ASX Release 5 July 2023

Honeymoon Uranium Project, South Australia

Infill drilling underway on satellite deposits to grow mine life and production rate

Expanded inventory will enable Boss to leverage existing infrastructure, take advantage of greater scale and increase free cashflow

Boss Energy Limited (ASX: BOE; OTCQB: BQSSF) is pleased to announce the start of an infill drilling program targeting the Gould's Dam and Jason's satellite deposits at Honeymoon.

The program aimed at upgrading the resources at both deposits while improving the geological and hydrogeological understanding of the uranium mineralisation.

Boss Managing Director Duncan Craib said: "These satellite deposits have the potential to expand Honeymoon's production profile and extend the current mine life.

"Increases in the forecast production rate were not considered as part of the current Honeymoon restart feasibility studies. But given the strong outlook for the uranium market, we want to unlock the substantial value which would result from increasing the inventory and production rate".

Honeymoon is on track for first production in the December quarter, 2023. The mine is increasing the production profile to 2.45 Mlb/annum over a plus-10 year mine life but this is based on just a portion of the existing Resource. In addition to the Resource, there is a substantial Exploration Target (details of Resource and Exploration Target are below).

Satellite deposits

Boss recently completed detailed geological modelling and planning for resource upgrade drilling on Gould's Dam and Jasons deposits. These studies highlighted the opportunity to grow and upgrade the satellite JORC resources.

It is envisaged that these new target areas will form the basis of a study to assess and define an increase in the forecast production rate to more than 3Mlb/annum U_3O_8 equivalent or an extension of mine life.

All drill holes will be logged with a Borehole Magnetic Resonance tool, Fission Neutron tools, and other lithological tools such as neutron porosity and formation density.

FOR FURTHER INFORMATION PLEASE CONTACT:

Boss Energy Limited
ABN 38 116 834 336

Level 1, 420 Hay Street, Subiaco
Western Australia 6008

Duncan Craib - Managing Director/ CEO
+61 (08) 6263 4494

Paul Armstrong – Public Relations
+61 (08) 9388 1474

ASX: BOE
OTCQX: BQSSF

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@Boss_Energy

Table 1: Summary of Mineral Resource for satellite deposits of Gould's Dam and Jason's

Resource Classification	Tonnage (Million Tonnes)	Average Grade (ppm U_3O_8)	Contained Metal (Kt, U_3O_8)	Contained Metal (Mlb, U_3O_8)
Jason's (March 2017)[1]				
Inferred	6.2	790	4.9	**10.7**
Gould's Dam (April 2016) [2]				
Indicated	4.4	650	2.9	**6.3**
Inferred	17.7	480	8.5	**18.7**

