

## Drilling at East Kalkaroo Identifies Mineralised Extensions to Honeymoon Deposit Host Yarramba Palaeochannel

### HIGHLIGHTS

- Exploration drilling completed east of East Kalkaroo resource ahead of schedule and within budget
- Two new exploration targets identified within the Yarramba Palaeochannel (host to the Honeymoon Uranium Deposit)
- Target Area 1 indicates possible extension of Honeymoon Mineral Resource in new direction
- Significant new drill intercepts of uranium (PFN results, ppm pU<sub>3</sub>O<sub>8</sub>) include:
  - BIF0204 from 119m **GT 2,902** (3.5m @ 829 ppm pU<sub>3</sub>O<sub>8</sub>)
  - BIF0186 from 124.75m **GT 1,136** (2.0m @ 568 ppm pU<sub>3</sub>O<sub>8</sub>)
  - BIF0198 from 109.25m **GT 1,177** (2.75m @ 428 ppm pU<sub>3</sub>O<sub>8</sub>)
- Significant historic drill intercepts of uranium (gamma results, ppm eU<sub>3</sub>O<sub>8</sub>) include:
  - 580-070 from 123.0m **GT 6,521** (3.5m @ 1,863 ppm eU<sub>3</sub>O<sub>8</sub>)
  - ZV-1100 from 116.8m **GT 4,932** (2.25m @ 2,192 ppm eU<sub>3</sub>O<sub>8</sub>)
  - ZZ-1100 from 119.0m **GT 1,870** (5.5m @ 340 ppm eU<sub>3</sub>O<sub>8</sub>)

**Boss Resources Limited (ASX: BOE)** is pleased to announce the completion of the recent drilling campaign undertaken at the Honeymoon Uranium Project, concentrated on the East Kalkaroo area, located approximately 3 – 10 kilometres from the Honeymoon Uranium Mine (**Figure 1**). The work program comprised:

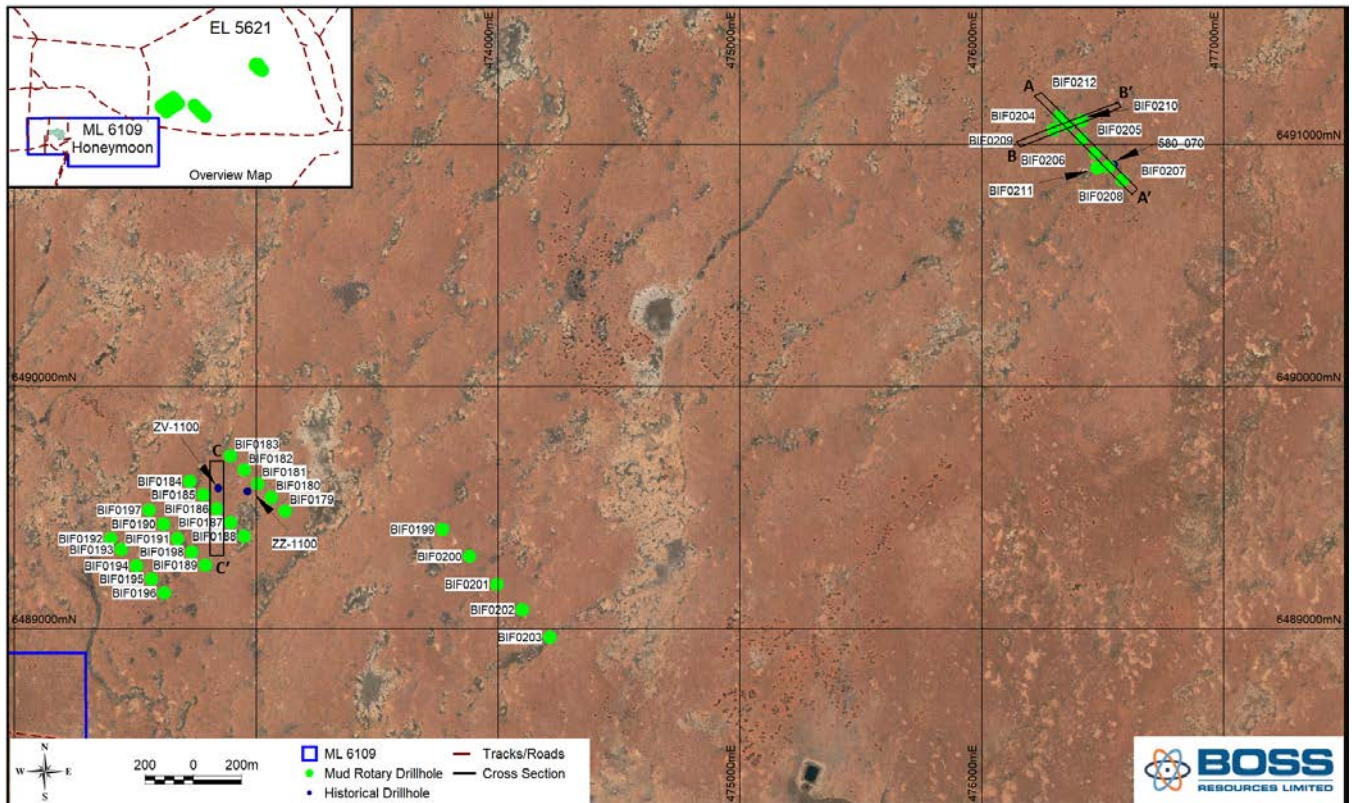
- **Step-out drilling:** targeting the easternmost edge of the Honeymoon Mining Lease, with the objective of identifying extensions to the current Mineral Resource; and
- **Regional exploration drilling:** focusing on the poorly-explored central part of Exploration Licence 5621, with the objective of identifying new areas of mineralisation for future exploration.

