ASX Announcement 31 May 2017

ASX: BOE

HONEYMOON PRE-FEASIBILITY STUDY

HERALDS NEAR TERM PRODUCTION POTENTIAL

HIGHLIGHTS

- Honeymoon Preliminary Feasibility Study completed, confirming highly economic project
- Low capital outlay optionality for near term production
    - US$10M re-start of existing Solvent Extraction Plant for production of 0.88Mlbs per annum U_3O_8 equivalent, with 12 months to first production
- Stage 2 potential incorporation of Ion Exchange Plant for production of 2Mlbs per annum U_3O_8 equivalent
- Stage 3 potential inclusion of Gould's Dam and the production of 3.2Mlbs per annum U_3O_8 equivalent
- Low All-in-Sustaining Costs
    - US$23.90 / lb U_3O_8 equivalent over Life of Mine (lowest cost quartile of world-wide producers)
    - Direct operating cost (at mine gate) of US$15.60 / lb U_3O_8 equivalent
- Significant potential for economic upside with further resource expansion and life of mine extension

Cautionary Statement concerning Preliminary Feasibility Study results including Inferred Resources

Boss Resources (the "Company") has concluded that it has a reasonable basis for providing the forward looking statements and production targets discussed in this announcement. The detailed reasons for that conclusion are outlined throughout this announcement and in Appendix I and all material assumptions are disclosed in this document and in the JORC table disclosures of the relevant Resource Statements. The detailed assumptions regarding the Resources are outlined in the Company's announcements dated 20 January 2016, 8 April 2016, 14 June 2016 and 15 March 2017.

This announcement has been prepared in accordance with the JORC Code (2012) and the ASX Listing Rules. The Company advises that the Preliminary Feasibility Study results, Production Targets and any Financial Information contained in this announcement are preliminary in nature as the conclusions are in-part based on low-level technical and economic assessments, and are insufficient to support the estimation of Ore Reserves or to provide an assurance of economic development at this stage. There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised. The outcomes of the

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Preliminary Feasibility Study however provide a reasonable basis for the Company to release the results whilst not providing an assurance of economic development at this stage. This is based on the current mining schedule indicating that for the first 2 years of production all of the material can be sourced from the Measured & Indicated Resources. Further to this 63% of production from Years 3 to 7 can be sourced from Measured & Indicated Resources for a total of 68 percent Measured & Indicated Resources over LOM. If the Inferred Resources are excluded, the economic analysis still forecasts a positive financial performance. The Company is therefore satisfied that the use of Inferred Resources is not the determining factor in overall Project viability and that it is reasonable to include the Inferred Resources in the PFS.

The Australian Securities and Investments Commission (ASIC) released Information Sheet 214, which concerns forward-looking statements by mining and resource companies (INFO 214). One of the matters raised is that forward-looking statements should only be made if the entity has reasonable grounds for concluding that funding will become available to the entity as and when required by the project's development or production schedules. Additional funding will be required by Boss Resources to bring the Project into full production stage. The original Honeymoon plant with a design capacity of 0.88Mlbs U3O8 is currently on care and maintenance and is capable of being restarted with minimal capital expenditure. Boss has a current market capitalisation of ~A$50 million and it has successfully raised ~A$14.5 million over the last 18 months which is in line with the required re-start capital of US$10 million (see Appendix I).

The Pre-Feasibility Study is based on material assumptions outlined in this announcement. Whilst the Company considers all the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the Pre-Feasibility Study will be achieved. Investors should note that there is no certainty that the Company will be able to raise the amount of re-start capital or additional funding (should it be required) for the Project when it is needed. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of the Company's existing shares. It is also possible that the Company could pursue other value realisation strategies such as a sale, partial sale or joint venture of the Project. If it does, this could materially reduce the Company's proportionate ownership of the Project.

Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Pre-Feasibility Study.

The Board confirms that the results from the Pre-Feasibility Study are positive and that this justifies the Company committing to the next stage of exploration and development by progressing through to the Definitive Feasibility Study.

Summary

Boss Resources Limited (ASX: BOE) ("Boss" or the "Company") is pleased to announce the completion of the Preliminary Feasibility Study ("PFS" or "Study") on its Honeymoon Uranium Project ("Project") in South Australia.

Boss CEO, Mr Duncan Craib, stated the PFS presents an overwhelming endorsement of the Honeymoon Project and marked another significant milestone for the Company as it advances towards production.

"*The Honeymoon Project is unique in that it is a fully permitted uranium operation with $170M of established infrastructure, a plant under care & maintenance, in good condition, and that has produced and exported uranium from the safe jurisdiction of South Australia, where it holds approved Heritage and Native Title mining agreements.*

"*To ensure a pathway for continued success a staged approach to restart the Project was implemented by the Board to address the challenges which the previous owners had encountered. Within a relatively short period of time Boss Resources successfully proved up an increase in the uranium resource and in September 2016 completed an Expansion Study which provided the basis for this highly successful PFS, the exciting and confirmatory results of which are presented herein.*

"*The PFS has delivered impressive results, confirming the technical and financial robustness of the Honeymoon Project which incorporates a combination of low upfront capital requirements and low operating costs that are unrivalled amongst our ASX peer group. The economic rationale of this Study arguably positions the Company to be Australia's next uranium producer*."

"*A number of potential improvements have already been identified for the project and these will be investigated further in the next stages. Key amongst these is cost saving associated with the ion exchange column construction and configuration, resin quantities and water treatment concepts."*

"*In addition, the PFS has also highlighted the upside associated with further increased uranium feed tenors from the well-fields. These increases can be achieved by optimised leach conditions, improved wellfield design and possibly utilising a solution stacking concept, all of which will be tested during the Field Leach Trial due to commence in June 2017."*

"*The Company can be fast tracked into production within a short 12-month time span so as to seize upon any improved market fundamentals. The increased production (2Mlbs / annum) through the addition of the ion exchange plant will take approximately 24 months to construct and commission, with the timing dependent on the delivery schedule for the columns for which there is a significant upside potential."*

"*Our exploration team is also further investigating several exciting exploration prospects in the defined paleochannel for further resource expansion*."

KEY PROJECT FUNDAMENTALS	
Mining method	In-Situ Recovery (ISR)
Solvent Extraction (SX) re-start time	12 months duration
Ion Exchange (IX) construction time	24 months duration
Operating Costs (AISC) Life of Mine	US$23.90 / lb U_3O_8 equivalent
Mine life	7 years (with potential for further extension)
Payback Period	3.6 years
% Measured & Indicated Resources in Production Profile	68% (90% during payback period)
COST ANALYSIS	
Operating cost estimates (AISC)	**US$**
Wellfield	$0.90
Plant	$13.10
General & Admin	$1.65
Marketing, Shipping & Royalties	$4.65
Sustaining Capex (including wellfield development)	$3.60
Total (US$/lb U308)	**$23.90[1]**
CAPITAL OUTLAY	
Breakdown of Capital Outlay	
Stage 1: SX re-start	US$ 10M[1]
Stage 2: 2.0Mlbs/annum IX process	US$ 58M[1]
Stage 3: 3.2Mlbs/annum IX increase	US$78M[1]

*Note: exchange rate of A$1.00 = US$0.75 was used

[1] Figures have been rounded

The PFS was commissioned with a staged development approach to de-risk the Honeymoon Project, define the well-field operations and progressively increase the processing plant capacity. Specifically, the Study set out to:

- Confirm the preferred processing technology;
- Optimize the production profile;
- Investigate well field development scenarios;
- Validate process performance through metallurgical testwork (leaching and IX); and
- Determine a mineral resource that could be converted to an Ore Reserve.

