

## HYPERSPECTRAL IMAGERY HIGHLIGHTS LARGE EPITHERMAL GOLD TARGETS AT EDINBURGH PARK, NORTH QUEENSLAND.

Great Southern Mining (ASX: GSN) (the “Company” or “GSN”) is pleased to provide an update on exploration at the Company’s 100%-owned Edinburgh Park Project in north Queensland following receipt of preliminary results on interpretation of hyperspectral imagery data. In October 2019 the company entered a cofunding, data sharing agreement with Evolution Mining Limited to undertake regional airborne hyperspectral imagery surveys over the Project area (refer to ASX announcement 8 October 2019).

### KEY POINTS

- **A significant number of illumination targets identified with indicative geological alteration footprints consistent with Mt Carlton-style high-sulphidation epithermal mineralization.**
- **Five (5) are considered to be high priority targets and a further ten (10) secondary epithermal targets have been generated from the current preliminary interpretation.**
- **Several priority targets exhibit approximately 2 km extent of advanced argillic alteration - ‘hot-spots’ zones; evident and comparable to those deposits which host the Mt Carlton style mineralization.**
- **A number of sizeable low-sulphidation veins or vein set targets are interpreted within larger target areas. Targets generated by initial hyperspectral interpretation, will allow a focused field exploration program around the highly prospective identified hydrothermal systems.**
- **Interpretation of the hyperspectral data is ongoing for other styles of gold mineralisation zones known to exist in this district.**

**GSN’s Executive Chairman John Terpu commented that** *“The Company is thrilled with the outcome of the initial interpretation from the hyperspectral survey over the Edinburgh Park project in north Queensland. The results have highlighted multiple new targets within our concessions and reaffirmed some of our already known targets like Fish Creek and Mount Dillon. What makes this really exciting is that many of these targets are more prominent than what was observed originally at Mt Carlton during my Conquest Mining days (now Evolution Mining Limited). The Company is now looking forward to getting the boots on the ground to follow up these targets for possible drilling later in the year.*

*We would also like to thank Evolution Mining Limited for offering us a chance to partner with them to complete the Hyperspectral survey.”*

### ASX ANNOUNCEMENT 15 April 2020

#### BOARD OF DIRECTORS

*Executive Chairman*  
John Terpu

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## Preliminary Results

The preliminary mineral maps generated have revealed evidence of advanced argillic alteration footprints over a number of areas (Figure 1 and Figure 2).

The hyperspectral results and interpretation have reinforced field observations at a number of known prospects (e.g., Fish Creek, Mt Dillon) and identified many new significant high-sulphidation hydrothermal centers or ‘hot spots’. Both the known and newly identified prospects show geological similarities between the Mt Carlton deposit and the broader mineralized Mt Carlton trend.

The newly identified epithermal targets indicate and supports the potential for multiple mineralized deposit discoveries within similar NE-trending structural corridors within the Permian volcanics (Figure 1 to Figure 3). Mineral mapping and hydrospectral images for several of these prospects are presented in Figure 3 to Figure 5.

Fish Creek, Mt Dillon, and the newly interpreted Edinburgh Castle, Whydah South and Bogie Range prospects are considered high priority targets due to the scale of the advanced argillic zones evident in the hyperspectral data which can extend up to ~2 km and are comparable to those alteration ‘hot-spots’ which host the Mt Carlton mineralization at the V2 and A39 deposits. A number of secondary targets show smaller scale scattered or ‘diffuse’ target alteration which may reflect limited outcrop or the effects of vegetation masking.

Further, a number of features in proximity to these targets are interpreted as sizeable veins or vein sets providing low-sulphidation epithermal targets, e.g., east of Fish Creek (Figure 3) and at Mt Dillon (Figure 4) and Whydah South (Figure 5).

The identified high-sulphidation centers sit broadly within strong NE-trending structural breaks identified in magnetic datasets (Figure 1), suggesting an important structural control consistent with the broadly E-W to ENE Mt Carlton trend to the south. At a district-scale there is an observed alignment of deposits within clusters positioned along NE-striking structures; demonstrating that the positioning within the structural domain is another important component in creating large scale hydrothermal fluid events.