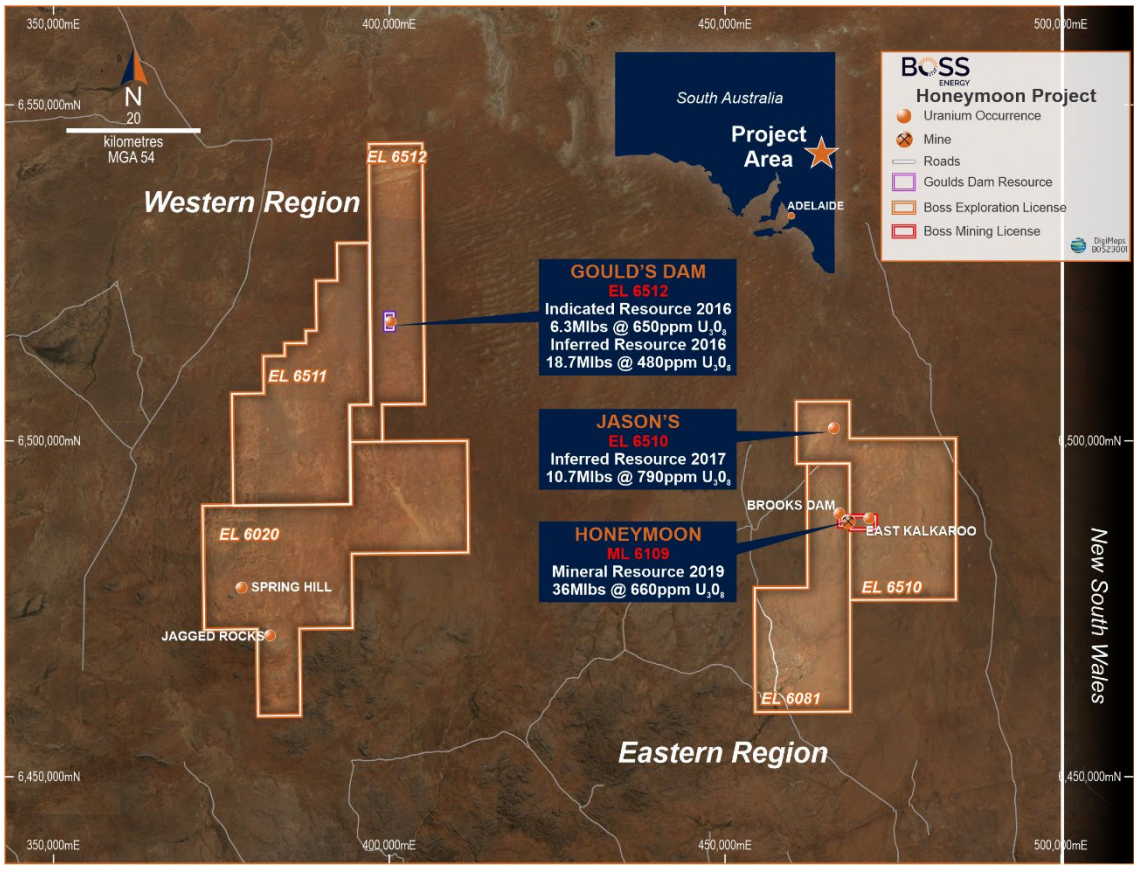

Figure 1: *Overview of Boss' Eastern and Western Region tenements, South Australia.*

Gould's Dam deposit

The Gould's Dam deposit is located within the "Western Region" project area ~80km northwest of the Honeymoon Mine (Figure 1) and currently contains a JORC-compliant resource (Table 1) of 4.4Mt @ 650ppm U_3O_8 for 6.3Mlbs contained U_3O_8 (Indicated) and 17.7Mt @ 480ppm $U_3O_8$for 18.7Mlbs contained U_3O_8 (Inferred). The "Indicated" portion of the deposit covers a strike length of ~1.5km while the "Inferred" resource extends a further ~8km to the north within the Billeroo palaeovalley (Figure 2).

[1] Refer to ASX: BOE announcement dated 15 March 2017
[2] Refer to ASX: BOE Announcement dated 8 April 2016

Uranium mineralisation is associated with lower Eyre Formation sediments analogous to the mineralisation at Honeymoon and Jason's to the east.

The program at Gould's Dam will comprise up to 60 rotary mud drill holes designed to acquire detailed host aquifer lithological and hydrogeological characteristics across the "Indicated" portion of the resource, along with confirmation/upgrade of historical drill results within the resource model (Figure 2). A number of infill and step-out holes designed to potentially expand the mineralised footprint will also be completed as part of this program.

A number of historical drilling intercepts (outlined below) peripheral to the current "Indicated" resource represent potential to identify additional economic mineralized "pods" and will also be tested during this program. Historical intercepts in the targeted area include:

- 7.5m @ 459ppm eU_3O_8 GT = 3,443 m.ppm BW142 from 120.7m;
- 3.5m @ 815ppm eU_3O_8 GT = 2,853 m.ppm GLD229 from 118.5m;
- 2m @ 1,219ppm eU_3O_8 GT = 2,438 m.ppm GLD082 from 117.5m;
- 3.7m @ 612ppm eU_3O_8 GT = 2,264 m.ppm BW324 from 118.3m.