Boss has worked with GR Engineering Services Limited ("GRES"), the Australian Nuclear Science & Technology Organisation ("ANSTO") and Groundwater Science to address the operational and plant performance issues which affected the previous owners. Preliminary test work on selected resins and organics for the proposed ion exchange and solvent extraction circuits was undertaken, along with leaching on core samples collected during the drilling program. In addition, the PFS was designed to

ensure all potential changes to the existing process and operational footprint are identified and assessed in relation to potential impact on safety, health and the environment.

The staged approach for development of the Honeymoon Project described in the body of this announcement is based on restarting the operation with existing facilities (modified to achieve nameplate throughput) in conjunction with constructing the first stage of the ion exchange plant. After successfully ramping up and verifying the new process a further ion exchange upgrade is planned. Accordingly, the re-start of the Honeymoon project will be executed in the following main stages:

Field Leach Trial: A wellfield trial at ~1:10 scale of a full-scale wellfield will be carried out within the existing developed mine footprint at Honeymoon to demonstrate the improved leaching chemistry defined by the current laboratory testwork and produce real solutions for an ion exchange pilot plant.

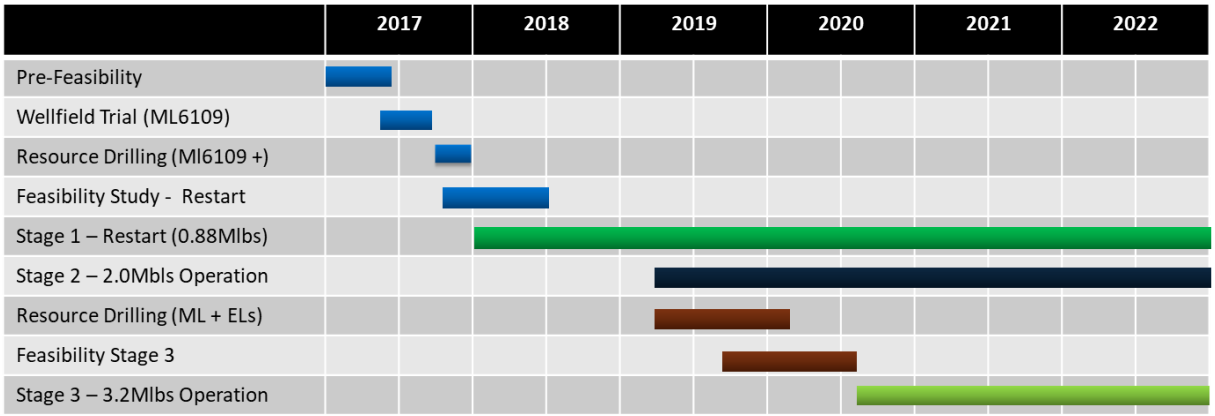
Stage 1: Restart of the existing operation; which will involve the use of existing wellfields, and restarting the existing solvent extraction (SX) plant with minor modifications to rectify identified operational issues, during the period of construction of the ion exchange (IX) plant;

Stage 2: Ramp up of plant capacity to 2Mlb/annum U_3O_8 equivalent using the combined SX / IX system;

Stage 3: Ramp up of plant capacity from 2Mlb/annum to ~3.2Mlb/annum U_3O_8 equivalent (after validating the IX technology) through the addition of further IX columns

The proposed time schedule for each of these stages detailed in Table 1 below.

Table 1. Proposed staged restart program for the Honeymoon Project.



Based on these strong results the Board has resolved to move to the next stage of development, the Field Leach Trial, which will form part of the Definitive Feasibility Study.

Introduction

Following the successful Expansion Study (announced ASX on 28 September 2016) a PFS was initiated as the next step for continuation of the restart strategy for the Honeymoon Project.

The PFS's primary aim was to confirm the preferred concept identified in the Expansion Study and validate the results through more detailed analysis as well as define the wellfield operating strategy and production profile. The Study further addressed the issues related to the low uranium tenors in the plant feed that the previous operators struggled with and which was one of the key reasons for the shut-down of the operation in 2014. The original design specification called for a feed tenor of 75mg/l U_3O_8 so as to meet the 0.88Mlbs/annum production target, whilst on a continuous basis during operations the wellfields were only able to achieve an average tenor of 53mg/l U_3O_8 (i.e. a 30% reduction). As the plant was volumetrically constrained this meant 30% less production which had a major impact on operating costs. Boss Resources' PFS determined that an average LOM feed grade of 69mg/l U_3O_8 was achievable, but taking a conservative view it was agreed that the new process be designed to meet the required production at a tenor of only 48mg/l U_3O_8.

Resultantly, an increase in the existing capacity of the processing plant from 0.88Mlbs / annum through a staged development incorporating ion exchange can achieve 2Mlbs / annum, with a further increase to 3.2Mlbs also possible.

Location

The Honeymoon Uranium Project is located in South Australia, approximately 80km north-west from the town of Broken Hill near the South Australian and New South Wales border. It is located between the Olary Ranges and Lake Frome, and forms part of the south-eastern extremity of the Lake Eyre drainage system.

Figure 1. Honeymoon Project Location

History

Boss Resources purchased Uranium One Australia (Pty) Ltd from Uranium One Inc in December 2015, and thereupon changed the business name to Boss Uranium Pty Ltd. The Uranium One Australia assets included the Honeymoon Mining License ML6109, which includes the Honeymoon solvent extraction processing plant, four existing ISR wellfields, support infrastructure, powerlines, operational and uranium export permits, and five uranium exploration licences within South Australia.

Construction of the Honeymoon Mine started in mid-2009 and was completed in Q1 2011. The mine commenced commissioning shortly after this and produced the first dried and drummed final product in August 2011. Despite this achievement, the mine was not able to achieve the nameplate capacity and only produced approximately 335t of U3O8 equivalent from 2011- 2013. Owing to the low uranium prices at the time and the production issues, Uranium One took the decision to place Honeymoon into 'care and maintenance' (C&M) in early 2014. The plant was systematically cleaned out and shut-down in a manner such that it could be recommissioned in a relatively short period of time if needed, however it has not been re-started since.

Geology

The Honeymoon Uranium Project is located in the southern part of the Callabonna sub-basin in South Australia. Uranium mineralisation within the project area is hosted by the Yarramba and Billeroo paleochannels. These consist of Paleogene age palaeovalleys filled by a sequence of inter-bedded sand, silt and clay. Thickness of the paleochannels at Honeymoon deposit area reaches a maximum of 55m thick.

The uranium mineralisation represents a classic basal channel type sandstone-hosted uranium roll-front model. This model implies the movement of oxidised, uranium-bearing fluid through a largely reduced aquifer, with mineralisation occurring at the redox front of the fluid. A geochemical zonation is associated with the roll front, including oxidation of the sands upstream (orange and yellow limonite) and abundance of pyrite/marcasites and organic matter downstream. Mineralisation is associated with discreet accumulations of organic matter and pyrite within the palaeovalley sequence.