## Background

The Edinburgh Park project comprises five (5) Exploration Permits for Minerals (EPM’s) 26810, 26527, 27130, 27131, 25196 covering 827 square kilometers (Figure 1). The project is a greenfields exploration project in the target generational phase, considered prospective for porphyry copper-molybdenum, Intrusive related gold systems (IRGS) deposits and epithermal gold-silver deposits. The area is considered under-explored with only minor exploration activities over the past fifteen year since the discovery of the Mt Carlton multi-million-ounce gold deposit in 2005 which is located adjacent the project tenure (Figure 1).

In late 2019, GSN, in partnership with Evolution Mining (see ASX Release date 9 October 2019), commissioned US-based contractor SpectIR International to acquire project wide airborne hyperspectral data over the Edinburgh Park project. The processed data was received in late March 2020. GSN then engaged hyperspectral specialists, to process and interpret the data, with preliminary mineral maps targeting epithermal minerals systems being recently made available to the GSN exploration team for review.

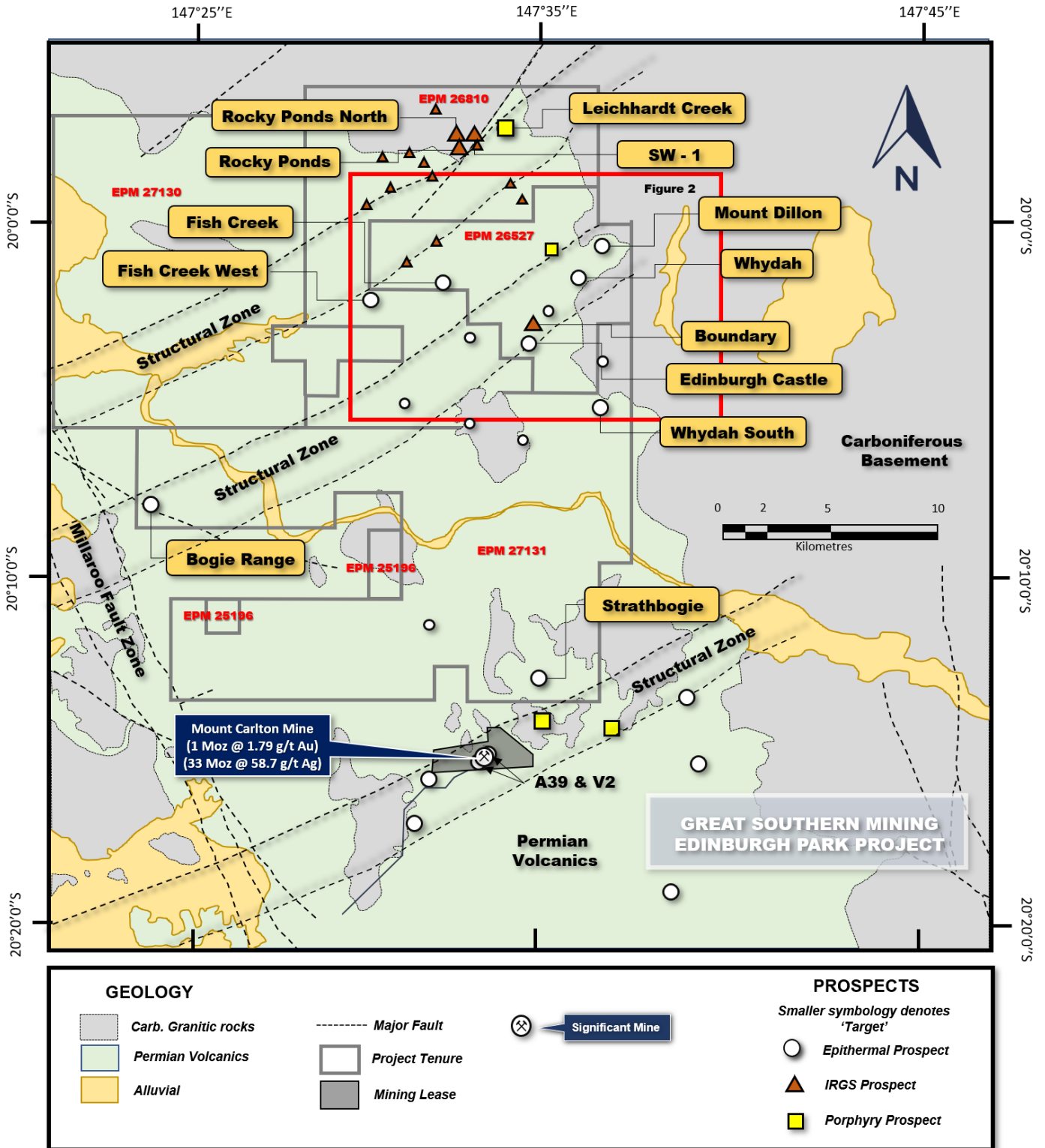


Figure 1: Project location highlighting regional geology and location of prospects.

The hyperspectral survey is part of a significant phase of target generation off the back of multi-disciplinary exploration techniques, with several prospects already delineated with promising geochemical signatures.

The Edinburgh Park hyperspectral survey acquisition and interpretation is part of the Company's philosophy of conducting modern 'smarter' exploration techniques to screen the whole of project for evidence of new economic mineral systems.

Hyperspectral mineral mapping is capable of detecting hydrothermal alteration associated with epithermal mineral systems and has proven to be an effective technique in differentiating minerals systems at Mt Carlton which is located close to the south in comparable geology (Figure 1). The survey has delivered project scale, high resolution base map image mosaics that have been interpreted to define various alteration zones over whole of project delivering an unprecedented view of the underlying geology and mineralogy.

The current results reported here are part of a broader interpretation which also aims to identify alteration associated with IRGS and porphyry-style systems that have also been identified at the project.

