Honeymoon Uranium Project Exploration Update

ASX Release 28 May 2020

Highlights

- **Boss undertakes advanced desktop review of project-wide historical exploration data at Honeymoon to assess mineral prospectively.**
- **Comprehensive exploration data will improve existing 3D models, e.g. lithological, stratigraphical and structural; to define drill-ready targets.**
- **Exploration of new targets may lead to new uranium discovery to increase Honeymoon's production profile distal to existing JORC mineral resources of 71.6 Mlbs; and possible IOCG mineral prospects.**
- **Review of all historical reports to be completed by July 2020.**
- **Database compilations and systematic reviews to be completed by December 2020, including ongoing review of each existing Exploration Target.**

Boss Resources Limited (ASX: BOE) (Boss or the **Company)** is pleased to provide an update on exploration activities at its Honeymoon uranium project in South Australia.

In April 2020, the South Australian Department of Energy and Mining**,** supported by the South Australian Chamber of Mines, proactively responded to the COVID-19 situation with an immediate deferral of mineral exploration licence fees until 31 December 2020, and a 12-month waiver of committed expenditure for all mineral exploration licence holders. Boss welcomed these supportive measures.

After completing an outstanding Feasibility Study (**FS**) for Honeymoon in January 2020, which positioned Boss as Australia's next uranium producer with the ability to restart production in 12 months, the Company's exploration team are gifted with a unique opportunity to complete a comprehensive desktop review on extensive historical exploration information inherited from vendor, Uranium One, and since project acquisition in 2015 to define new uranium exploration targets and advance project-enhancing desktop exploration initiatives. Fieldwork activities have accordingly paused.

Boss's Managing Director and CEO Duncan Craib said, "*South Australia's proactive initiatives to support the mineral exploration industry provide a golden opportunity for Boss to thoroughly research and compile the wealth of historical information from previous explorers. Industry experience shows comprehensive reviews of all historical information often results in new exploration discoveries and significant increases in mineral resources. Initial results are already revealing exciting new information that is proving to be of huge benefit for the advancement of the Honeymoon Uranium Project.*"

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Honeymoon Resource and Exploration Potential

The Mineral Resource for the Honeymoon Re-Start Area (**Re-start Area**) totals 24Mt at 660ppm U_3O_8 for 36 Mlbs U_3O_8, while the global Honeymoon Mineral Resource stands at 52.4 Mt at 620ppm U_3O_8 for 71.6 Mlbs U_3O_8, using a cut-off grade of 250ppm.[1]

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)[2]				
Inferred	6.2	790	4.9	10.7
Gould's Dam (April 2016)[3]				
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	25.5
Inferred	30.9	570	18.0	38.5
Total	**52.4**	**620**	**32.5**	**71.6**

Table 1: *Summary of upgraded Mineral Resource for the global Honeymoon Uranium Project*

In addition to the global Mineral Resource, Boss has an Exploration Target[4] for the Honeymoon Uranium Project 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.** 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.

Through its assessment of historical data, Boss aims to identify drill-ready targets that will assist in converting the estimated Exploration Target into additional JORC mineral resources. The Exploration Target range would be exploited when the anticipated upswing in uranium fundamentals occurs.

The final compiled datasets will be utilised to further optimise the Native Title heritage clearance and passive seismic survey programs planned for Honeymoon's Western Region tenements, as well as generating multiple, project-wide, drill-ready targets for future drilling programs. Internal work scheduling to is to complete the review of all historical reports to be completed by July 2020 (Project-wide). Database compilations and systematic reviews are scheduled to be completed by December 2020 at the latest, which includes the ongoing review of all data located within each existing Exploration Target.

The Company looks forward to updating shareholders as results of the desktop study come to light.

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

Honeymoon Restart and Expansion

Boss's Restart and Expansion plans have been split into three separate stages, of which Stage 1 and 2 are presented as the base case for the Honeymoon FS[5], showing that production can recommence within a 12-month period. Stage 1 development will focus on the restart of the existing solvent extraction (**SX**) plant, which has a nameplate capacity of 0.88Mlb/annum U_3O_8 equivalent. Stage 2 is an expansion strategy that will increase production to 2Mlb/annum U_3O_8 equivalent and involves the construction of a new ion exchange (**IX**) circuit.

Boss' defined Exploration Target range could potentially extend the mine and increase the production profile through the development of satellite operations on its Western tenements. The Honeymoon plant would be modified with an additional IX column and downstream circuits to meet an increased production target as required by the market. The approach for Stage 3 will be confirmed once the source of the additional production has been better defined through exploration programs currently underway.