Distribution of the uranium accumulations within the paleochannels is controlled by fluid pathways that have transported the dissolved uranium and the distribution of organic matter which served as reductants causing precipitation of uranium. Interplay of these two main factors has created a stacked geometry of the "uranium rolls" commonly distributed as elongate pods along the strike of the palaeovalley. These features are similar to the uranium deposits of the Great Divide basin in Wyoming.

The two main exploration regions are the Eastern Region (EL's 5215 and 5621) which hosts the Honeymoon, Brooks Dam and East Kalkaroo Resources (Figure 2); and the Western Region (EL's 5043, 5623 and 5622) which hosts the Goulds Dam and Billeroo deposits, all of which have historical Mineral Resource estimates.

The details of the individual licences are shown in Table 2 below.

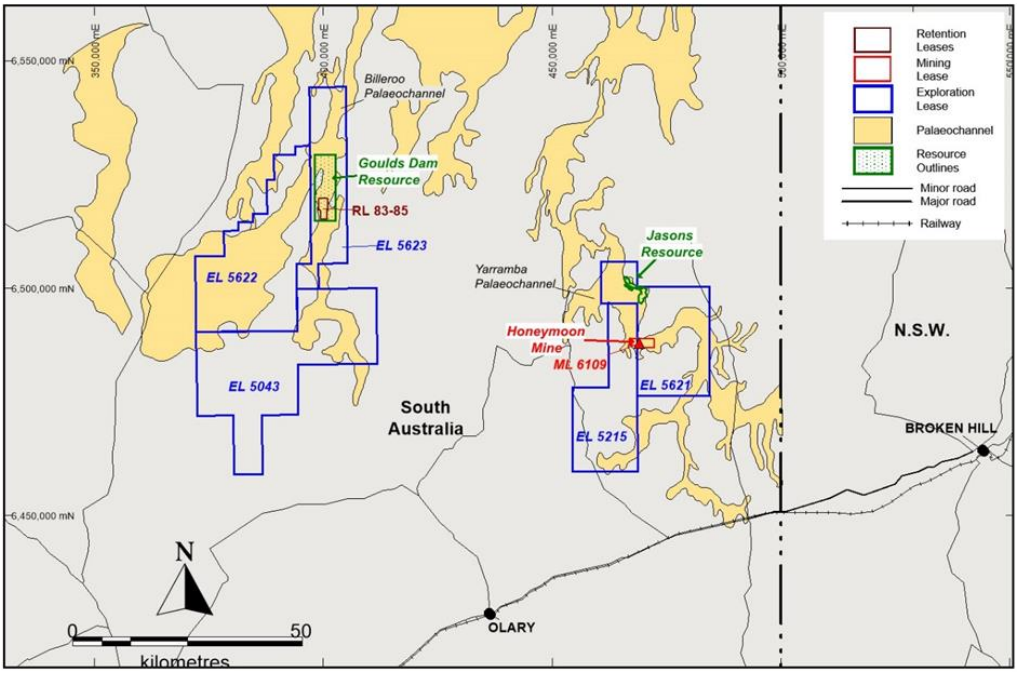


Figure 2. Honeymoon Uranium Mining Licence and adjacent Exploration Tenements owned by Boss Resources

Table 2. Honeymoon Project Tenements

Project Licenses – April 2017 (80% Owned by Boss Resources Ltd)					
License	Name	Project Region	Grant Date	Expiry Date	Area (km^2)
Mining License					
ML 6109	Honeymoon Uranium Mine	Eastern	8/02/2002	7/02/2023	10
Exploration Leases					
EL 5215	South Eagle	Eastern	26/09/2012	25/09/2017	379
EL 5621	Yarramba area	Eastern	29/05/2015	Renewal lodged	452
EL 5043	Glenorchy	Western	23/02/2012	Renewal lodged	778
EL 5623	Goulds Dam	Western	29/05/2015	Renewal lodged	334
EL 5622	Katchiwilleroo Dam	Western	29/05/2015	Renewal lodged	652
				Total	**2,595**
Retention Leases					
RL 83	Curnamona Billeroo	Western	23/11/2007	22/08/2017	0.8
RL 84	Curnamona Billeroo	Western	23/11/2007	22/08/2017	1.6
RL 85	Curnamona Billeroo	Western	23/11/2007	22/08/2017	0.8

Resource

The Mineral Resources for Honeymoon (inclusive of Brooks Dam and East Kalkaroo), Jasons and Gould's Dam and are summarised in Table 3. In total, they contain 43.5Mt of mineralisation at the average grade of 660 ppm eU_3O_8, which corresponds to 63.3Mlb of contained eU_3O_8 above a 250ppm lower cut-off.

All Mineral Resources are located below the water table at the depth of approximately 100m and hosted by the palaeochannel sedimentary sequence composed of weakly lithified permeable sands intercalated with clays. Previous hydro-geological test work including a pilot production mining study and the actual Honeymoon operation have confirmed that Mineral Resources are amenable for exploitation using in situ leach technologies.

Table 3. Honeymoon Project 2017 Resources

Classification	Million tonnes	eU3O8 (ppm)	Contained metal (U_3O_8, K t)	Contained metal (U_3O_8, M lb)
Jasons (March 2017)				
Inferred	6.2	790	4.9	10.7
TOTAL	**6.2**	**790**	**4.9**	**10.7**
Goulds Dam (April 2016)				
Indicated	4.4	650	2.9	6.3
Inferred	17.7	480	8.5	18.7
TOTAL	**22.1**	**510**	**11.3**	**25.0**
Honeymoon* (January 2016)				
Measured	1.7	1720	3.0	6.5
Indicated	1.5	1270	1.9	4.2
Inferred	12.0	640	7.6	16.8
TOTAL	**15.2**	**820**	**12.5**	**27.5**
Project Total (All deposits)				
Measured	1.7	1720	3.0	6.5
Indicated	5.9	810	4.8	10.5
Inferred	35.9	586	21.0	46.2
GRAND TOTAL	**43.5**	**660**	**28.8**	**63.3**

* Quoted resources have been adjusted to exclude previous production of approximately 335t of U_3O_8 .
Ordinary Kriged estimate reported using a 250 ppm eU3O8 as a lower cut-off and density of 1.75 t/m3.
Note: Figures have been rounded

Metallurgy

A further testwork program was undertaken as part of the PFS with ANSTO to further define and optimise the selected flowsheet. The testwork focussed on:

- Leaching test work on drill core samples (batch and continuous column leaches);
- Water quality assessments;

- Ion exchange test work; and
- Solvent extraction test work.

Leaching Testwork

The leaching testwork used core collected from Honeymoon as part of the sonic drilling program undertaken during the Jasons drilling program. Two sample types were generated from the recovered core; one being a low clay sample with coarse sands but relatively high pyrite content, and the other a high clay sample with finer materials and again relatively high pyrite content.

The mineralogy work identified the presence of uranium phosphate minerals in these samples, which although known to be present in the ore body was not thought to be as abundant as shown by these samples. Further mineralogy work on new samples collected as part of future drilling programs is planned.

A summary of the results achieved to date in both batch leach tests and continuous column leach tests are shown below in Table 4. The testwork confirms that the uranium can be leached under a wide range of conditions, but that the optimal conditions from a reagent consumption perspective are at pH 1.5 with an ORP not exceeding 450mV. This pH is lower than the value targeted during the previous operations, where values in excess of pH 2 were maintained.