Drilling has identified two new zones of mineralisation in what appear to be channel limbs of northeast-southwest and broadly east-west orientation, respectively. Regional-scale, airborne electromagnetic (EM) data (**Figure 2**) suggest that these limbs are extensions of the same Tertiary-aged Yarramba Palaeochannel that hosts the Honeymoon Uranium Deposit, making these new targets highly prospective and worthy of further exploration.

The drillholes were originally designed as follow-up to historical gamma results (ppm eU<sub>3</sub>O<sub>8</sub>) at holes ZV-1100, ZZ-1100 and 580-070, intersecting 2.25m @ 2,192 ppm eU<sub>3</sub>O<sub>8</sub>, from 116.8m; 5.50m @ 340ppm eU<sub>3</sub>O<sub>8</sub> from 119.0m; and 3.50m @ 1,863ppm eU<sub>3</sub>O<sub>8</sub>, from 123.0m, respectively.

The results from the 2018 program highlight one mineralised trend (Target Area 1, **Figure 2**) that appears to be 190m across at its widest point and is situated at the easternmost edge of the Honeymoon Mining Licence (ML). The location of this mineralisation suggests an extension of the known Mineral Resource in an orientation different to the currently recognised east-west trend at Honeymoon.

A second mineralised trend of approximately 80m width (Target Area 2, **Figure 2**) was identified from the drilling completed 4 kilometres from the eastern edge of the ML. Further extensive exploration is required to define the morphology of these channel limbs and determine their potential to meet the ultimate objective of increasing the Honeymoon Mineral Resource.