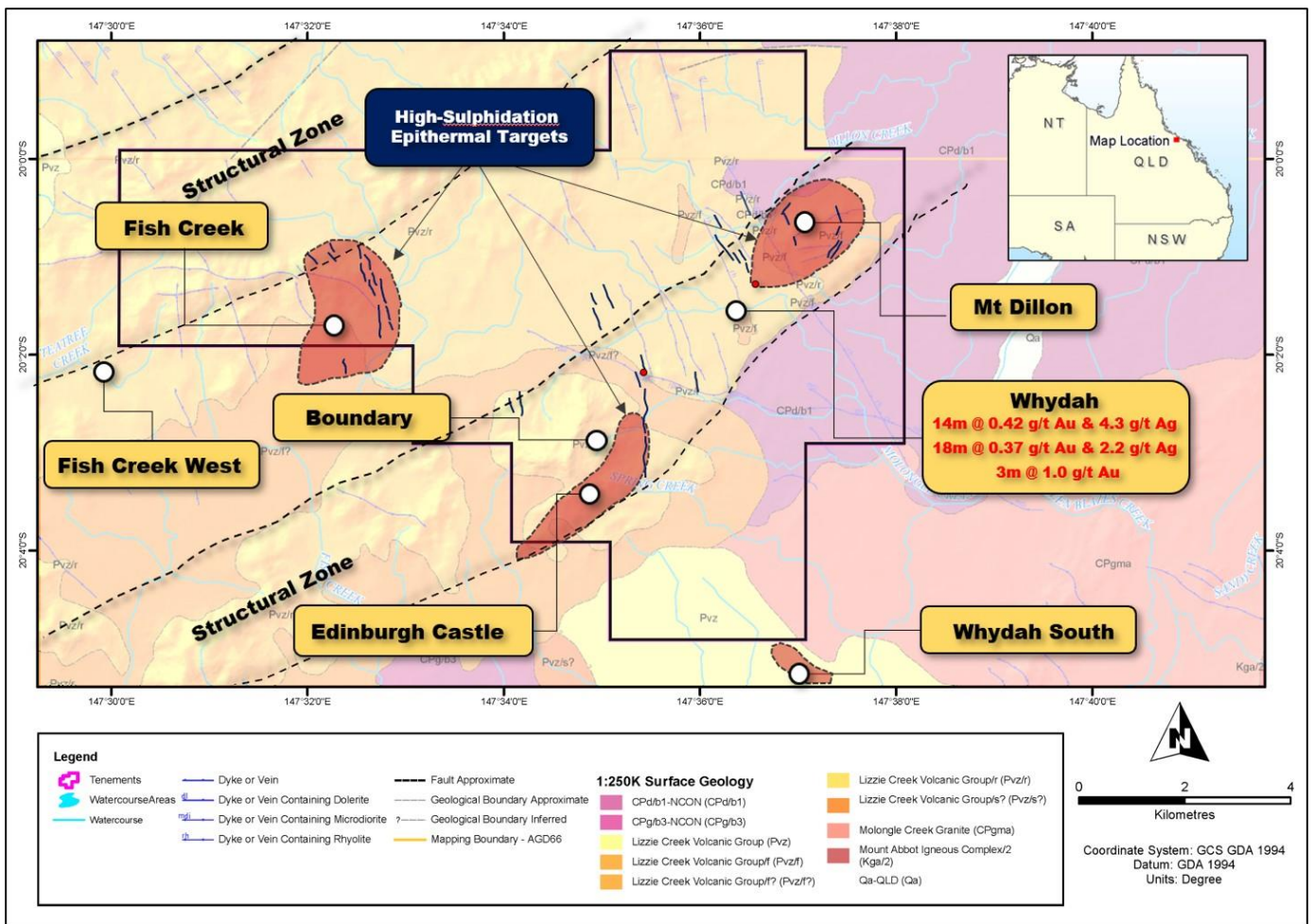


Figure 2: Location of a cluster of advanced argillic centers interpreted in the hyperspectral data in the projects north.