Table 4. Honeymoon Core Leach Results

Leaching Results				
Sample	Conditions	U Extraction (%)	Acid Consumption (kg/t)	Oxidant Consumption (kg/t)
Batch Tests				
Low Clay	pH 1.5, ORP 420mV	88%	2.9	0
High Clay	pH 1.5, ORP 430mV	76%	8.3	0
High Clay	pH 1.5, ORP 450mV	76%	10.7	1.4
High Clay	pH 1.5 ORP 500mV	82%	25.6	10.1
High Clay	pH 2.4 ORP 500mV	65%	38.7	18.1
Continuous Column Tests				
Low Clay	pH 1.5, ORP 420mV	~90%	3-5	0
High Clay	pH 1.5, ORP 450mV	83-87%	8-10	-

Column leach testwork is continuing with new samples being collected to supplement the program.

The next stage of testwork will be the Field Leach Trial which will form an integral part of the DFS and will be the first of the four stages proposed in the Honeymoon restart plan.

The trial will be run in the area of a previously designed, but not operated, wellfield from the Uranium One production plan. The trial will be ~1:10 scale of a normal production wellfield, and will use similar equipment with a modified leach chemistry (pH & ORP levels). The pregnant leach solution (PLS) produced from the trial will be used to pilot the proposed ion-exchange circuit, specifically to confirm the long-term performance of the selected resin over multiple load-elute cycles.

The information generated from both of these activities will be key inputs for the DFS and will provide a high level of confidence in the selected process for the project.

Ion Exchange Testwork

Five different resins with varying functional groups were selected for the testwork program, including some from the first program of work carried out as part of the Expansion Study, and some new resins. The resins were extensively tested with two resins selected as the best performing resins for the project, one of which was a stand-out option (preferred resin) and was used in the final design.

The testwork undertaken on the resins included loading and elution work as well physical hydrodynamic testing, all of which was used as inputs for the design of the ion exchange circuit. Some modelling was carried out by ANSTO for the two preferred resins to provide an estimate of the impact of both adsorption equilibrium and kinetics on the performance and size of a potential IX plant. The preliminary estimates for the optimal conditions for two feed concentrations (average and high) and the two resins are provided in Table 5.

Table 5. Ion Exchange Operating Parameters

Operating Parameters for Absorption Columns				
Resin	Resin A		Resin B (preferred)	
Feed Tenor (mg/l U_3O_8)	53mg/l	100mg/l	53mg/l	100mg/l
Number of Columns	7	7	3	4
Total Volume of Resins (m^3)	347	347	149	198
Flowrate through Column (m^3/h)	151	151	353	265
Barren Concentration (mg/l U_3O_8)	2.3	3.1	1.0	1.0
Resin Loading (g/L_{wsr} U_3O_8)	8.2	14.4	43.2	60.1
Recovery from PLS (%)	96	97	98	99

The results show that if using the preferred resin (Resin B) the overall size of the plant could be reduced significantly (around 50 %) using only 3 or 4 columns compared with 7 columns for Resin A. The total flowrate of resin to the elution circuit will be reduced by a factor of 4 - 5 due to the higher achievable loadings (1.4 – 1.8 m3/h compared with 6.9-7.3 m3/h).

The reduced resin throughput to the elution circuit also suggests that there will be significant savings in reagent consumption; but this will be tempered somewhat by the less efficient eluting of the resin.

Production Profile

The production profile proposed for the PFS is centred upon an in-situ recovery process that will generate a PLS for the plant that over the life-of mine will average 69mg/l U_3O_8. Based on the modelling this tenor will be higher in the first few years (~110mg/l U_3O_8) due to higher grade material being leached in the Honeymoon deposit as per the revised wellfield designs. However, the plant is designed to achieve the required production at a significantly lower tenor (48mg/l U_3O_8).

Based on the Mineral Resources located within the Mining Lease, and incorporating a small portion of the Mineral Resources associated with the Exploration Leases (Jasons and Gould's Dam), an initial 7 year life of mine has been developed with a maximum production of 3.2Mlbs / annum post the Stage 3 construction. Additional Inferred Resources are contained within the Mining Lease and the Exploration Leases that have not been considered directly in this study. A high-level analysis was undertaken in which these Inferred Resources were included at the end of the current schedule, after the Measured and Indicated Resources were depleted. The results of the analysis were positive and showed that no further capital outlay would be required.

The various stages of the operation proposed in the PFS are presented below in Table 6.

Table 6. Production Profile

Honeymoon Project Production Profile					
Description	Duration (years)	Process Technology	Resource	Ave Production (Mlbs/annum)	% M&I Resource
Stage 1 – HM Restart	2	SX	Honeymoon	890	100%
Stage 2 – 2Mlb Operation	2	SX / IX	HM / East Kalkaroo / Jasons	1 990	74%
Stage 3 – 3.2Mlb Operation	3	SX / IX / Satellite IX	HM / EK / Jason / Gould's Dam	3 000	58%
Total LOM	7	-	-	2 100	68%

Operations are proposed to start in the Honeymoon deposit where Uranium One previously installed their wellfields. Wellfield D, which had been operate for only a short time by Uranium One, will be restarted after rescreening the holes and this wellfield will provide sufficient feed for the first year of operation. Further wellfields from Honeymoon are proposed to be brought online as the production demands. The wellfields associated with Honeymoon are all located with the Measured and Indicated Resource and are exclusively used during the first stage of operation.

It is proposed for Stage 2, that the wellfields in East Kalkaroo be started up in Year 3, followed by Jasons in Year 4. Both East Kalkaroo and Jasons are associated with Inferred Resources and during this operating period the PFS assumes ~74% of the material treated will be Measured & Indicated. The operation of the Jason's deposit will require an additional capital expenditure in the order of US$10M to install a trunk line, pumps and ponds to manage the solutions.

Gould's Dam is proposed to be brought online in Year 5 and is the main driver for the increase in production to 3.2Mlbs / annum (Stage 3). Gould's Dam wellfields are located within the Indicated portion of the Mineral Resource and during this operating period the PFS assumes ~58% of the material treated will be Measured & Indicated. A significant amount of capital would be required to bring Gould's Dam online due to the distance from the Honeymoon Plant (~75km). To reduce this a satellite ion exchange operation is proposed which would load the uranium onto the resin and then truck it to Honeymoon for the elution stage and final uranium production.

Depending on the success of the planned exploration programs the increased capacity to 3.2Mlbs may be sourced from nearer Honeymoon resources as opposed to the more remote resources of Jasons and Gould's Dam. This would bring a significant advantage to the project as the capital cost associated with Jason's additional trunk lines and the Gould's Dam satellite plant could be mitigated.

Wellfield Design

The Study proposes that wellfields for the project will be developed in the deposits near the Honeymoon facilities, at the Jasons deposit and the Gould's Dam deposit.

The wellfield plan (equivalent to a mine plan in a conventional mining operation) has applied uranium grade thickness (GT) cut-off criteria to discrete mineralised horizons and defines the portion of the Mineral Resource that can be economically recovered. Wellfields are then planned over this portion of the resource which in turn becomes the resource under leach.