Of particular interest are the Jason's and Gould's deposits, with existing indicated and inferred JORC resources of 36 Mlbs U_3O_8 and aspiring to host satellite IX plants and providing genuine growth opportunities for Honeymoon's mine life and production profile.

Honeymoon's Federal EPIP Act approvals allow export of more than 3Mlbs/annum U_3O_8 equivalent[6].

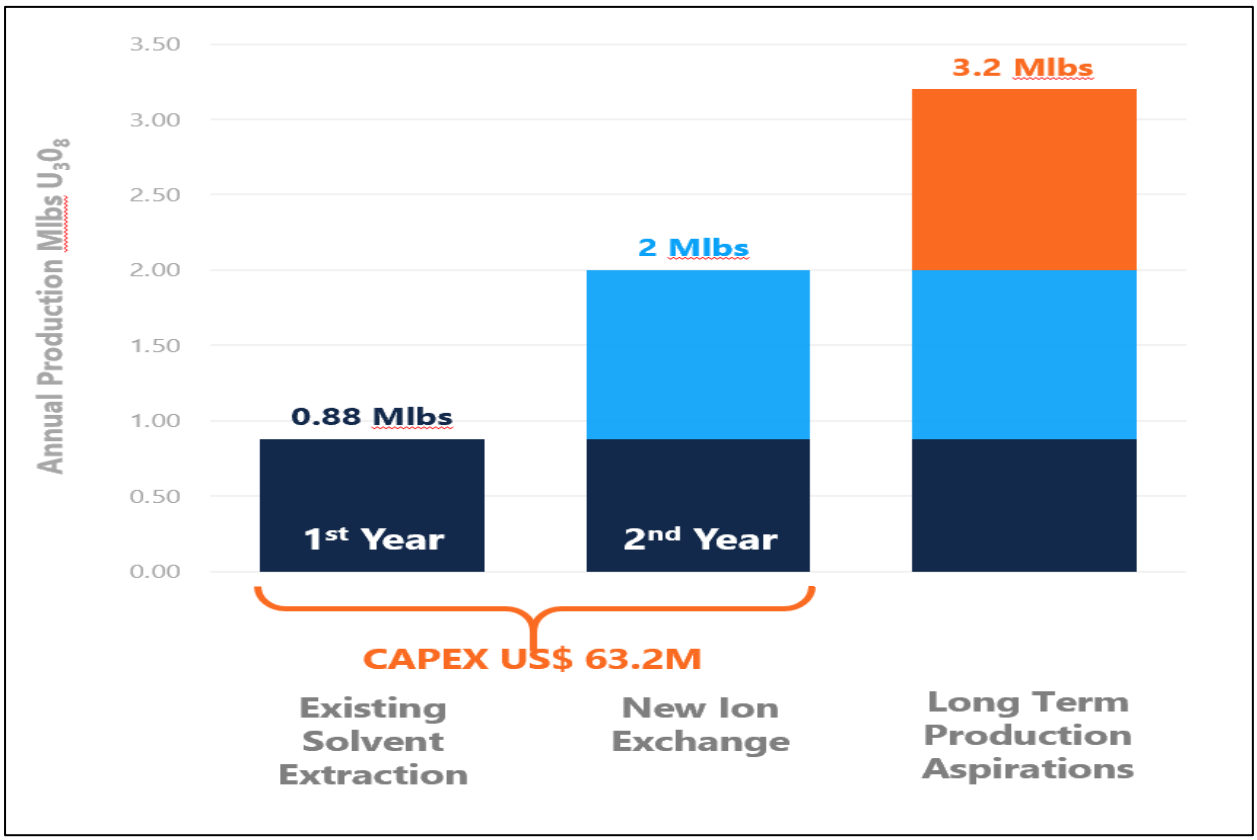


Figure 1: *Stage production approach for the Honeymoon Uranium Project*

[5] *Refer to ASX: BOE Announcement dated 21 January 2020. The forecast financial information (and the production targets on which such forecast financial information is based) was previously announced on 21 January 2020. All material assumptions underpinning the forecast financial information (and the production targets on which such forecast financial information is based) in the announcement on 21 January 2020 continue to apply and have not materially changed.*

[6] *Refer ASX: BOE announcement dated 8 April 2019*

Current Exploration Activities

Boss Resources' 100%-owned Honeymoon Uranium Project is 80km northwest of Broken Hill, near the border of South Australia and New South Wales and covers an area of 2,600km^2. It consists of one granted Mining Licence, five granted Exploration Licences, three Retention Leases and two Miscellaneous Purpose Licenses. In March 2019, Boss defined 10 Exploration Target areas, five of which were situated extensional to the existing Mineral Resources (Figure 2), and five that targeted significant geophysical anomalies.