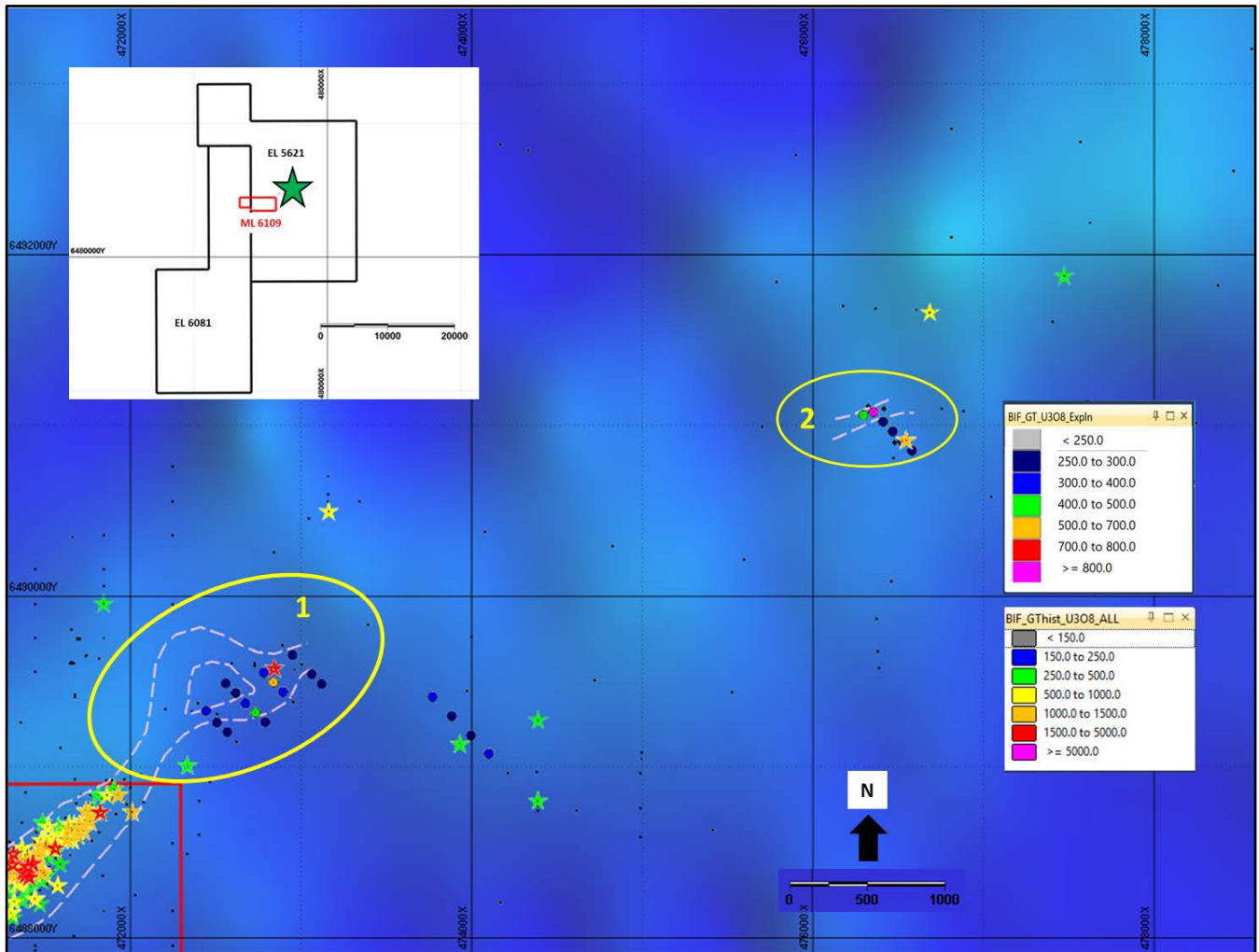


**Figure 1:** Location Map for the 2018 exploration drilling program at East Kalkaroo

**Figure 2** shows the peak per-hole grade x thickness composites overlain on the 90-95m depth slice image from the regional-scale EM data. The composite grade-thickness (**GT**) values are based on the best significant intercepts returned from the 2018 drilling campaign. Historical drilling has been plotted for reference, along with the interpreted channel structure as pink dashed lines. The yellow ellipses highlight the two new areas of mineralisation as identified by the recent drilling. Despite the variable density of historic drilling in and around the more regional areas of EL 5621, mineralisation was intersected sporadically and definitive extensions to the historic resource could not be distinguished. However, the grades returned from the recent drilling support the mineral endowment highlighted by the historical holes and suggest good continuity of mineralisation along strike into areas of extension to the east of the Honeymoon Mining Lease.

The EM depth slice image (**Figure 2**) also indicates three linear features trending broadly northwest-southeast that appear to intersect the Tertiary-aged Yarramba Palaeochannel which hosts the Honeymoon Uranium Deposit. These features are thought to be faults or fractures that may have affected the basement lithologies and influenced the formation of the channels, i.e. by creating offsets within the main channel structure, producing potential trap sites for mineralisation within which chemical conditions may become appropriate for the reduction and precipitation of uranium. However, due to the blockage in permeable horizons, the uraniferous fluid can no longer continue to flow through the deposit and becomes trapped resulting in accumulations of (often) high-grade mineralisation. Further exploration will therefore be undertaken in these areas to test this model.

Drilling undertaken within Target Area 2 was originally designed to test historic hole 580-070, however the mineralised trend identified was situated at the northwestern end of the drill line where there is no record of historic drill testing. This result, when viewed in context with the features interpreted from the EM data, suggests a structural complexity that may have affected the channel morphology and created two separate mineralised trends.



**Figure 2:** Summary GT distribution map overlaying regional-scale EM depth slice. Green star denotes area of exploration drilling in 2018.

**Table 1 of Appendix 1** provides the full list of significant intersections returned from the downhole Prompt Fission Neutron logging (ppm  $\text{pU}_3\text{O}_8$ ). All reported drill intercepts were above the nominal cutoff value of 250ppm  $\text{pU}_3\text{O}_8$ , greater than 0.5m in thickness and less than 1m of internal dilution.

Highlights falling within grade expectations and confirming historical interpretation include:

- 3.50m @ 829ppm  $\text{pU}_3\text{O}_8$  GT 2,902 (BIF0204 from 119.00m)
- 4.00m @ 340ppm  $\text{pU}_3\text{O}_8$  GT 1,360 (BIF0199 from 117.25m)
- 2.75m @ 428ppm  $\text{pU}_3\text{O}_8$  GT 1,177 (BIF0198 from 109.25m)
- 2.25m @ 278ppm  $\text{pU}_3\text{O}_8$  GT 626 (BIF0207 from 113.50m)
- 2.25m @ 274ppm  $\text{pU}_3\text{O}_8$  GT 617 (BIF0206 from 122.25m)

Geological logging of the drill chip samples has shown that the mineralisation is hosted within the sandy units of the Lower Eyre Formation. Interpretation of the geophysical logs is in progress to ensure that correct interpretation of lithological units is applied.