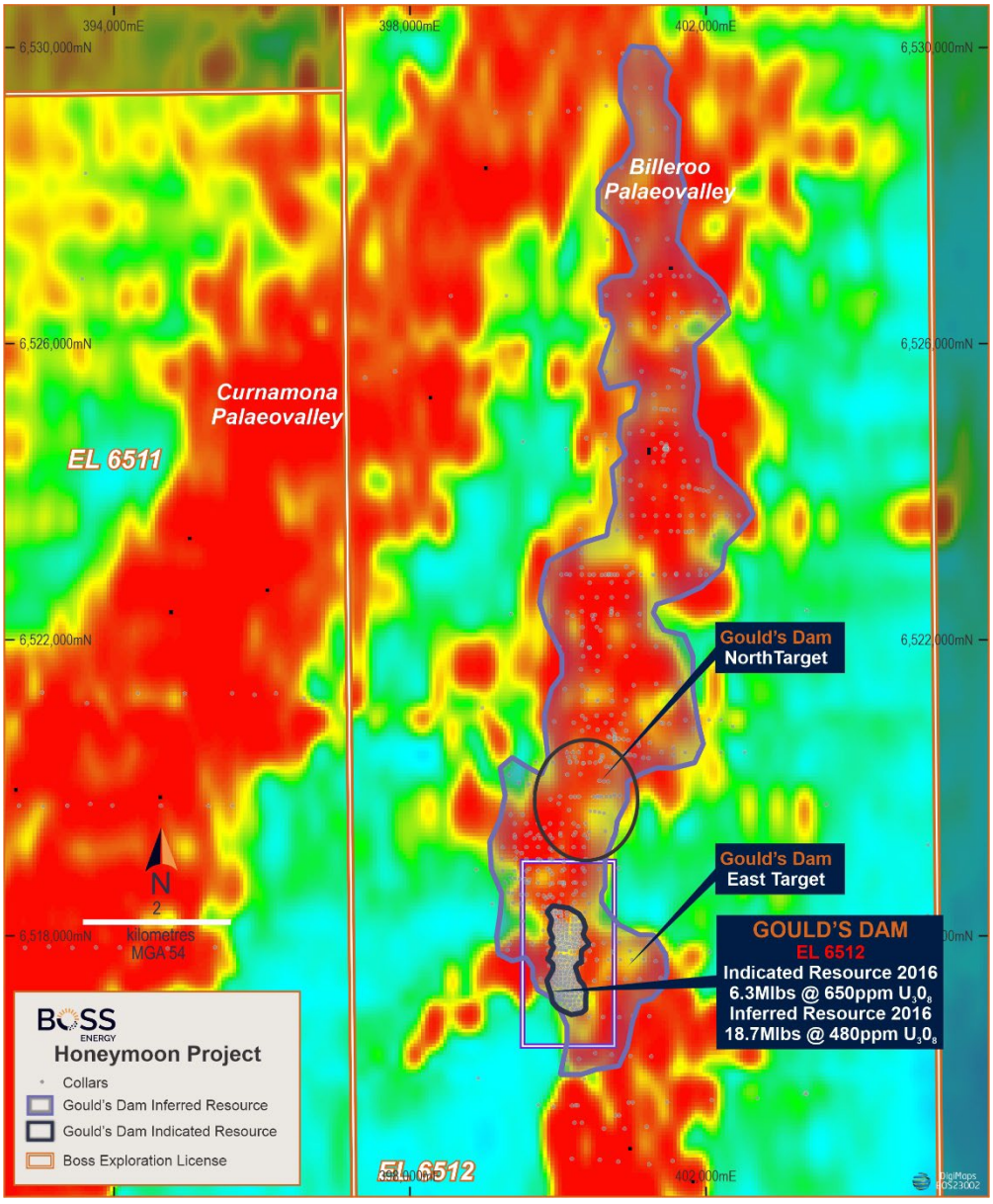

Figure 2: *Gould's Dam resource and peripheral target areas.*

Jason's Deposit

The Jason's deposit is located ~13km north of the Honeymoon Mine (Figure 3) and comprises a JORC-compliant resource of 6.2Mt @ 790ppm U_3O_8 for 10.7Mlbs contained U_3O_8 (Inferred) – see Table 1. The deposit is also hosted within lower Eyre Formation sediments within the Yarramba palaeovalley, similar to the nearby Honeymoon deposit. The drill spacing across the deposit at present is still relatively coarse at up to 250m, with a number of prospective areas peripheral to the identified mineralisation remaining relatively untested.

This program will comprise a combination of resource infill and step-out rotary mud drilling, with the aim of both confirming and extending the continuity of identified mineralised zones along with confirmation/upgrade of a number of historical drill results within the resource model. The program will also provide detailed hydrogeological information on the host Eyre Formation aquifers within the deposit for the first time.