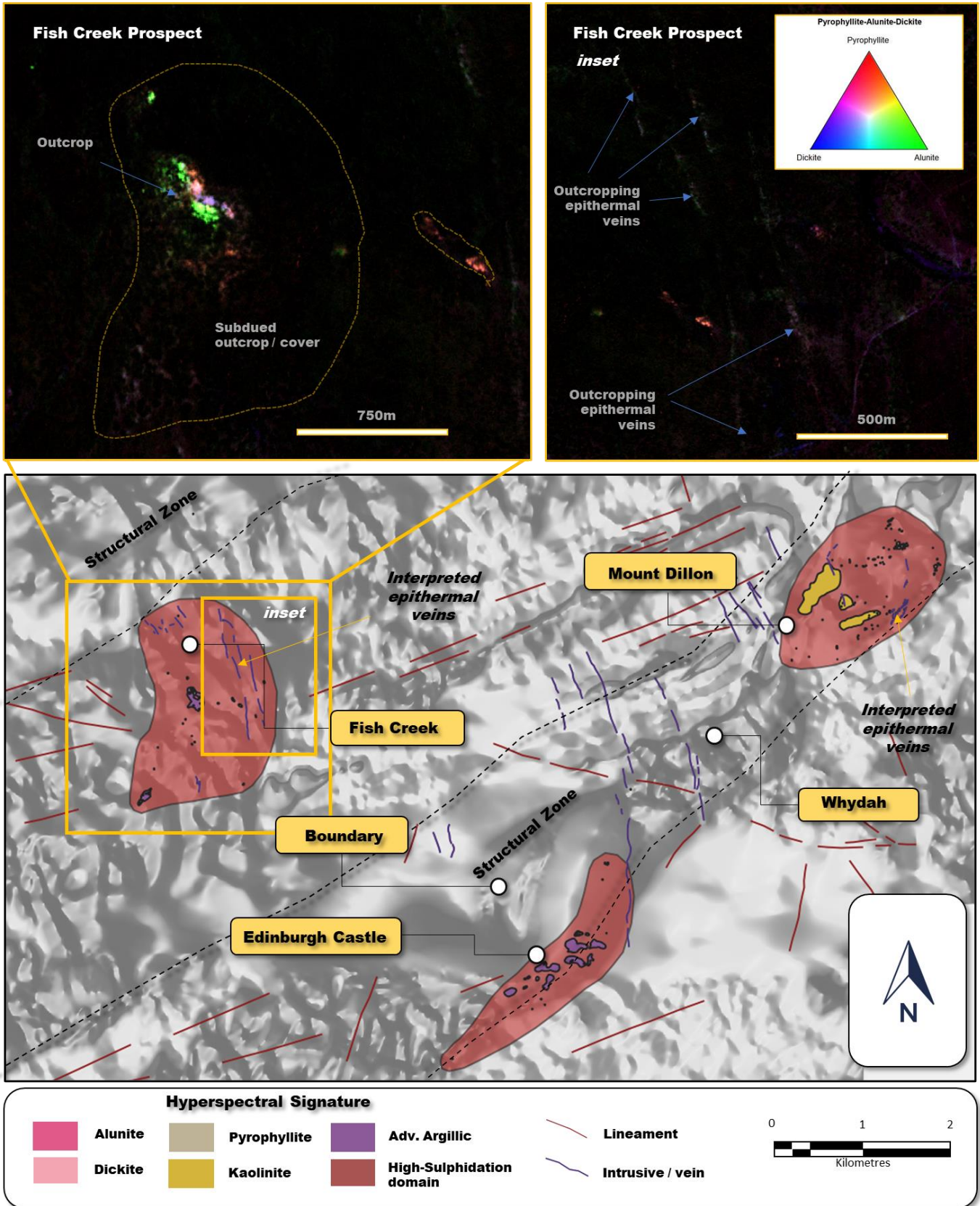


Figure 3: (Below) Interpreted spectral features from airborne hyperspectral data showing areas-of-interest and prospects in the Edinburgh Park project overlain on airborne magnetic imagery. (Above) Ternary image from airborne hyperspectral mineral mapping over the Fish Creek Area showing the spatial distribution of pyrophyllite, alunite and dickite spectral signatures.