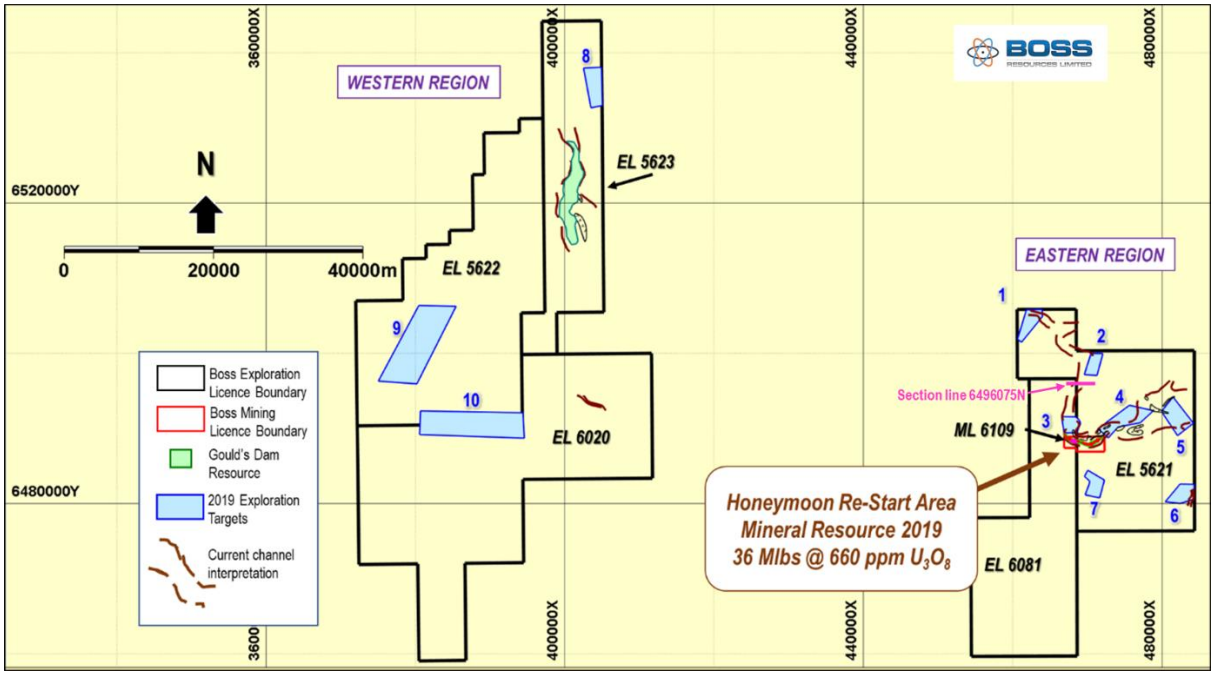


Figure 2: *Honeymoon Uranium Project Area, showing Exploration Targets 1 - 10*

Due to the postponement of field activities, including the inability to undertake heritage surveys over the Company's Western Tenements, where it had designed and proposed passive seismic surveys for the 2020 field season, Boss has refocused exploration efforts on a comprehensive desktop study involving the systematic review of all historical information within the Eastern and Western Region tenements.

Boss received a large collection of historical information from Uranium One and Boss has subsequently added to this since acquisition of the project in 2015. The historical data are currently still in their original form, i.e. old data formats and coordinate systems (often local grid), outdated styles of geological logging, PDF images of geology mapping and geophysical survey results.

Boss initiated a comprehensive study in March 2020 with the following objectives:

- **Investigation of currently unexplored or under-explored areas** to determine mineral prospectivity, specifically within the 10 existing Exploration Targets. Much of the historical exploration was conducted over areas of differing sizes and shapes to the tenements now held by Boss. The data, therefore, first need to be extracted, reformatted, validated and plotted in 3D visualization software, after which they can then be filtered to show only the data that falls within the Exploration Target areas.