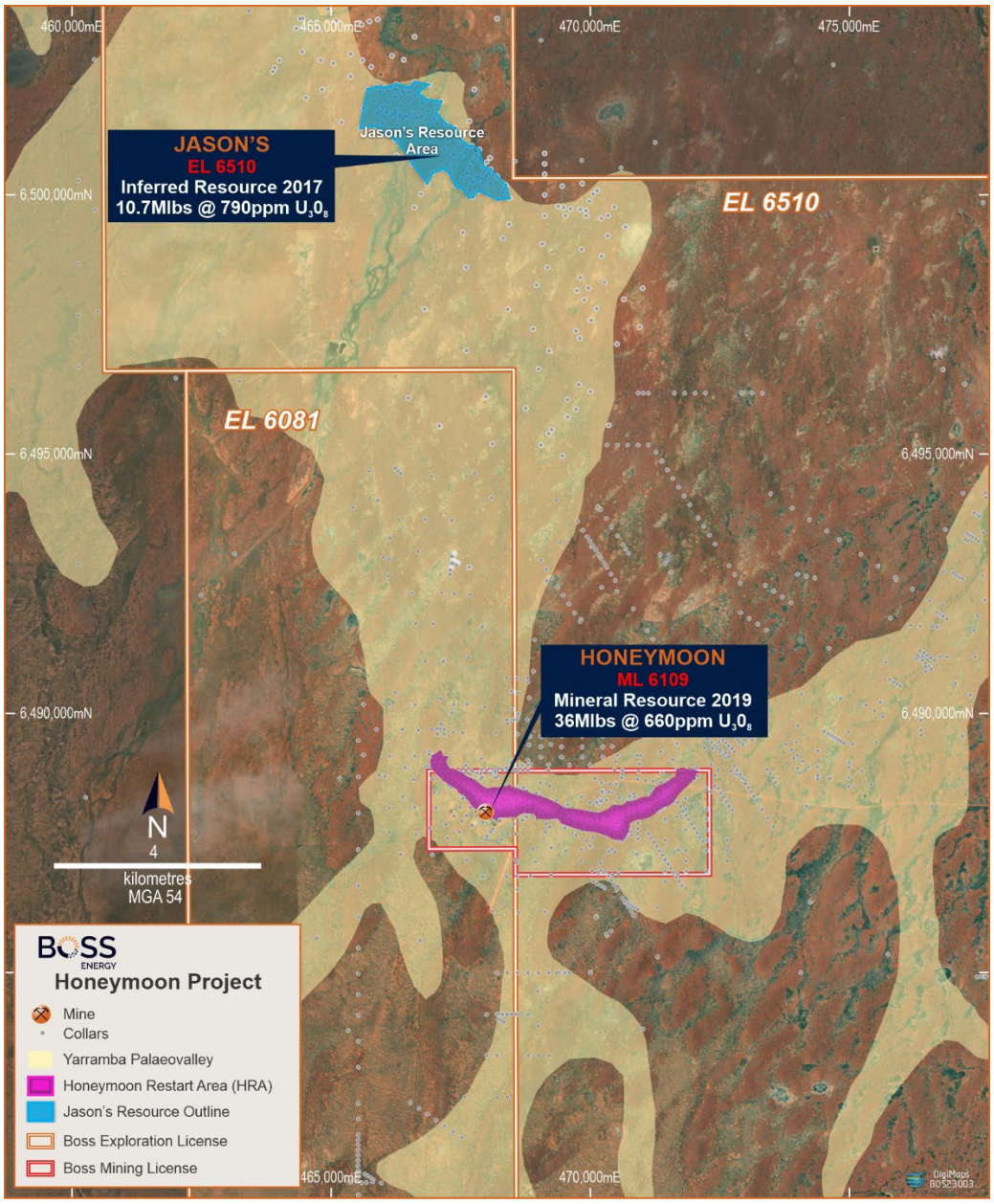

Figure 3: *Location of the Jason's deposit.*

Honeymoon Project Mineral Resource

The global Honeymoon Mineral Resource stands at 71.6 Mlb (52.4Mt) with an average grade of 620ppm U_3O_8, using a cut-off grade of 250ppm, as summarised in Table 2.

The current Honeymoon restart feasibility studies utilise only a portion of Honeymoon's JORC resource, excluding 36Mlb of JORC resource outside the HRA, which could expand the mine life, and Boss' defined exploration target could potentially extend the mine life beyond the initial 11 years and increase the production profile. Honeymoon's Federal EPIP Act approvals allow export of more than 3Mlbs/annum U_3O_8 equivalent.

In addition to the global Mineral Resource, the Honeymoon Uranium Project also has an Exploration Target range of 28 Mt to 133 Mt of mineralisation at a grade of 340 ppm to 1,080 ppm U_3O_8 for a contained 58 Mlbs to 190 Mlbs U_3O_8 (26,300 to 86,160 tonnes of contained U_3O_8), using a cut-off of 250ppm[3]. Note the potential quantity and grade of the Exploration Target range is conceptual in nature. There has been insufficient exploration to estimate a Mineral Resource and it is uncertain whether future exploration will result in the definition of a Mineral Resource.

Table 2: Summary of Mineral Resource for satellite deposits of Gould's Dam and Jason's

Resource Classification	Tonnage (Million Tonnes)	Average Grade (ppm U_3O_8)	Contained Metal (Kt, U_3O_8)	Contained Metal (Mlb, U_3O_8)
Jason's (March 2017)[4]				
Inferred	6.2	790	4.9	**10.7**