The wellfields have been planned as 5-spot patterns with a single extraction well surrounded by 4 injection wells. The 5-spot pattern is a conventional ISR wellfield layout implemented at most operating ISR mines. This layout has the advantage of minimising wellfield development cost and providing a flexible layout for optimising leach performance.

Wellfield pattern radii were varied to suit the orebody morphology and achieve an economic wellfield development cost per pound of uranium. For the lower confidence Inferred Resources where there is insufficient detail to develop a detailed wellfield plan, the plan is conceptual, detailing only the wellfield extent and pattern radii and serves to; estimate the portion of the resource under leach, estimate the development cost, and inform the production schedule.

Construction of wellfields taking into account leaching rates were then planned to meet the staged project production profile. The production (leaching) rate used as the basis for this was the production rate achieved by the previous operator during leaching of early Wellfield C at Honeymoon. This is a conservative approach applied for the PFS as Boss Resources expects to improve leaching performance through the optimisation of chemical leaching conditions (described above) and improved well design detailed below.

The wellfield plan incorporates well designs that will improve on leaching performance compared to the previous ISR operating conditions. Wells are designed with a very precise production zone that directs the injected leach solution into contact with the target ore horizons. The opening between the well and the ore horizon is precisely cut (under-reamed) out of a sealed PVC bore casing. This well design is standard ISR technology, however it is a significant enhancement over the well designs implemented in the previous ISR operating conditions at Wellfields A, B and C at Honeymoon (Figure 3).

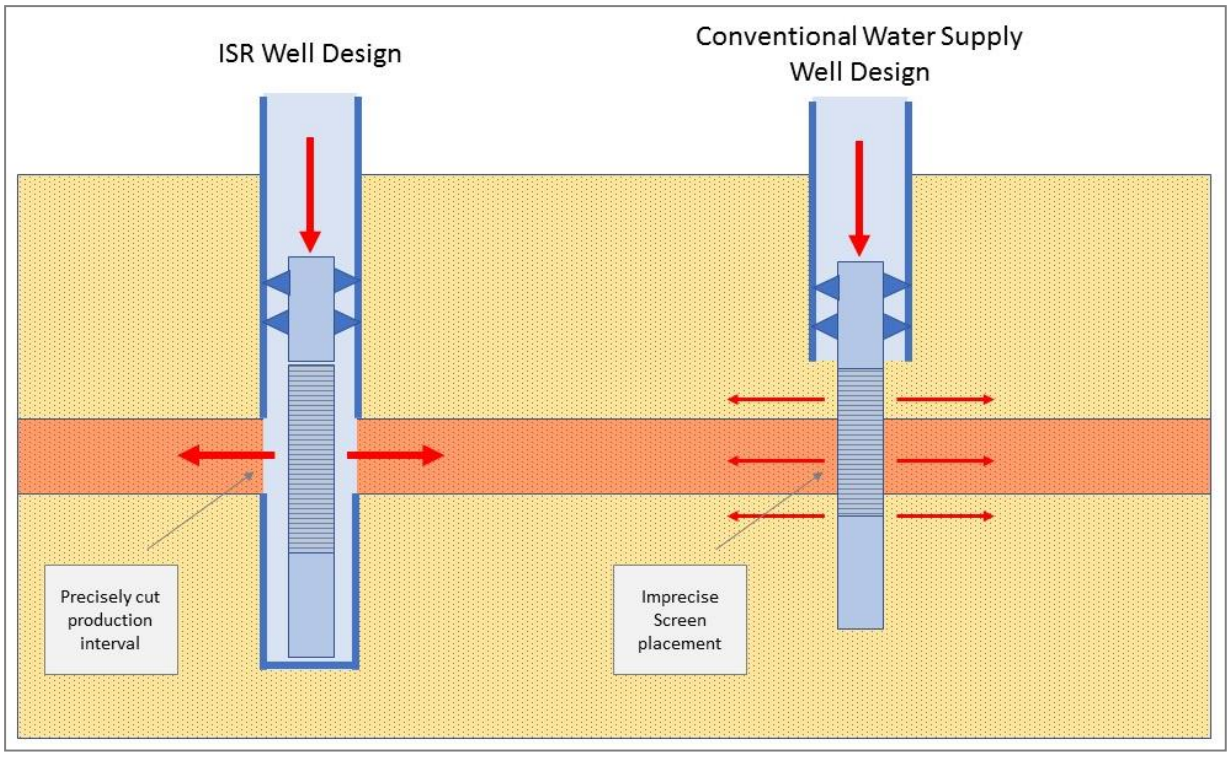


Figure 3: Specialist ISR Well Design planned for Honeymoon compared to the standard water supply bore design implemented for previous operation Honeymoon Wellfields A, B and C

The previous wells at Honeymoon were constructed with standard water supply well technology and did not accurately target the mineralised horizons.

Prior to operation the groundwater in the wellfields will be conditioned by purging with water from the aquifer and using sodium carbonate to remove calcium from this in the ground water treatment plant before recirculating.

Re-Development Strategy

The proposed re-development strategy to meet the production outlined above is detailed below. This strategy will be implemented after the completion of the DFS and most importantly after the successful demonstration of the modified ISR process and the ion exchange process in the Field Leach Trial (FLT) which is planned as the first activity of the DFS.

Stage 1 – Restart of Existing Operations at Honeymoon

After the completion of the various studies and the finalization of the project financing, the existing SX processing facility is proposed to be re-commissioned with modifications to resolve processing issues that were identified during the original operational period.

The key changes to the existing process will be:

- Booster pumps at the wellfields to boost the feed pressure to the injection wells to improve ISR performance;

- Jameson cell to remove organic from SX raffinate and prevent organic reporting to the wellfields;
- Co-matrix filter to remove organic and a plate and frame filter to remove iron precipitates from the loaded strip solution and improved precipitation and product drying performance;
- Modifications as required to the existing WTP such that it is capable of continuously processing 100 m3/h of Barren Leach Solution (BLS) bleed;
- Enlargement of the PLS and BLS ponds along with other modifications for tie-ins and to create space for the construction of the IX circuit that will be required for construction of Stage 2 while still operating the existing plant; and
- The remainder of the process plant will be unchanged from the existing facilities.

Initially the wellfields previously developed by Uranium One (specifically Wellfield D) will be brought back online as feed to the plant, but as production ramps up new wellfields will be brought on sequentially to match production needs. All wellfields associated with this stage are contained within the Measured and Indicated Mineral Resource.

Along with the re-commissioning of the water treatment plant, the effluent disposal (liquid and solids) systems will also be reinstated with upgrades as required.

Stage 2 – 2Mlb Expanded Production at Honeymoon

In this stage of the development the focus is on expanding the existing Honeymoon plant from the current nominal capacity (0.88Mlb/annum U_3O_8 equivalent) to around 2.0Mlbs/annum through a number of upgrades and modifications. These changes are seen as the most practical steps to increase capacity based on the existing facilities.

The increased production will necessitate the expansion of the current operational area to include wellfields in East Kalkaroo. For this Study it has also been assumed that the resources from Jasons will be incorporated in the production plan and the costs associated with the infrastructure required for this have been defined as part of the study. Inferred material will start to be treated during this phase.