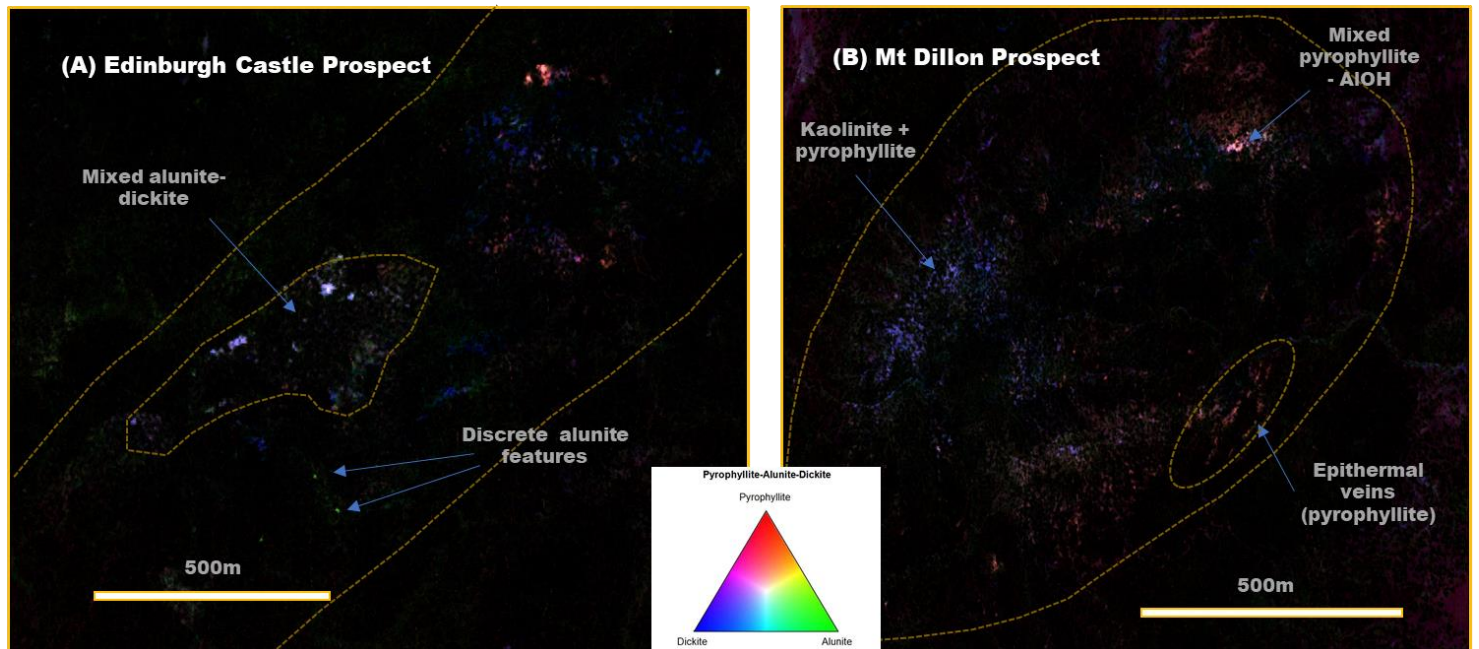


Figure 4: Ternary image from airborne hyperspectral mineral mapping over the (A) Edinburgh Castle and (B) Mt Dillon showing the spatial distribution of pyrophyllite, alunite and dickite spectral signatures.