Gould's Dam (April 2016) [5]				
Indicated	4.4	650	2.9	**6.3**
Inferred	17.7	480	8.5	**18.7**
Honeymoon Restart Area (January 2019)				
Measured	3.1	1,100	3.4	**7.6**
Indicated	14	610	8.7	**19**
Inferred	7.0	590	4.1	**9.1**
GLOBAL HONEYMOON URANIUM PROJECT				
Measured	3.1	1,100	3.4	**7.6**
Indicated	18.4	630	12.0	**25.3**
Inferred	30.9	570	18.0	**38.5**
Total	**52.4**	**620**	**32.5**	**71.6**

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

[3] Refer to ASX: BOE announcement dated 25 March 2019
[4] Refer to ASX: BOE announcement dated 15 March 2017
[5] Refer to ASX: BOE Announcement dated 8 April 2016

For further information, contact:
Duncan Craib
Chief Executive Officer
P: +61 (8) 6263 4494
E: boss@bossenergy.com

For media enquiries, contact:
Paul Armstrong
Read Corporate
P: +61 (8) 9388 1474
E: info@readcorporate.com

Competent Person's Statement

The information contained in this announcement that relates to exploration results is provided by Mr Jason Cherry, who is a Member of the Australasian Institute of Geoscientists (AIG). Mr Cherry has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration, and to the activity being undertaken to qualify as a Competent Person, as defined in the JORC 2012 edition of the "Australasian Code for Reporting of Mineral Resources and Ore Reserves". Mr Cherry has 17 years' experience and is a full-time employee as Geology Manager for Boss Energy Ltd. Mr Cherry consents to the inclusion in this report of the matters based on this information in the form and context in which they appear.