Stage 2 will consist of the new IX circuit using the preferred resin that has been identified in the ANSTO testwork. Processing infrastructure needed to handle the increased PLS flowrates that will be generated from the wellfields at the expanded production rate will also be developed.

Specifically, the additional facilities required will include:

- Installation of larger PLS and BLS pumps to accommodate the higher flowrates from the wellfields;
- IX adsorption and elution facility to process the majority of the PLS and produce a high tenor eluate;
- Nano-filtration to recover reagents from IX eluate for recycle back to eluent make-up;
- New proprietary fluidised bed precipitation package to produce coarser UO4·2H2O product thereby increase the existing filtration and drying capacity to operate in parallel with the existing precipitation circuit which will still treat the liquor from the SX circuit;

- Additional oil heater, vacuum/off-gas system and other minor changes to the existing product filtration and drying to allow concurrent operation of the existing dryers and increase the drying capacity of the existing facility; and
- A new water treatment plant to remove calcium and sulphate from a bleed stream of the BLS, leaving the existing ground water treatment plant for wellfield conditioning only.

Effluent disposal systems, raw water supply and all monitoring systems will be reviewed as part of the study and modified to meet requirements. As part of this expansion, additional wellfields both to the north-west and the east will be developed and the operational area of ML6109 expanded as a result.

Stage 3 – 3.2Mlb Expansion at Honeymoon

Stage 3 would expand the production rate at the Honeymoon plant to the maximum amount permitted on the existing Federal government approvals detailed in the EIS (3.3Mlbs/annum). The PFS assumes that this would be realized with the development of a satellite operation at Gould's Dam with IX adsorption columns and trucking of loaded resin to Honeymoon. The Honeymoon plant would be modified with an additional elution column and downstream circuits to meet the increased production target. In this scenario, the new equipment required would be:

- PLS and BLS ponds, pumps and reagent systems to feed the wellfields at Gould's Dam;
- IX adsorption columns at Gould's Dam and resin load-out system for trucking loaded resin to Honeymoon;
- Additional elution column at Honeymoon to produce a uranium rich eluant along with barren resin load-out system for trucking barren resin to Gould's Dam;
- Additional nano-filtration capacity to recover reagents from IX eluate for recycle back to eluant make-up;
- Centrifuge package for filtration and precipitate washing, processing all of the yellowcake production at Honeymoon;
- Rotary kiln dryer to process all of the yellowcake and produce a final product which will be fed to the existing packaging system. This final product may be UO3 as opposed to the UO4·2H2O produced in earlier stages. This will be confirmed as part of the final design process; and
- Infrastructure to support operations at Gould's Dam including road, office, workshop, stores and diesel fired power station

The Gould's Dam Indicated Resource has been included to achieve the targeted 3.2Mlbs / annum production rate, with the Inferred Resource being excluded from the project assessment. The concept for this final stage will be finalised as part of the DFS with the optimal solution being dependent on the results of the exploration program planned for Honeymoon (i.e. within ML6109), Jasons and the western tenements (Gould's Dam etc.).

Capital and Operating Costs

The capital cost estimates for the various stages of the Project are shown below in Table 7. The costs are presented in US dollars as at Q2 2017 to an accuracy of -15% +25% and have been converted from Australian Dollars using an exchange rate of A$1.00 = US$0.75. The estimate was prepared by GR Engineering. The costs include an average weighted contingency of 10%.

Table 7. Capital Cost Estimates

Description	Capex (US$000)
Stage 1 – Restart (0.88Mlbs)	
Direct Costs	$6,046
Construction Indirects	$555
EPCM	$760
Spares, Inventory & Mobile Fleet	$654
First Fill	$1,190
Contingency	$994
Total	**$10,199**
Stage 2 – 2.0Mlb Operation	
Direct Costs	$40,832
Construction Indirects	$2,382
EPCM	$4,253
Spares, Inventory & Mobile Fleet	$471
First Fill	$5,144
Contingency	$4,513
Total	**$57,594**
Stage 3 – 3.2Mlb Operation	
Direct Costs	$56,250
Construction Indirects	$3,432
EPCM	$3,558
Spares, Inventory & Mobile Fleet	$1,717
First Fill	$5,952
Contingency	$7,019
Total	**$77,929**

The all-in sustaining cost estimates (AISC) are shown in Table 8. The cost estimates were prepared by GR Engineering, with Boss Resources providing the costs associated with the wellfield development. The costs shown are the weighted average costs for the various production stages.

The estimate is based on prices obtained during the second quarter of 2017, and is to an accuracy of -15% +25%, no contingency has been included in these costs. An exchange rate of A$1.00 = US$0.75 has been used to convert from Australian Dollars.

Table 8. Operating Cost Estimates (AISC)

Description	AISC (US$000) / annum	AISC US$ / lb U3O8 equiv.
Stage 1 – Restart (0.88Mlsb)		
Wellfield	$300	$0.46
Plant	$16,300	$25.60
General & Admin	$3,200	$5.04
Marketing, Shipping & Royalties	$2,750	$4.29
Sustaining Capex (inc. wellfield dev)	$1 050	$1.64
Total	**$23,600** [1]	**$37.03**
Stage 2 – 2.0Mlbs Operation		
Wellfield	$800	$0.45
Plant	$21,750	$11.92
General & Admin	$3,250	1.78
Marketing, Shipping & Royalties	$7,350	4.03
Sustaining Capex (inc. wellfield dev)	$4,200	2.31
Total	**$37,350** [1]	**$20.48**
Combined Stage 1 &2		**$23.64**
Stage 3 – 3.2Mlbs Operation		
Wellfield	$3,500	$1.08
Plant	$38,300	$11.88
General & Admin	$3,800	$1.17
Marketing, Shipping & Royalties	$16,000	$4.97
Sustaining Capex (inc. wellfield dev)	$13,800	$4.28
Sub-Total	**$75,400** [1]	**$23.36**
LOM		
Wellfield	$1,800	$0.90
Plant	$27,300	$13.10
General & Admin	$3,450	$1.65
Marketing, Shipping & Royalties	$9,750	$4.65
Sustaining Capex (inc. wellfield dev)	$7,400	$3.60
Sub-Total	**$49,700** [1]	**$23.90** [1]

[1] Figures have been rounded

Infrastructure

Power

Power supply for the existing Honeymoon site is via overhead transmission line from New South Wales via the grid from Broken Hill and Cockburn. The power is then reticulated by high voltage cable and overhead power line to the processing facilities, infrastructure and wellfields at Honeymoon. The Study

assumes that the process plant expansion and future well fields developed in the Honeymoon vicinity will be connected into this high voltage reticulation network.

Power for wellfield operation and PLS transfer at the Jasons deposit is assumed to be generated at site by local diesel fuelled power station. The generating sets for the Jasons deposit can be installed on a hire basis with refuelling and maintenance on a contract basis from the hirer.

The Study proposes power for the operations at Gould's Dam will be from a Build Own Operate (BOO) diesel fuelled power station with high voltage power reticulated to the plant, infrastructure and wellfields by underground cable. The BOO power contractor will provide the generating sets, fuel farm and maintenance facilities along with the operators and maintenance personnel.

Roads

The existing site access road to Honeymoon, approximately 20 km long, can be utilised for access to the site from the state road network. It is assumed the new Jasons and Gould's Dam access roads will be an unsealed road of approximately 15km and 75 km respectively in length with a pavement width of eight metres.