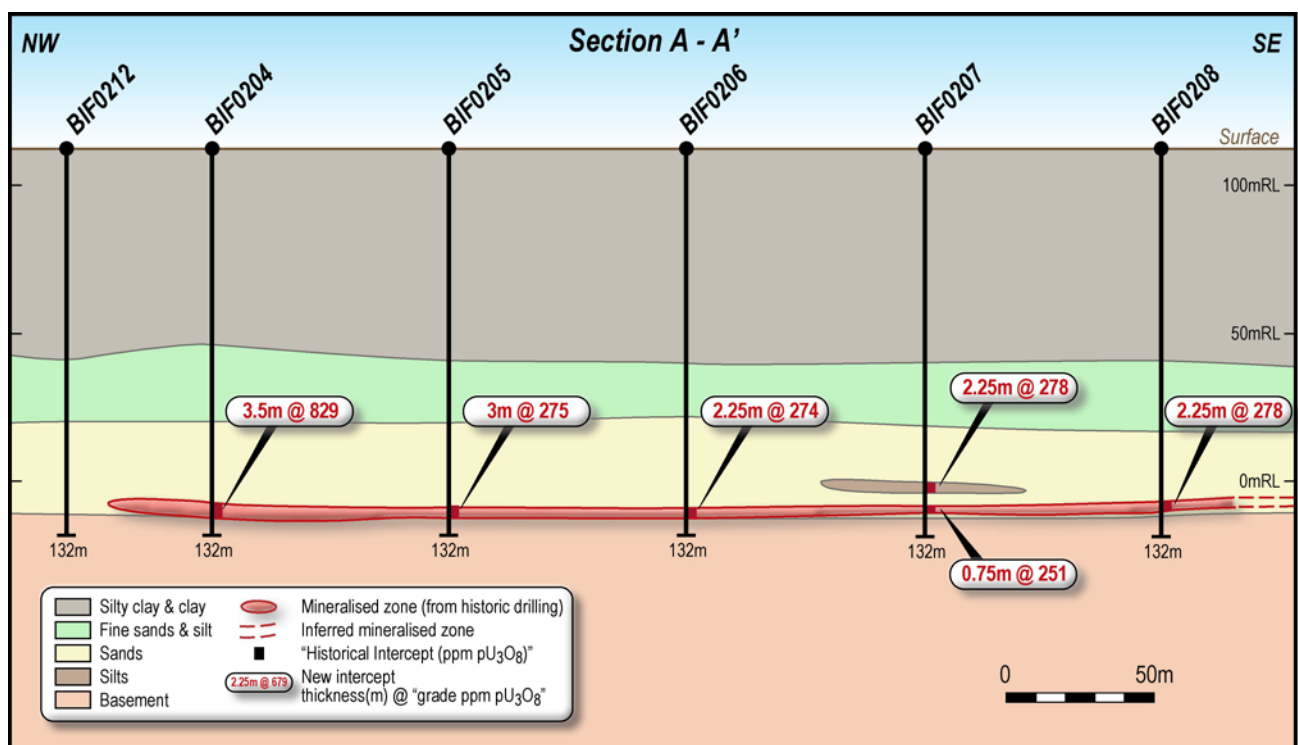
**Figure 3** provides a cross-sectional view along section line A – A', while **Figure 4** shows a long-section along the northeast-southwest strike of the newly-identified mineralised trend in Target Area 2, represented by black references lines A – A' and B – B', respectively, on **Figure 1**.

Mineralisation is seen to be continuous along section and appears to remain open to the southeast (**Figure 3**).

Unfortunately, drilling of hole BIF0210 intersected very loose, unconsolidated silts and sands that collapsed back into the hole just prior to the commencement of downhole logging, blocking access with the PFN tool and preventing the collection of data. However, the trend of mineralisation identified in holes BIF0204 and BIF0209 (**Figure 4**) suggests that both grade and thickness should continue to the northeast and warrants further investigation in this target area.

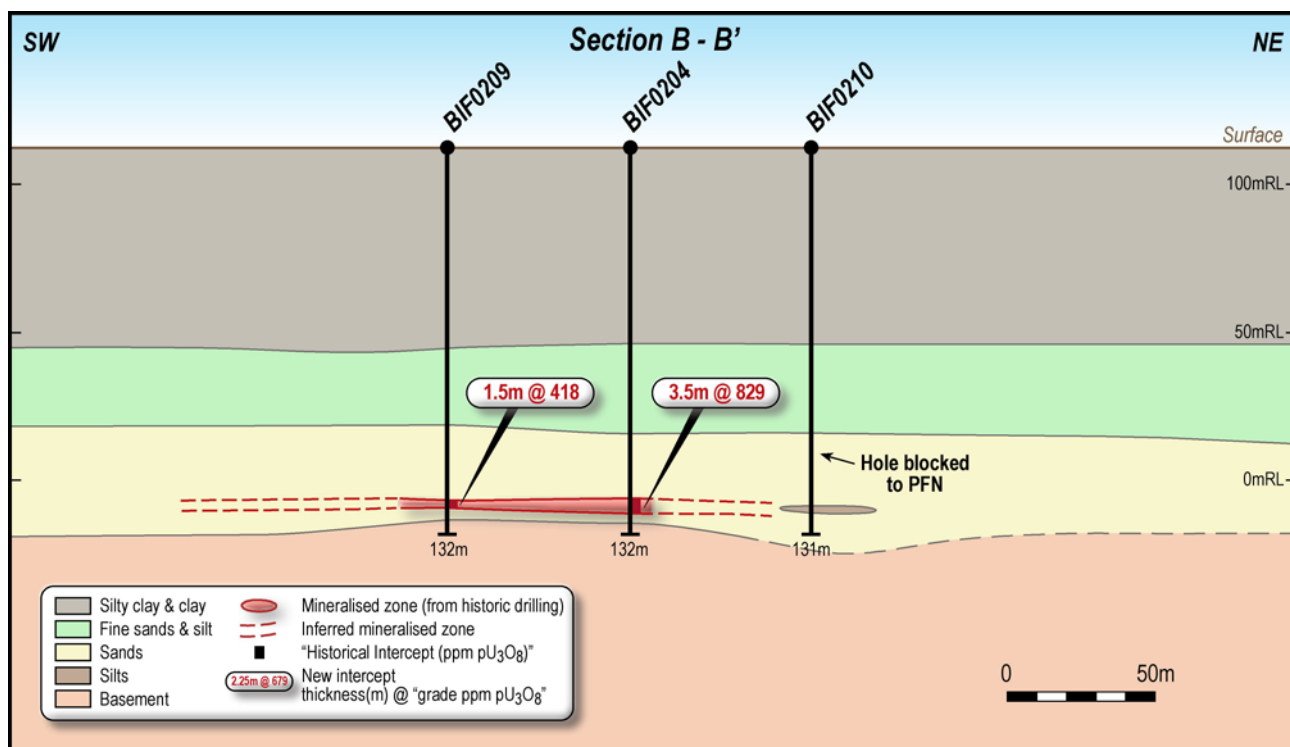
**Figure 5** illustrates an oblique section view through Target Area 1, as represented by black reference line C – C' on **Figure 1**. Mineralisation was observed within the coarse sandy units of the Lower Eyre Formation, just above the contact with the basement lithologies of the underlying Willyama Supergroup. One interpretation of the shape of the mineralised channel is shown by the pink dashed lines on **Figure 2**.

