seismic Orientation Survey

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. Taking into consideration the existing Mineral Resource³ to sustain Honeymoon’s Re-start of mining operation, and the current uranium price, the Company is pursuing cost effective alternatives to regional exploration in order to discover new economic mineral deposits.

Honeymoon’s initial Exploration Targets comprises 10 target areas⁴, of which five are in areas extensional to the existing Mineral Resources (refer Figure 2). The remaining five areas target geophysical anomalies, i.e. identifiable features on regional-scale geophysical data that have historically been associated with known mineralisation elsewhere in the Honeymoon Project area. Only two of these anomalies are supported by some drilling.

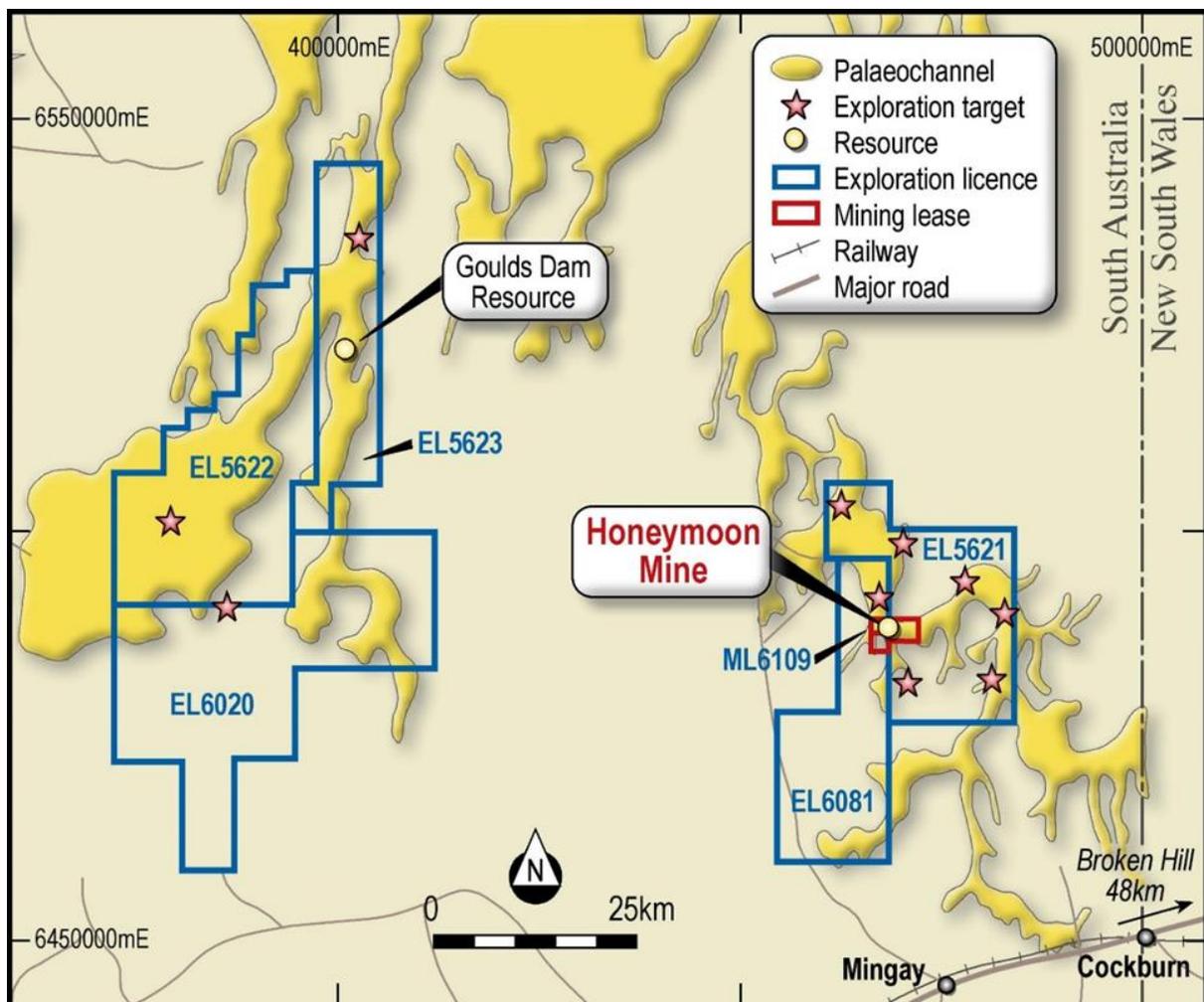


Figure 2: Honeymoon Uranium Project Area, showing the identified 10 Exploration Targets.

³ Refer ASX Announcement dated 25 February 2019.

⁴ Updated Exploration Target announced to the ASX on 25 March 2019.

During the quarter the Company commenced an orientation survey trialling the passive seismic geophysical method at Honeymoon (Figure 2). The survey was deliberately designed to cover an area of recent drilling in order to ascertain the efficiency of the technique as an effective, low-cost exploration non-invasive alternative to drilling in the region. Survey results successfully confirmed the existence of a narrower palaeochannel within the much broader palaeovalley system, as well as further strengthening the current model that mineralisation appears to sit on the edge (or banks) of the channel rather than in the deeper areas.

The passive seismic survey system (or Tromino) has been used extensively throughout Australia with particular success in the identification of palaeochannels. The technique was first introduced to the Australian mineral exploration industry in 2013⁵ with specific focus on the exploration of shallow, sub-surface, sediment-hosted deposits.

This proven, cost-effective exploration tool involves the measurement of natural (ambient) seismic vibrations in the Earth’s crust. These vibrations, or surficial seismic waves, can be caused by the interference of deeper seismic waves or by natural surface phenomena such as tidal action and wind. These vibrations are propagated over large distances and can be used to identify boundaries between different