Reference to previous ASX announcements

In relation to the results of the Feasibility Study announced 21 January 2020, the Company confirms that all material assumptions underpinning the production target and forecast financial information included in that announcement continue to apply and have not materially changed.

In relation to the Mineral Resource announced on 25 February 2019 and the Exploration Targets announced on 25 March 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 announcement and that all material assumptions and technical parameters underpinning the estimates in that market announcement continue to apply and have not materially changed.

Forward-Looking Statements

This announcement includes forward-looking statements. These forward-looking statements are based on the Company's expectations and beliefs concerning future events. Forward-looking statements are necessarily subject to risks, uncertainties, and other factors, many of which are outside the control of Boss Energy, which could cause actual results to differ materially from such statements. Boss Energy makes no undertaking to subsequently update or revise the forward-looking statements made in this announcement, to reflect the circumstances or events after the date of this announcement.

APPENDIX 1 – Historical Drill Results

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

Table 1: Summary of historical drill holes listed within this report. All holes were drilled vertically (-90˚ inclination and 0˚ azimuth)

Hole ID	Easting	Northing	RL	EOH	Depth From	Thickness	eU_3O_8	GradeThickness
	MGA94, z54		(m)	(m)	(m)	(m)	(ppm)	(m.ppm)
BW142	400,618	6,520,092	75.0	136	120.69	7.50	459	3,443
BW324	401,233	6,516,917	80.7	128	118.29	3.70	612	2,264
GLD082	401,320	6,517,660	79.0	126	117.50	2.00	1,219	2,438
GLD229	400,160	6,520,349	74.5	138	118.50	3.50	815	2,853

Historical eU_3O_8 grade data derived from calibrated gamma tool data sampled historically at the time of drilling these holes.

Values are reported above the nominal 250ppm eU_3O_8 cutoff grade, 0.5m minimum interval thickness and maximum 1m internal dilution.

JORC Code, 2012 Edition – Table 1

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code Explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.* • *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.*	• The BW series drill holes were geophysically logged with calibrated gamma tool and lithological tools (SP, resistivity and neutron) by Austral United Geophysical between 1976 and 1982. • The GLD series drill holes were geophysically logged upon completion with in-house calibrated gamma tools (Robertson tools, both 1" and 4" crystals), along with induction and resistivity tools in 2004 (GLD082, Southern Cross Resources) and 2006 (GLD229, Southern Cross Resources).
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• The drilling technique used for all holes was the Rotary Mud drilling technique.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• Drill chips were collected for geological logging purposes only, with recovery described as being good.

Criteria	JORC Code Explanation	Commentary
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• All four holes were geologically logged, with graphical logs presented within open file technical reports (ENV02713, ENV03329 & ENV09561). These logs have been digitised, verified and incorporated into the Boss Energy database.
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• No assay sampling was carried out for the drill holes in question.
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	• Calibration information for the gamma tools used for the BW series drill holes was not elaborated on within the historical reporting. Due to the historic nature of the logging data and uranium grades for the BW series drill holes included in this report, it is not possible to comment on the accuracy or quality of any calibration systems or methods used to produce the historical results. • Robertson gamma tools used during the 2004 & 2006 drilling (GLD series) were calibrated at the PIRSA calibration facility in Adelaide prior to the program commencing.
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• Given the historic nature of the data from the BW series drilling, it has not been possible to verify these results. • Results from other GLD series drill holes were able to be compared with Prompt Fission Neutron (PFN) tools. The Competent Person has reviewed and verified these data and is satisfied that the assays are of sufficient quality to provide reasonable, indicative basis for the existence of potentially economic mineralisation within the specified target areas.