The results listed in **Table 1** are based upon the downhole geophysical logging conducted by Boss using its wholly owned Prompt Fission Neutron (PFN) tools, which are capable of providing calibrated  $\text{pU}_3\text{O}_8$  grade data that is not affected by radioactive disequilibrium. The two PFN tools utilised for the logging were calibrated at Honeymoon using four on-site test pits established by the previous owners of the operation. The operating, calibration and results of the PFN tool have been reviewed by an independent PFN expert. Full sampling and drilling details are shown in the **Appendix 1** JORC tables.

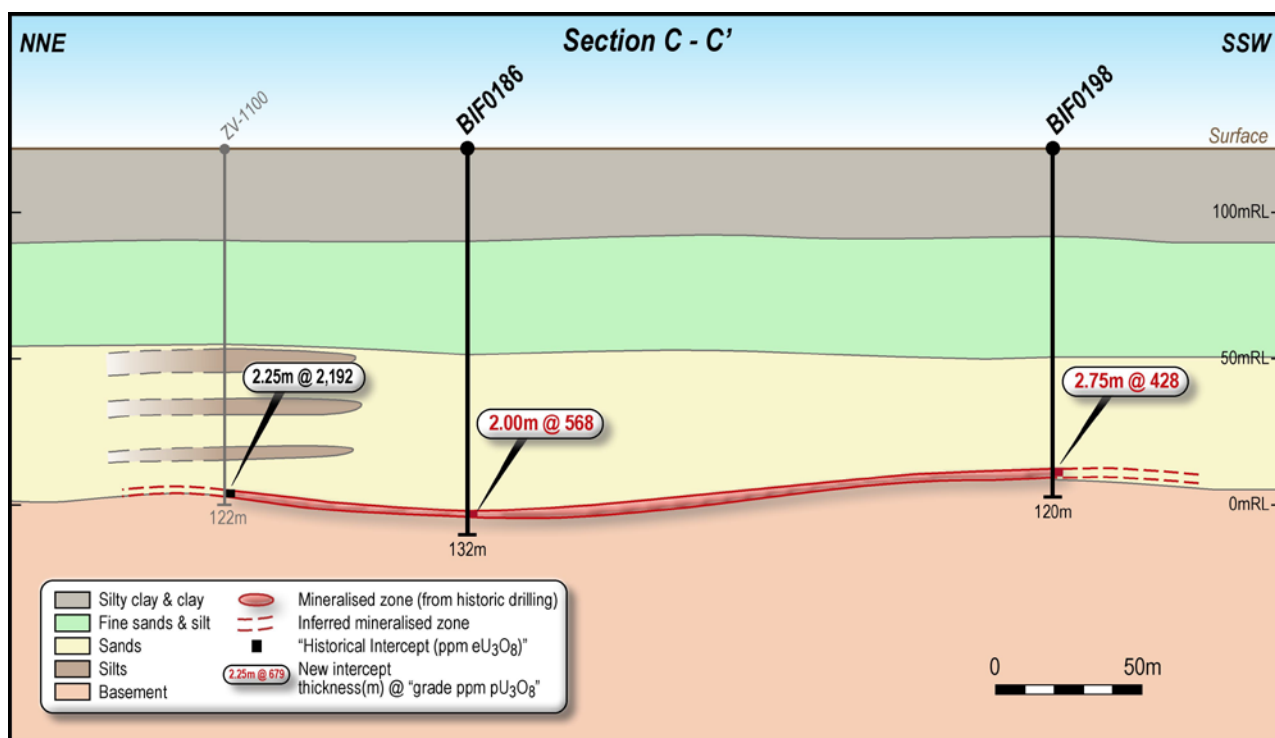


**Figure 3:** Section A – A' - cross-sectional view through Target Area 2, east of East Kalkaroo.





**Figure 4:** Section B – B' – long-section view along the strike of Target Area 2, east of East Kalkaroo.



**Figure 5:** Section C – C' – oblique-section view through Target Area 1, at the eastern edge of the Honeymoon ML.

The results from the 2018 exploration drilling campaign provide strong justification for further exploration over the two new target areas. Prior to committing to an expensive drill program, comparably low-cost surface geophysics is recommended to provide better channel definition.