- **Compilation of geological data** from areas of known outcropping basement in the southern parts of the Project. Little opportunity has existed during the Company's tenure to allow adequate mapping and sampling of these bedrock outcrops, however historical geology maps will increase current understanding of the basement into which the Yarramba and Billeroo Palaeovalleys were eroded. This increased knowledge will enable greater understanding of chemical and mineral forming environments within the palaeovalley systems.

- **Collation of sample assay data** to reveal geochemical vectors for mapping areas of mineral prospectivity. Work completed so far has identified many surface soil, stream sediment and rock chip sample assay data that, when viewed in conjunction with geology, will greatly assist in achieving the stated objective.

- **Compilation of structural data from drilling**. Work completed thus far has already revealed a wealth of structural information from historical diamond drill holes around the Project area, some of which did not already exist in the Boss database. These structural data are extremely valuable as the basement bedrock is known to be highly faulted and folded in and around the Project area. In 2019, an interpretation exercise was completed using the combination of multiple geological and geophysical datasets (AEM, gravity, magnetics, radiometrics) to create a 3D wireframe model of all the interpreted and mapped fault structures within the Project area. Areas of structural intersection and complexity are well known for acting as mineral "trap sites", allowing the preferential flow of mineralised fluids up into overlying host sediments from favourable basement bedrock, and hosting often economic accumulations of a range of different minerals. Faults are also known to greatly influence palaeochannel and palaeovalley formation, as water will preferentially flow along existing, low-lying, depressions and drainages, often created by fault activity. The structural data extracted from the historical drilling is now being used to improve the 3D structural model and will be one of the many tools used to optimise drilling targets.

- **Collation of geophysical data** from areas previously thought to contain limited geophysical survey information. Examples of this are provided in Figures 3 - 5.

Figure 3 shows the comparison between existing, government-sourced, regional-scale magnetics data and tenement-scale magnetics survey data from the Western Region tenements recently revealed from the historical data review. The improvement in resolution is immediately apparent, resulting from the closer spacing of survey lines. Work is continuing to determine survey specifications and details.

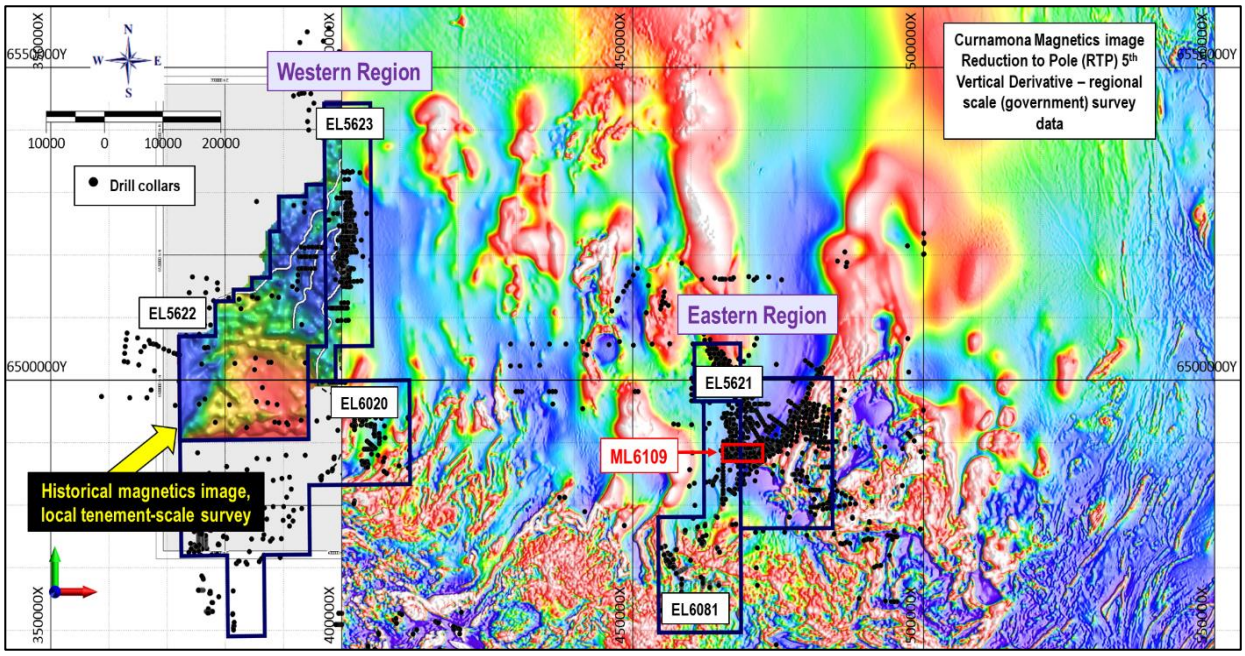


Figure 3: *Regional magnetics image (reduced To Pole 5th Vertical Derivative)*

Figure 4 shows the same palaeovalley interpretation image along with all existing drill collars to illustrate the way in which the historical data will be used in conjunction with existing exploration data in order to generate drill-ready targets for future exploration programs.