Criteria	JORC Code Explanation	Commentary
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• Due to the historic nature of the BW series drill holes, there is little information available on methods used to peg drill holes. Hole locations have been verified by digitizing historical maps and using modern satellite imagery. Coordinates are cited in MGA94 grid, z54. • The more recent GLD series drill holes were located using a hand-held DGPS, with an accuracy of ~0.1m. Coordinates are cited in MGA94 grid, z54.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• The Competent Person has reviewed all available data and, based on their knowledge and experience with the various exploration techniques employed, is satisfied that the historical drilling data included here is of sufficient quality and accuracy to provide a reasonable, if indicative, basis for the mineralisation reported herein.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• All modern & historical holes were drilled vertically which provides an accurate intersection of the flat laying mineralised bodies.
Sample security	• *The measures taken to ensure sample security.*	• Due to the historic nature of the downhole geophysical data reported therein, it is not always possible to comment on the sample security methods employed for the data used to produce the results described in this report. • As these data are from areas that are in a purely exploratory stage of operation, the Competent Person has considered that any issues potentially relating to sample security do not present a material risk at this current stage of evaluation.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• All information and data used in this report have been reviewed by the Boss Energy Competent Person. Due to the historic nature of the results reported therein, no further reviews or audits have been undertaken.

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• The Project consists of 1 granted Mining Lease, 5 granted Exploration Licenses, 3 Retention Leases and 2 Miscellaneous Purpose Licenses.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• The Gould's Dam region and surrounding areas of the Billeroo and Curnamona palaeovalleys have been systematically explored and drilled starting from 1969.
Geology	• *Deposit type, geological setting and style of mineralisation.*	Palaeovalley-type, sand-hosted, tabular style uranium of the following model: • Narrower, mineralised, palaeochannels within a broader palaeovalley system, • Underlying basement faults reactivated sporadically, greatly influencing the shape and formation of the overlying fluvial system, creating uplifted ridges of basement and the meandering narrow palaeochannels described above; • REDOX interfaces from the vertical and lateral movement of uraniferous (oxidised) fluids from south (granitic source rocks in the Olary Ranges) to north (towards Lake Frome); • Organic/sulphide-rich horizons and possible hydrocarbon fluids, the latter seeping upwards along the basement faults. Organic- and sulphide-rich material formed within shallow channel embankments and ledges.

Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*
	  ○ *easting and northing of the drill hole collar*
	  ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*
	  ○ *dip and azimuth of the hole*
	  ○ *down hole length and interception depth*
	  ○ *hole length.*
		• Please refer to Appendix 1, Table 1 for drill collar information.

Criteria	JORC Code explanation	Commentary
	• *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• Mineralised intervals were chosen based upon a nominal 250ppm U_3O_8 cutoff, 0.50 m minimum interval thickness and maximum 1m internal dilution for reporting. Where available, Prompt Fission Neutron (PFN) data is used which is designated pU_3O_8. For historical drilling or in instances during modern drilling where the PFN tool data was unavailable, gamma toll derived data is used which is designated eU_3O_8 and may be affected by radiometric disequilibrium.
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	• Historic drill traverses were oriented at oblique angles across the strike of the palaeovalley as per the historical interpretation current at the time of drilling. • Modern drill traverses are often oriented at right angle across the domain strike, although this can vary depending on the interpreted geological setting of each area.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• Appropriate and relevant diagrams have been included in the announcement
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• Balanced reporting has been adhered to. See previous exploration announcements.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• Mineralisation is still open along the strike of the various domains referred to herein.

Criteria	JORC Code explanation	Commentary
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• Further work will involve a combination of twinning historical drill holes (to verify grade data) and if justified step-out drilling of these holes to test for continuity of mineralisation. • All results will be used to update the resource model upon the completion of drilling.