The next stage of exploration activities will therefore involve the use of the ground-based passive seismic system to map out the underlying basement topography, identifying areas of basement depression and structure as well as improving the current resolution of the known morphology of the Yarramba Palaeochannel. The passive seismic system is a far cheaper and proven exploration alternative to the other standard geophysical techniques, and has been used extensively within the exploration industry to successfully map out palaeochannel morphology for various projects throughout Australia.

A small orientation survey will initially be undertaken within the Honeymoon Mining Licence in order to provide definitive confirmation that the passive seismic system will derive expected results. This resulting data will then be used to produce a depth-to-basement model, with the recent drilling utilised as calibration data. Once the model has been produced, the geophysical method will be applied to regional areas around the tenement package. It is anticipated that this phase of exploration will commence in the first half of 2019.

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#### **Competent Persons' Statements**

*The information in this report that relates to Exploration Results for the Honeymoon Project is based on and fairly represents information compiled by Dr M. Abzalov, who is a Fellow of the Australian Institute of Mining and Metallurgy (AusIMM). He has sufficient experience relevant to the style of mineralisation and type of deposit under consideration, and to the activities being undertaken 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' (JORC Code). Dr M. Abzalov serves on the Technical Committee 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 information in this document relating to the Mineral Resources is extracted from the announcements entitled 'Substantial Increase And Upgrade In Honeymoon Uranium Resource' dated 20 January 2016 , 'Boss Increases Honeymoon Uranium Project Resource' dated 8 April 2016, and is available to view on [www.bossresources.com.au](http://www.bossresources.com.au).*

## APPENDIX 1

### Drilling Results Tables

In accordance with ASX Listing Rule 5.7.2, the Company provides the following information.

**Table 1: Recent Drilling – Summary Results from 2018 Mud Rotary Drilling**

Summarised above a nominal 50cm minimum thickness, 1m internal dilution & above 250ppm pU<sub>3</sub>O<sub>8</sub><sup>2</sup>

HoleID	Easting	Northing	RL	EOH	Dip	Az	mFrom	Thickness	<sup>1</sup> eU308 ppm	<sup>2</sup> pU308 ppm
BIF0179	473120	6489486	118	132	-90	0	116.75	1.5	188	259
BIF0180	473063	6489543	117	126	-90	0	118.25	1	170	256
BIF0181	473006	6489599	118	126	-90	0	NSA			
BIF0182	472950	6489656	118	132	-90	0	125.5	1	154	251
BIF0183	472893	6489713	117	136	-90	0	NSA			
BIF0184	472725	6489609	118	122	-90	0	NSA			
BIF0185	472781	6489552	118	132	-90	0	118.25	2	239	379
BIF0186	472838	6489496	118	132	-90	0	124.75	2	684	568
BIF0187	472894	6489439	118	134	-90	0	115.5	1.75	208	328
BIF0187	472894	6489439	118	134	-90	0	117.25	2.25	221	316
BIF0188	472951	6489382	118	132	-90	0	NSA			
BIF0189	472790	6489263	119	120	-90	0	102.5	2.25	174	269
BIF0190	472617	6489433	119	132	-90	0	111.5	1.25	41	250
BIF0190	472617	6489433	119	132	-90	0	117.75	1.25	52	259
BIF0190	472617	6489433	119	132	-90	0	125.75	1.5	80	253
BIF0191	472674	6489372	118	138	-90	0	126.75	0.5	100	283
BIF0191	472674	6489372	118	138	-90	0	128.5	2.25	184	369
BIF0192	472398	6489372	118	114	-90	0	NSA			
BIF0193	472443	6489328	119	126	-90	0	68.25	2.5	139	353
BIF0193	472443	6489328	119	126	-90	0	106.5	2	98	263
BIF0193	472443	6489328	119	126	-90	0	116.5	1	18	257
BIF0194	472506	6489260	119	132	-90	0	107	0.5	12	273
BIF0195	472568	6489205	119	120	-90	0	104.25	1.25	20	250
BIF0196	472620	6489148	120	120	-90	0	NSA			
BIF0197	472558	6489490	119	126	-90	0	121.25	1	76	263
BIF0198	472733	6489318	119	120	-90	0	109.25	2.75	416	428
BIF0198	472733	6489318	119	120	-90	0	112.75	2.25	136	279
BIF0199	473770	6489410	117	126	-90	0	117.25	4	178	340
BIF0200	473883	6489298	118	126	-90	0	114	2.5	120	282