geological units which in turn, have variable densities and seismic velocities. This difference, or impedance contrast, is measured by an instrument that weighs only 1.5kg, is no larger than a standard sized shoebox (Figure 3⁶) and gives a peak frequency value that corresponds to the depth at which the instrument detects a separation between the horizontal and vertical components of the seismic waves – i.e. the boundary between solid bedrock and overlying unconsolidated palaeochannel sediments.



Figure 3: Instrumentation and survey acquisition – A) Tromino unit developed to passively measure natural seismic vibrations (courtesy of Resource Potentials Pty Ltd), B) survey method employed at Honeymoon.

⁵ Readers are referred to the Geological Survey of Western Australia, Record 2014/09: “Application of passive seismic to estimate cover thickness in Greenfields areas of Western Australia - method, data interpretation and recommendations” (A.J. Scheib).

⁶ Image taken from the website of Resource Potentials Pty Ltd, North Perth, W.A.

Stage 2 Regional Exploration - Passive Seismic Survey

Following completion of the orientation survey, the passive seismic method is now being utilised in and rolled out to areas both extensional to known resource (beyond Mining Licence) and more distal (regional) to identify other similar palaeochannel systems, and most importantly the most prospective parts of the system, with the following objectives:

- a) to test potential extensions of the known mineralised palaeochannel both to the east and northwest of the Mining Licence;
- b) to cover zones of interpreted structural complexity that influence channel morphology and mineralisation accumulations; and
- c) to test areas of anomalous conductivity response from the historical, regional-scale, airborne EM data.

Figure 4 displays the planned survey lines (yellow) targeting the various Exploration Targets around the Eastern Region of the Honeymoon Uranium Project, in relation to the recently completed orientation survey on Honeymoon Mining Licence ML6109.

Initial surveys have covered the southwestern part of Exploration Target Area 4, with the resulting data included in the modelled topographic basement surface shown in Figure 4. The extension of the mineralised palaeochannel hosting the Honeymoon Mineral Resource is clearly illustrated, providing the first exciting drill target area for future drill campaigns.