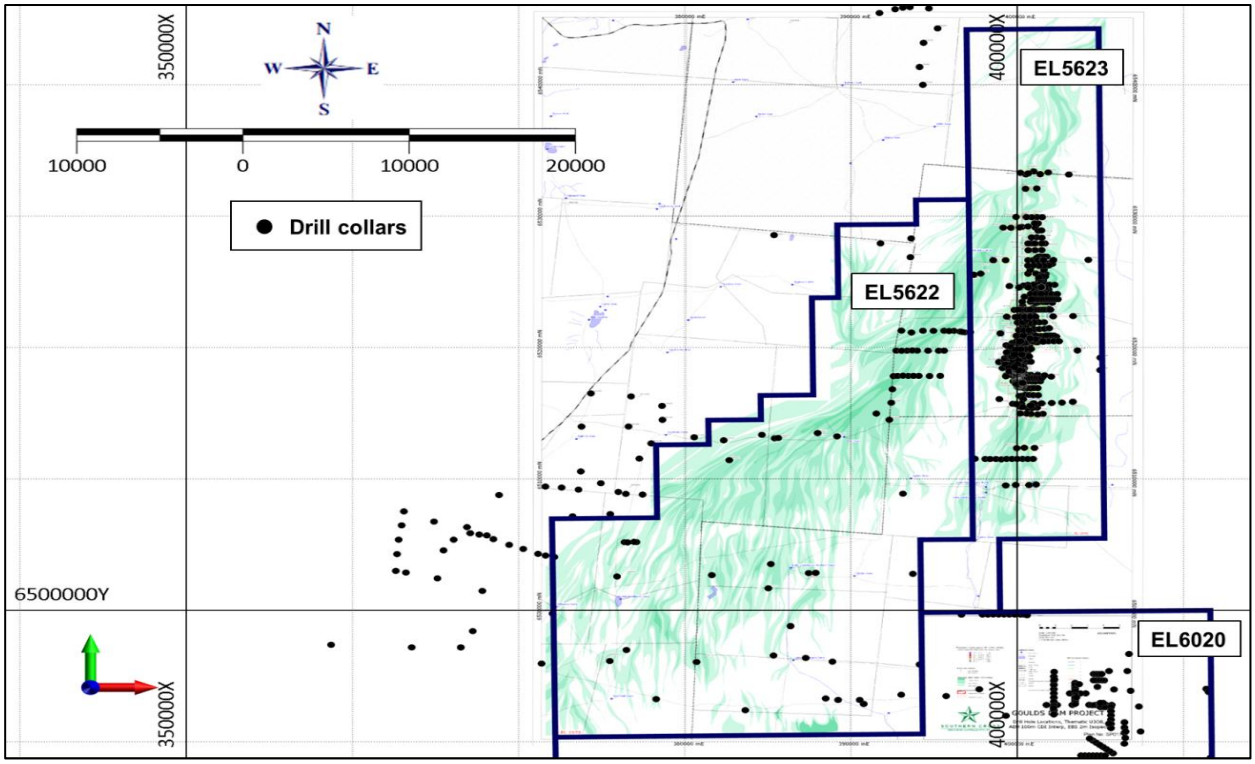


Figure 4: *Western Region – existing drill collars overlain on historical AEM-based palaeovalley interpretation*

Figure 5 provides historical interpretation of the Billeroo and Curnamona Palaeovalleys based on tenement-scale airborne electromagnetics (**AEM**) data. A thematic map of the uranium grades was also produced on a more local scale at the Gould's Dam Deposit. This will be used in conjunction with existing uranium resource data to map grades for future extension drill programs designed to grow the Gould's Dam Mineral Resource.