BIF0201	473996	6489184	117	126	-90	0	117.25	2	19	268
BIF0202	474101	6489078	118	132	-90	0	70	0.5	130	257
BIF0202	474101	6489078	118	132	-90	0	110.5	2.75	168	385
BIF0202	474101	6489078	118	132	-90	0	115	0.75	21	262
BIF0203	474214	6488965	119	54	-90	0	NSA			
BIF0204	476355	6491078	112	132	-90	0	119	3.5	663	829
BIF0204	476355	6491078	112	132	-90	0	123.25	2.75	160	311
BIF0204	476355	6491078	112	132	-90	0	126	1.25	61	253
BIF0204	476355	6491078	112	132	-90	0	127.5	3	9	254
BIF0205	476412	6491022	112	132	-90	0	110.5	0.75	10	253
BIF0205	476412	6491022	112	132	-90	0	122.75	3	94	275
BIF0205	476412	6491022	112	132	-90	0	125.75	1	38	253
BIF0205	476412	6491022	112	132	-90	0	127.75	1.75	7	251
BIF0206	476468	6490965	112	132	-90	0	122.25	2.25	154	274
BIF0206	476468	6490965	112	132	-90	0	124.75	1.25	83	253
BIF0206	476468	6490965	112	132	-90	0	126.5	0.75	39	270
BIF0207	476525	6490908	112	132	-90	0	113.5	2.25	389	278
BIF0207	476525	6490908	112	132	-90	0	122.75	0.75	142	251
BIF0208	476581	6490852	113	132	-90	0	120.75	1	321	286
BIF0209	476296	6491060	113	132	-90	0	119.5	1.5	163	418
BIF0209	476296	6491060	113	132	-90	0	125.25	0.5	441	281

<sup>1</sup> –  $eU_3O_8$  grade data derived from natural gamma downhole tool calibrated and operated by Boss Resources. No top cuts applied.

<sup>2</sup> –  $pU_3O_8$  grade data derived from Boss's Prompt Fission Neutron Tools (PFN). These have been calibrated to the groundwater and the sedimentary conditions at the Honeymoon Minesite.

Locations recorded in MGA94 Zone 54



## APPENDIX 2 - JORC TABLES

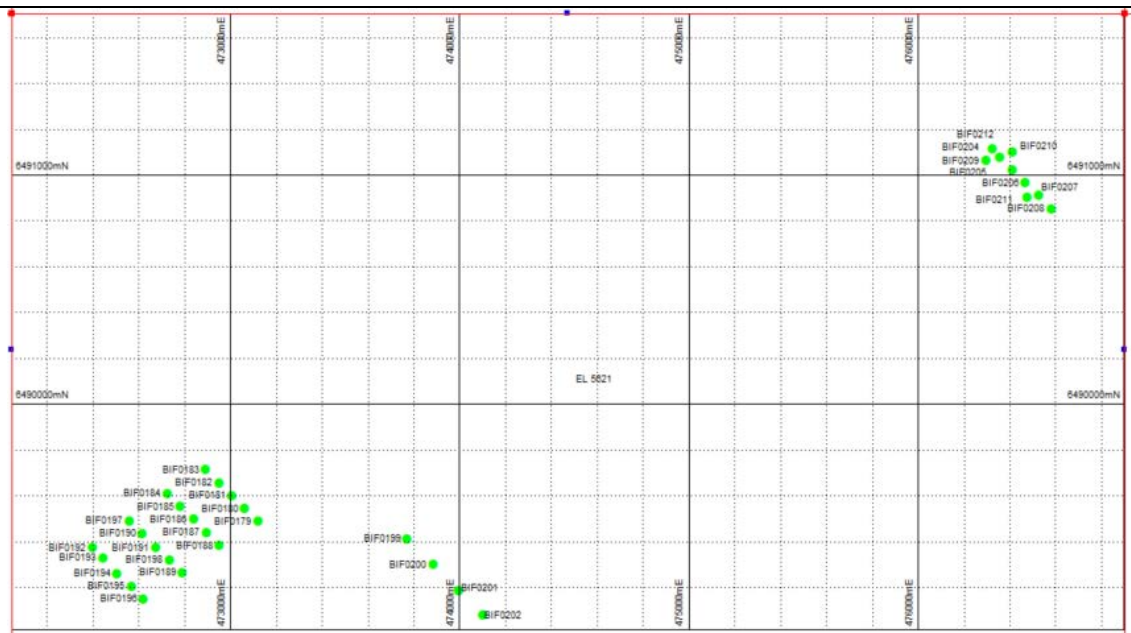
JORC Table 1: Section 1 Sampling Techniques and Data