The Study assumes access roads will be maintained on a contract basis with maintenance consisting of drainage channel clearing, profile re-shaping and minor repairs. An allowance has also been made to contribute to the ongoing maintenance of the unsealed road from the Barrier Highway to the Honeymoon access road.

Water

Water for the Honeymoon site can be provided from the existing raw water bores. The Study proposes that water for the Gould's Dam site will be provided from two additional bores drilled in non-ore paleo channels close to the site.

Waste liquid from the sites is considered to consist of at least:

- BLS bleed;
- WTP sodium purge (if required);
- Potable water plant brine;
- Grey water;
- Clean-up of spillage from reagents areas; and
- Water collected in the storm water pond.

The Study assumes the waste water will be collected at Honeymoon and Gould's Dam in solid retention ponds to remove any suspended solids prior to re-injection into existing disposal wells at Honeymoon and new disposal wells at Gould's Dam.

Camp

The Study proposes that the existing camp at Honeymoon can be utilised for all stages of the operation. Personnel carrying out duties at Gould's Dam will need to travel between the two sites at the beginning and end of shift by light vehicle.

Buildings

The Study proposes that the existing administration building, maintenance workshop, stores and associated facilities at Honeymoon will be supplemented with additional facilities at Gould's Dam to support the satellite operations. These new facilities are assumed to include:

- Plant control room;
- Office building with offices along with a small meeting room, crib room;
- Ablutions;
- Workshop and stores buildings; and
- Offices.

Airstrip

The Study assumes that the existing Honeymoon airstrip will be rehabilitated as required and utilised for the operations. Further to this the airstrip will be maintained on a contract basis as part of the road maintenance contract.

Permitting & Environmental

Mining at Honeymoon is endorsed by the local indigenous communities with Native Title agreements in place and signed with the Adnyamathanha and Wilyakali people. Mining and uranium export permits are in place for the existing operation which means production can commence at Honeymoon with a very short lead time.

Specifically at the Federal level, the proposed restart of the Honeymoon Project and the ramp-up to full production will fall within the existing scope of the projects with Federal approval, granted under the Environment Protection (Impact of Proposals) (EPIP) Act 1974 (CWLTH). Current EPIP approvals provide for production rates up to 3.3Mlb / annum at Honeymoon.

On a State level, Boss are currently preparing an 'Assessment of Change' to the current Regulatory Approvals under the Mining Act 1971 (SA), for the inclusion of the ion exchange unit in parallel with the solvent extraction process, and the planned increase in the footprint of the mining area within ML6109.

The results of the draft 'assessment of change' suggests that the changes associated with the planned increase within ML6109 will be minor. This will require minor updates to the Program for Environment Protection and Rehabilitation (PEPR), and the Radiation Management Plan (RMP) and Radioactive Waste Management Plan (RWMP) under the Radiation Protection and Control Act 1982 (SA).

Planned Exploration Activities

On 20 January 2016, the Company announced an Exploration Target for the Project. An extensive drill program is planned as part of the future DFS to investigate this further. The program will focus in the East Kalkaroo area, further refining the resource and undertaking the required step-out drilling to follow up on trends identified in the historical drilling. The program will be a combination of rotary mud and

sonic core drilling to produce core to validate lithologies and obtain chemical assay data for grade verification.

Other Planned Exploration Activities

The Project also contains significant potential for additional Mineral Resources to be defined in the areas contained by the exploration leases. Based upon a review of the exploration data an Exploration Target for this area was announced by the Company on 20 January 2016.

Past exploration drilling has shown that uranium mineralisation continues up and downstream from ML6109 for more than 15km in each direction within EL's 5215 and 5261. The project database contains some 208 drill holes that intersected ore grade mineralisation, with grades of up to 4,000ppm eU3O8.

Analysis of the drilling at the Jasons Deposit and revised geological interpretation indicates that the current resource estimate is limited by sparsity of data and lack of infill drilling.

The Gould's Dam and Billeroo regions contain historical estimates that have not yet been validated by the Boss technical team. Regionally, in the Gould's Dam area airborne magnetic data indicates the potential for significant untested paleochannel regions, with historical drilling data indicating the presence of uranium mineralisation.

Potential for Cost Savings

The work carried out during the Study has indicated a number of areas where potential cost savings may be realised. These include:

- Ion exchange column capital costs
- Delivery times of the IX columns for the Stage 2 construction
- Increased tenors in the PLS which would reduce the required size of the IX and nano-filtration equipment
- Wellfield development
- Wellfield conditioning
- Gypsum control during operation
- Increased resources near mine (Honeymoon)

As further staged development and refinement of the Honeymoon Project progresses the company is confident savings can be achieved.

Competent Person's Statement

The information in this report that relates to the Exploration Results and Mineral Resources are based on information compiled by Dr M. Abzalov, who is a Competent Person according to the JORC 2012 Code. Dr M. Abzalov is a Fellow of Australasian Institute of Mining and Metallurgy. He has sufficient experience in estimation Resources of uranium mineralisation, and have a strong expertise in the all aspects of the data collection, interpretation and geostatistical analysis to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves'. Dr M.Abzalov is employed as a director of Boss Resources Ltd. Dr M. Abzalov consents to the inclusion in the report of the matters based on their information in the form and context in which it appears. The Company confirms that the form and context of the results presented have not been materially modified from the original market announcements released on 6 December 2016, 8 December 2016, 14 December 2016 and 15 March 2017.

Appendix I

Supporting, Forward Looking and Cautionary Statements

This announcement has been prepared in accordance with the JORC Code (2012) and the ASX Listing Rules. The Company advises that the PFS results, Production Targets and any Financial Information contained in this announcement are preliminary in nature as the conclusions are in-part based on low-level technical and economic assessments, are insufficient to support the estimation of Ore Reserves or to provide an assurance of economic development at this stage.

The Company notes that there is a low level of geological confidence associated with Inferred Mineral Resource and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources.

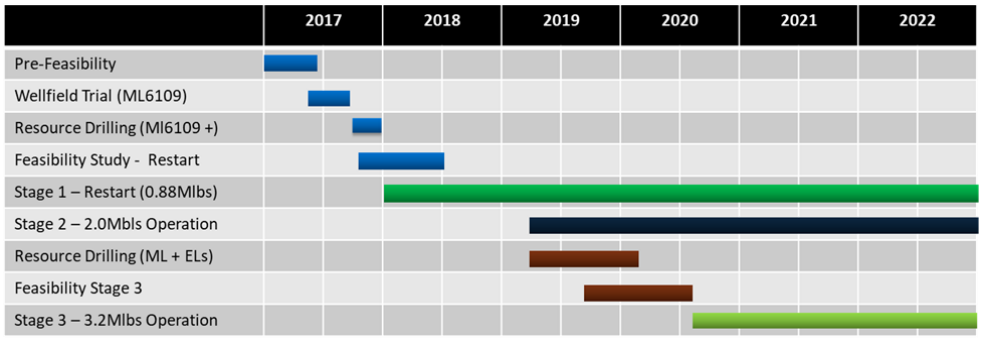
The Company believes it has a reasonable basis for making the forward-looking statements in this announcement, including Production Targets and cost information, for the reasons set out in this announcement and including the following:

- For Mineral Resources, the Company confirms that all material assumptions and technical parameters that underpin the relevant market announcements continue to apply and have not materially changed.
- Further extensive resource drilling is planned in the Definitive Feasibility Study and there is a reasonable expectation, based on historical results, that the majority of the Inferred Mineral Resource can convert to Indicated Mineral Resource
- The Boss Resources Board and core technical team have a strong technical skill-set and four members of the team have direct uranium experience in the engineering, geological and environmental fields.
- Boss Resources current market capitalization is ~A$50 million and it has successfully raised ~A$14.5 million over the last 18 months.
- The Boss Resources Board has had previous success in raising capital for mining projects of this nature.
- There is strong broker support for the project with two major broking firms indicating an interest in being considered to assist with the provision of funding for the project through debt, equity or partnership.
- The Honeymoon Project is unique in that it includes a modern ISR plant and significant mine infrastructure which is currently on care and maintenance.
- The Honeymoon project region has mining, environmental and export approvals (State and Federal) which are currently on-hold and can be easily re-activated when mining resumes.
- Mining at Honeymoon is endorsed by the local indigenous communities with Native Title agreements in place and signed with the Adnyamathanha and Wilyakali people.
- GR Engineering Services (GRES) have been used to conduct the technical aspects of the study. GRES and their appointed consultants have experience in designing uranium processing plants and in executing projects in Australia.

Appendix II

Material Assumptions used in the Pre-Feasibility Study

Criteria	Commentary
Status of Study	The information and production targets presented here are based on a Pre-feasibility Study. The Pre-feasibility Study is a comprehensive study on the technical viability of a project that has advanced to a stage where the preliminary wellfield design and process design have been established and a cost analysis for the project has been completed. However, due the level of inferred resource included in the study, the results of the PFS are to be considered preliminary in nature.
Mineral Resource Estimate Supporting Production Targets	The detailed assumptions regarding the Resources are outlined in the Company's announcements dated 20 January 2016, 8 April 2016, 14 June 2016 and 15 March 2017.
Classification	The production targets referred to in this announcement are based on Mineral Resources which are classified as 68% Measured and Indicated and 32% Inferred over the 7-year life-of-mine.
Wellfield Design Assumptions	The production target is based on an ISR process. The hydrological performance of the wellfields was based on the work carried out by and an independent consultant, incorporating the performance of the wellfields that were operated by Uranium One prior to the shut-down. The cut-off grade thickness (gt) value used to define the wellfield pattern was 650 ppm U_3O_8 x metres. The wellfield pattern dimensions were defined on an economic requirement and benchmarked against other operations.
Metallurgical Assumptions	The uranium recovery has been derived based on the performance of the wellfields that were operated by Uranium One prior to the shut-down, specifically Wellfield C, and validated through the preliminary leach testwork undertaken at ANSTO. The plant recovery is dependent primarily on the uranium precipitation efficiency, which has assumed to be 99% based on other operations. This has been rolled up into the overall recovery figure reported for the wellfields.
Capital Costs	Plant and Infrastructure capital costs have been estimated by an independent consultant and are consistent with a Pre-Feasibility Study level of accuracy (-15 + 25%). The estimate is valid as of Q2 2017 and an overall average contingency of 10% has been included in the estimate. Capital costs have been estimated for each stage, Jasons extension and the East Kalkaroo extension. Sustaining Capex, including wellfield development, were also estimated by the independent consultant using the quoted wellfield development costs from Boss Resources.

	• Stage 1 – US$10M • Stage 2 – US$58M • Stage 3 – US$78M • Jason extension – US$10M • East Kalkaroo extension – US$2M
Operating Costs	Wellfield and plant operating costs were estimated by an independent consultant and are consistent with a Pre-Feasibility Study level of accuracy (-15 + 25%). No contingency was included in the estimate. Operating costs were built up from first principles, based on quotes received in Q2 2017. • Stage 1 – US$37.03/lb U_3O_8 • Stage 2 – US$20.48/lb U_3O_8 • Combined Stage 1&2 - US$23.64 / lb U_3O_8 • Stage 3 – US$25.09/lb U_3O_8
Schedule	The project development schedule indicates that the Stage 1 construction could start in Q2 2018 and be completed with 12 months allowing the wellfield and plant start-up in Q1 2019, provided funding can be secured by Q1 2018. Stage 2 construction could start in Q2 2019 and be completed within 24 months, with 2.0Mlb production starting in 2021. Stage 3 construction could start in 2021 and be completed within 24 months, with 3.2Mlbs production starting in 2023. 
Infrastructure	The majority of the required infrastructure already exists, including the 0.88Mlb / annum plant. The Honeymoon plant, wellfields, access roads, power transmission, water source, camp and administration buildings are currently under care and maintenance and can be easily brought back online. The infrastructure costs associated with the extension to Jasons and Gould Dams were estimated by an independent consultant.
Environmental	The project already has an approved EIS granted under the Environment Protection (Impact of Proposals) (EPIP) Act 1974. The Current EPIP approvals allow for production rate of up to 3.3Mlbs / annum.
Social	Mining at Honeymoon is endorsed by the local indigenous communities with Native Title Agreements in place and signed with the Adnyamathanha and Wilyakali People.

Funding	In order to achieve the range of outcomes indicated, funding in the order of US$68M will be required to restart the operation and construct Stage 2. The stages are not linked and may be broken into 2 steps; a US$10M for restart and US$58M for Stage 2. It is anticipated that Stage 3 will be funded by company cashflow. It is anticipated that the finance will be sourced through a combination of equity and debt instruments from existing shareholders, new equity investment and debt providers from Australia and overseas. It is important to note that no funding arrangements have yet been put in place, as these discussions will usually, and are expected to, conclude during the advancement of the DFS. The Company has however had discussions with potential off-takers for the sale of production from Honeymoon which would unlock debt financing opportunities. A combination of fixed and market related pricing was proposed at or around long term benchmark levels for term contracts. As uranium demand and its price environment strengthens as expected, in alignment with the Company's time schedule for Honeymoon returning to production, such arrangements will be favourably considered. The Company's current market capitalization is ~A$50 million and it has successfully raised ~A$14.5 million over the last 18 months. The Company has sufficient funds on hand at the date of this announcement to undertake the next stage of the project, i.e. the Field Leach Trial. The Board of Boss Resources believes that there is a reasonable basis to assume that funding will be available, as and when the Company required by the development and production schedules based on the following: • Operational and support infrastructure already in place. • The Board and executive team have a strong financing track record. • The Company is confident that it will continue to increase the Mineral Resource beyond that of the current study. • The Company has strong reputable brokerage support for the Project, providing reasonable anticipation that equity financing will be available to further progress the outlined staged development of the Project • The economics of the PFS are highly attractive and for this reason it is reasonable for the Company to anticipate that equity financing will be available to further develop the Project. • In addition to future equity financing, the Company plans to engage with potential debt providers and off-take partners, and will focus on progressing funding options during the DFS. Preliminary discussions with potential off-takers has been positive. • The Company's highly prospective gold projects in Burkina Faso, subject to Joint Venture with Teranga Gold Corporation, will possibly result in additional farm-in payments. • Stage 3 funding is assumed to be generated by company generated cashflow.
Independent Review	Study inputs were prepared by Competent Persons / Independent Consultants identified in the announcement.