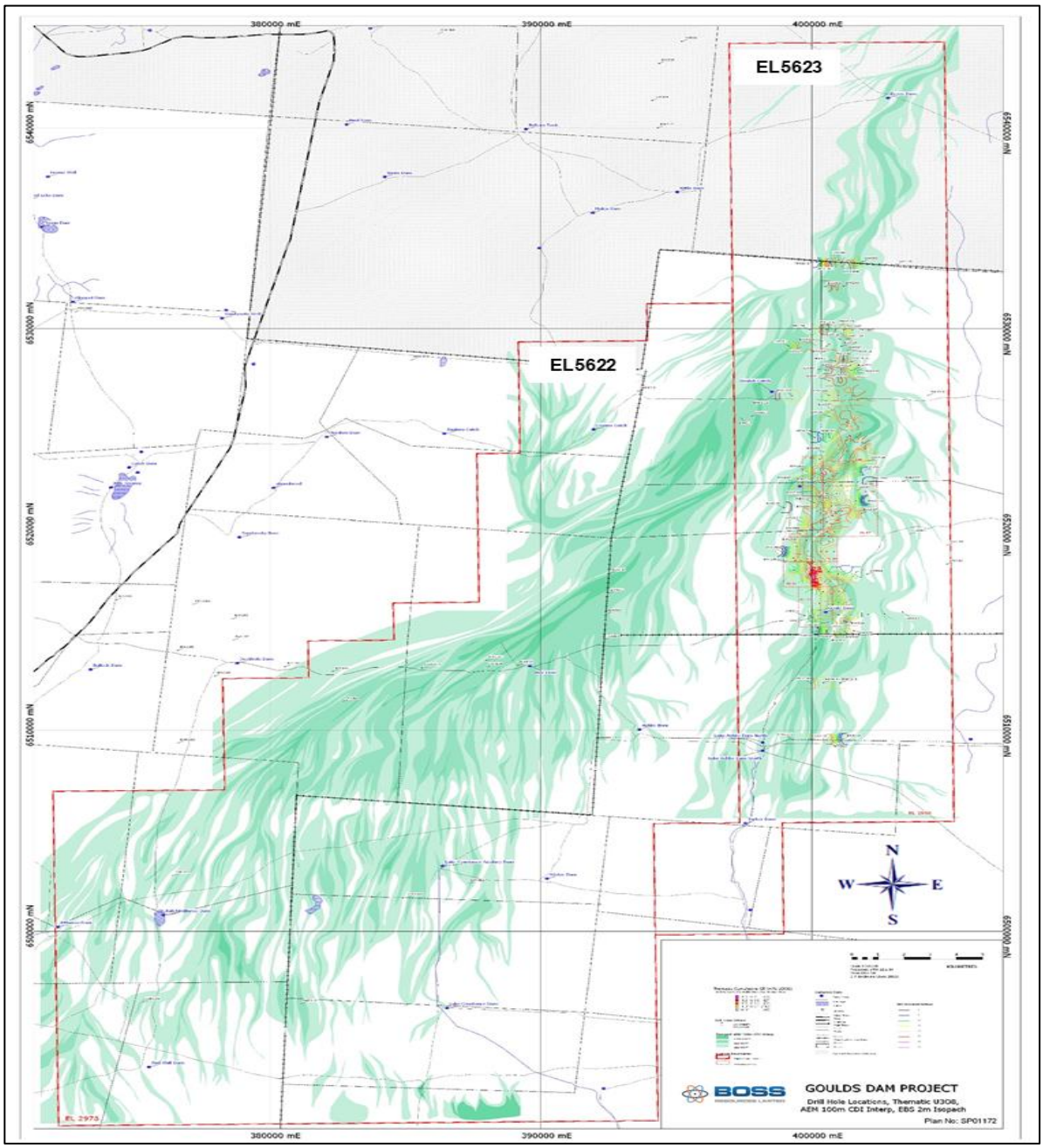


Figure 5: *Western Region - historical palaeovalley interpretation from tenement-scale AEM survey data*

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

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Competent Persons Statements

Mineral Resources

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

Exploration Target

The information contained in this announcement that relates to the Exploration Target was first reported by the Company to the ASX on 25 March 2019. The Exploration Target does not include areas of existing Mineral Resource and the potential quantity and grade reported are conceptual only in nature. Insufficient exploration has been conducted to estimate a Mineral Resource and it is uncertain whether future exploration will lead to the estimation of a Mineral Resource in the defined areas. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original announcement.

Exploration Results and Feasibility Study

In relation to the results of the Feasibility Study announced on 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 previous announcements containing exploration results referred to in this announcement, the Company confirms that it is not aware of any new information or data that materially affects the information included in those announcements.