Criteria of JORC Code 2012	Reference to the Current Report
	Comments / Findings
<i>Sampling techniques</i>	<p>Boss is utilising its own PFN tools to obtain <math>pU_3O_8</math> grades which, when properly calibrated, reduce the effect of radioactive disequilibrium. In-hole radiometric uranium grade data was also determined by Wireline Services with <math>eU_3O_8</math> determined from the down-hole natural gamma-logs and <math>pU_3O_8</math>.</p> <p>All tools were maintained by specialised electronic companies and technicians based in Adelaide and Perth. Calibration for the PFN tool was regularly undertaken using in-house calibration pits available at the Honeymoon Project and for the gamma tools externally, at the certified calibration facilities at Glenside, Conyngham St, Adelaide. Standard industry procedures were used for geophysical logging of the drill holes and estimation from the geophysical logs for the <math>eU_3O_8</math> (from the gamma-ray logs) and <math>pU_3O_8</math> (from the PFN instruments) grades.</p>
<i>Drilling techniques</i>	The holes were drilled by Watsons Drilling using the mud rotary method. The typical hole diameter is 14.5cm.
<i>Drill sample recovery</i>	Not applicable. Caliper readings indicate that hole size diameters are predominantly consistent.
<i>Logging</i>	Chip samples are collected every 2m and piles are photographed and geologically logged. Documentation has included colour, grain size, texture, sorting, alteration and oxidation state. All mineralised intervals were geologically logged with logging standards compliant with the industry standards.
<i>Sub-sampling techniques and sample preparation</i>	QA/QC of the geophysical data has included systematic control of the depth logged and control of the recorded $U_3O_8$ grade values. Geophysical tools estimate uranium content at large volumes, approximately 25 to 40 cm radius. The volume is sufficiently large allowing accurate measure of the grade.
<i>Quality of assay data and laboratory tests</i>	<p>Company Geophysical tools used to collect data include:</p> <ul style="list-style-type: none"> <li>• Auslog Gamma (with Guard) S422</li> <li>• Prompt Fission Neutron tool PFN#27</li> <li>• Prompt Fission Neutron tool PFN#32</li> <li>• Prompt Fission Neutron tool PFN#8</li> <li>• Gamma combined with guard S058</li> <li>• Auslog 3 arm calliper A326</li> </ul> <p>Wireline Services tools used to collect data include: Natural gamma, Induction, SP, Density, Neutron Porosity, Resistivity, Magnetic Resonance, deviation and 3 arm caliper</p> <p>Holes were logged in down and up directions, which provided a good control of logging consistency. All geophysical tools were regularly calibrated, using in-house facilities and the certified laboratories in Adelaide.</p> <p>QA/QC of the geophysical data has included systematic control of the depth logged and control of the recorded <math>eU_3O_8</math> grade values.</p> <p>The winches in the logging truck have their depth calibration checked periodically.</p>
<i>Verification of sampling and assaying</i>	The gamma-log data were additionally validated against the PFN logs. PFN grade data was only reported where there was a good correlation between PFN and gamma anomalies; and where PFN tool readings were considered to be robust.
<i>Location of data points</i>	<ul style="list-style-type: none"> <li>• Positions are set out using a Garmin handheld GPS and recorded after drilling.</li> <li>• The projection adopted for surveying is GDA 94, MGA zone 54 with AHD elevation. All surveys were tied to the existing registered base stations.</li> <li>• Topographic control was improved by Aerometrx Pty. Ltd flying 10cm pixel aerial photography which was rectified using registered survey points installed at site before plant construction began.</li> </ul>

<i>Data spacing and distribution</i>	Drill spacing is approximately 80m x 200m. Uranium grade is composited to 0.25cm to aid in interpretation.
<i>Orientation of data in relation to geological structure</i>	All holes are drilled vertically which provides an accurate intersection of the flat laying mineralised bodies.
<i>Sample security</i>	N/A
<i>Audits or reviews</i>	N/A

**JORC Table 1: Section 2 Reporting of Exploration Results**

Criteria of JORC Code 2012	Reference to the Current Report
	Comments / Findings
<i>Mineral tenement and land tenure status</i>	The Project consists of 1 granted Mining Lease, 5 granted Exploration Licenses, 3 Retention Leases and 2 Miscellaneous Purpose Licenses.  The Mining license expires in 2023, exploration licenses expire in 2019 (except EL 5623 which expires in 2020).
<i>Exploration done by other parties</i>	The Honeymoon deposit and surrounding areas of the Yarramba palaeochannel have been intensely explored and systematically drilled starting from 1969.  The Honeymoon Project was evaluated several times, with the degree of details varying from scoping studies to bankable feasibility undertaken in 2006. Resource estimates have been made from 1998 to 2016.
<i>Geology</i>	Palaeochannel type sandstone hosted uranium roll and tabular style.
<i>Drill hole Information</i>	See previously exploration announcements and drillhole collar diagrams. The topography in this region is predominantly flat. All holes were drilled vertically with an average hole length of approximately 120m.
<i>Data aggregation methods</i>	Mineralised intervals were chosen based upon a nominal 250ppm U <sub>3</sub> O <sub>8</sub> cutoff and over 50cm for reporting. Consideration was given to mineralisation defined by a combination of PFN eU <sub>3</sub> O <sub>8</sub> and natural gamma eU <sub>3</sub> O <sub>8</sub> co-existent intervals.
<i>Relationship between mineralisation widths and intercept lengths</i>	Drill traverses are oriented at right angle across the domain strike.  Holes are drilled vertically down. All holes have been down-hole surveyed with only minimal deviation identified (e.g. <2m over 100m).
<i>Diagrams</i>	Appropriate and relevant diagrams have been included in the announcement. The following diagram illustrates currently drilled holes.

	
Balanced reporting	Balanced reporting has been adhered to. See previous exploration announcements.
Other substantive exploration data	Mineralisation is still open along the strike of the domain.
Further work	Sonic holes will be planned to enable a fuller understanding of practical disequilibrium and sedimentological conditions within the deposit. Chemical analysis of sonic core will be an important step in validating the observed PFN grades and disequilibrium.