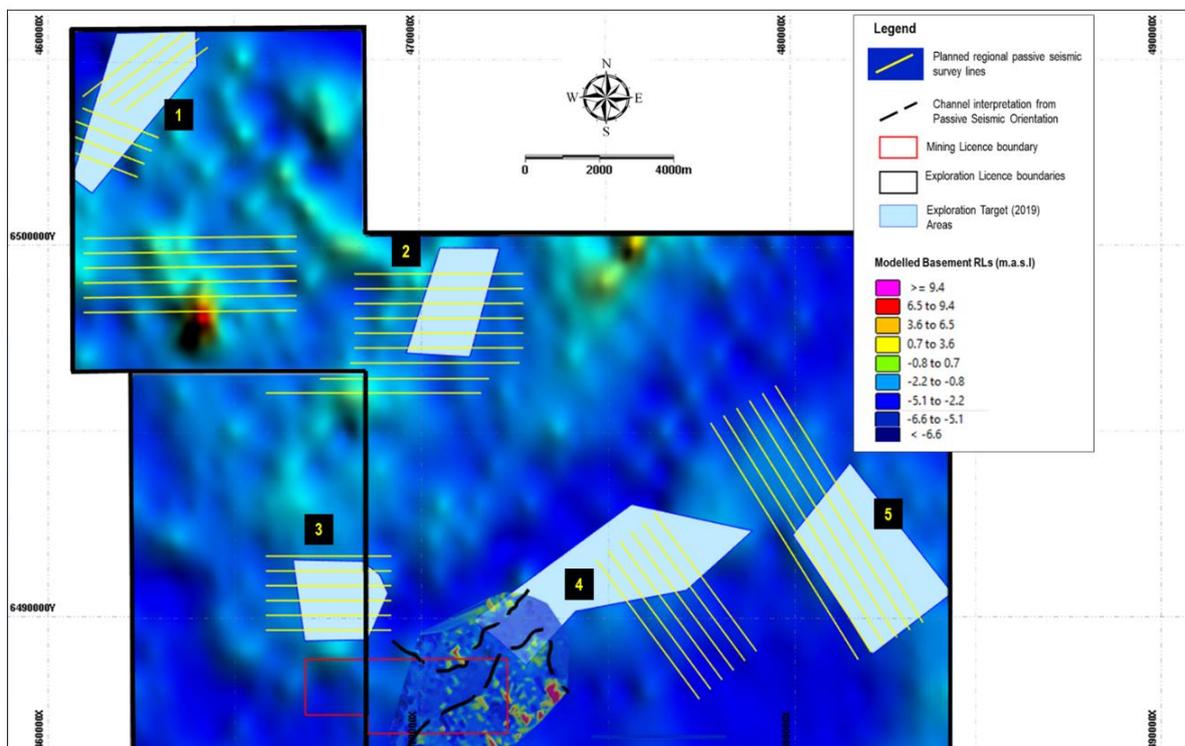


Figure 4: Planned passive seismic survey lines for regional areas around the Eastern Region of the Honeymoon Uranium Project.

The Company looks forward to reporting on exploration results of the identified 10 target areas once the passive seismic surveys are completed.

Corporate

Cash reserves

The Company had approximately A\$10.5 million cash at bank at the June 2019 quarter end (31 March 2019: A\$11.4 million). In addition, the Company anticipates receiving an R&D rebate of approximately \$1.15 million during Q3 CY2019.

Appointment of Bryn Jones

The Company announced the appointment of Bryn Jones as a Technical Director, effective 15 September 2019, to assist in further driving development at Honeymoon.

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 ISR and mine development and production.

Mr Jones spent nearly 10 years in roles with ISR uranium producer Heathgate Resources, owned by US based nuclear company General Atomics. Heathgate is the owner and operator of the Beverley and Beverley North Uranium Mines in South Australia, Australia's only other producing ISR uranium mine.

Most recently he was the Chief Operating Officer of Canadian-based uranium developer Laramide Resources (ASX/TSX: LAM, OTC: LMRXF) which has a portfolio of uranium US-based assets and Australian project interests.

Mr Jones has been involved with the Honeymoon Project for nearly three years as part of his consultancy role with The Inception Group. The group has been working with Boss on the project since its Pre-Feasibility Study in 2016.

Issue of securities under Employee Securities Incentive Plan

The Company has a discretionary equity-based incentive plan in place in order to preserve cash balances (currently A\$10.5 million) whilst aligning employee incentives with shareholder interests. During the quarter, the Remuneration Committee undertook a comprehensive review of remuneration practices and commissioned a benchmarking exercise of the Company's remuneration framework by external advisors.

As a result of that review, the Board has agreed to grant the Managing Director/CEO a total of 3 million shares as an annual bonus. The number of shares granted was determined by reference to the 20-day VWAP prior to 30 June 2019. The Board has also agreed to grant the Managing Director/CEO replacement options, as the existing unexercised options will shortly expire. The new unquoted options are granted in three equal tranches of 15 million with the same exercise prices as the replaced options, being \$0.065, \$0.08 and \$0.095. Each tranche expires on 30 June 2023.

The issuing of all shares and unquoted options to the Managing Director/CEO is subject to shareholder approval, to be sought at the 2019 AGM. The Managing Director/CEO's existing unquoted options are to be forfeited upon the issue of the new unquoted options following the receipt of shareholder approval.

The Board has also agreed to grant and immediately issue both the Company Secretary/CFO and Geology Manger three equal tranches of 2.5 million unquoted options each with the same exercise prices of \$0.065, \$0.08 and \$0.095. Each tranche expires on 30 June 2022.

Uranium Outlook – US Section 232

Since the petition was filed on 16 January 2018, the industry has noted a substantial reduction in demand by US utilities willing to enter into long term off-take agreements with foreign suppliers. Instead, these utilities, which account for more than a quarter of the world's uranium market, have been drawing down on inventories while waiting for US President Trump's determination on the Section 232 investigation. This demand, which would have entered the market gradually over time, is now likely to enter the market at the same time, once the determination on the Section 232 Petition is made, putting pressure on available supply.

By way of background, the Section 232 Petition lodged by two US uranium producers was based on the premise that uranium imports from "state-sponsored producers" threatened the viability of the US uranium industry. The petition called on the US Department of Commerce and US President Donald Trump to enact a remedy to restore the viability of US uranium production and its related infrastructure.

Boss Resources expects the determination of the Section 232 Petition to favourably affect Australian uranium production, by unlocking buying activity from US utilities and supporting a uranium price increase. The petitioners' original concern was that 'state sponsored production' would have a significant detrimental impact on the country's national, energy and economic security. There is no way that Australian production could be described as 'state sponsored'. Once a decision has been announced, expected no later than 14 July 2019, and US utilities have more clarity on the shape of restriction, they are expected to come to the market with requests for proposals, and this increased demand should put upward pressure on prices.

Boss Resource has solid relationships with a variety of US utilities with whom the Company has been discussing off-take agreements. Australia has been a long-term reliable and important supplier of uranium to the US and this decision will see this continue, underpinning project development in Australia as well as providing foreign investment.

As described above, the renewal of the uranium mineral export permit is a major step towards Re-starting production at Honeymoon. Boss is in the advantageous position of being able to sign term agreements to export uranium in parallel with considering the decision to move forward with production. The Company is in discussions with utilities to enter into off-take agreements which it is considering in concert with the uranium price. This is a rare advantage for a producer given in many instances, production may start several years after the decision to mine and only having obtained

necessary permitting in supportive market conditions. As such, Boss essentially has the same cost structure and restart timeline as most tier one and two uranium producers with capacity for future expansion.

SCHEDULE OF MINING TENEMENTS

The following information is provided pursuant to Listing Rule 5.3.3 for the quarter ended 30 June 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%
Katchiwilleeroo	South Australia	EL5622	100%
Ethiudna	South Australia	EL6020	100%
Gould's Dam	South Australia	RL83-90	100%
Honeymoon Mine	South Australia	ML6109	100%

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