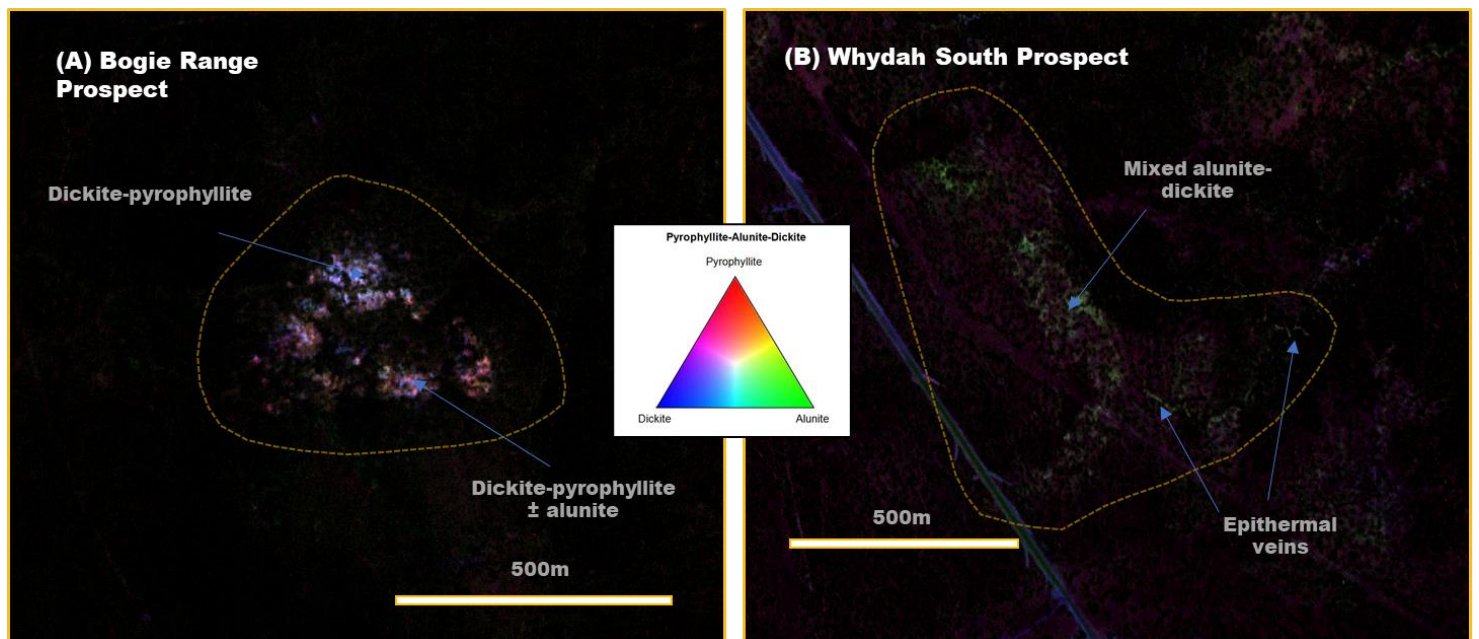


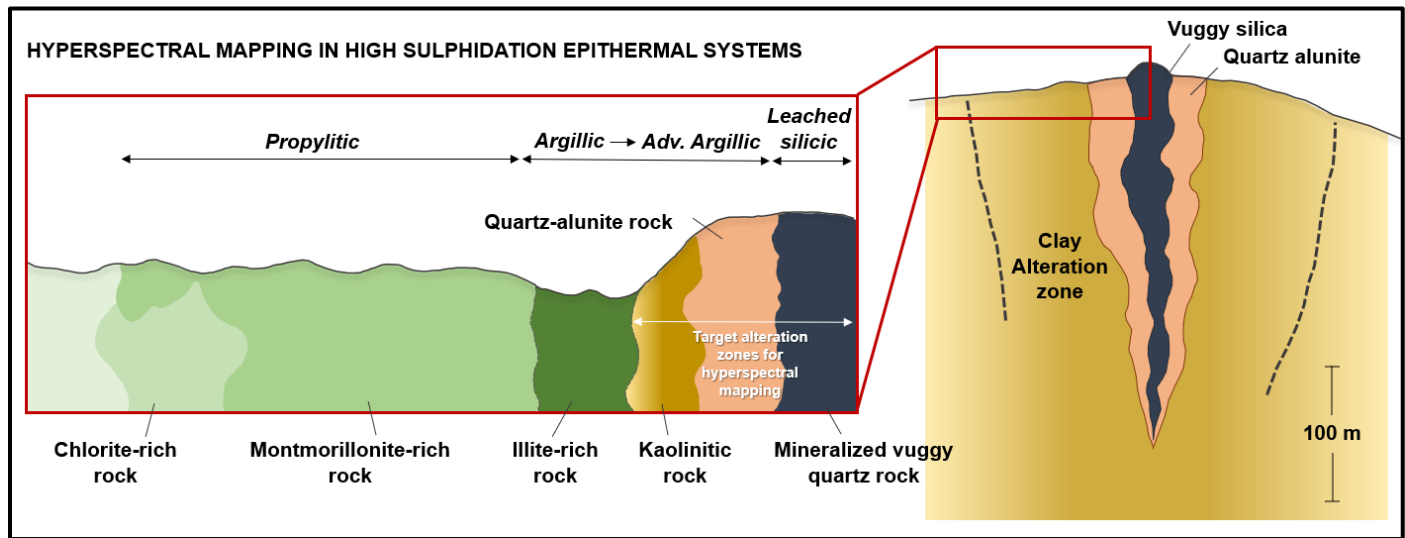
Figure 5: Ternary image from airborne hyperspectral mineral mapping over (A) Bogie Range and (B) Whydah South Areas showing the spatial distribution of pyrophyllite, alunite and dickite spectral signatures.

### Preliminary Results – Exploration Concept (High-sulphidation Epithermal)

The Edinburgh Park Project is located at the northern margin of the Bowen Basin (Figure 1) in a region interpreted to represent a magmatic arc setting considered prospective for porphyry copper-molybdenum, Intrusive Related Gold System (IRGS) deposits and epithermal gold-silver deposits. Hyperspectral surveys are an early stage exploration tool in high-sulphidation systems used to identify the broader higher temperature advanced argillic halo to the more discrete mineralized core, primarily through the identification of pyrophyllite ± dickite ± alunite.

The current exploration work indicates the Company’s high-sulphidation and low-sulphidation epithermal targets at Edinburgh Park are concealed within the basal sequences of the exposed Permian volcanic package and developed by the exploitation of permeable lithologies (typically flat dipping), or dilatant structures (predominantly NE- or NNW-trending). GSN’s exploration activity has established a geological framework for the project area which highlights strong similarities with the Mt Carlton district some 2 kilometers to the south. Central to the Mt Carlton district are the A39 and V2 epithermal deposits currently being mined by Evolution Mining (EVN) (Figure 7).

High sulphidation ore systems are characterized by zoned alteration patterns (Figure 6) which can be used as a useful vector tool toward the prospective Au ± Ag ± Cu mineralized zone to the system. At Mt Carlton, the high-grade ore commonly occurs within cores of silicic alteration which are typically no more than a few tens of meters which have halo’s of advanced argillic minerals (e.g., Alunite, dickite, kaolinite, pyrophyllite, diaspore and pyrite) that may have area extents up to several square kilometers (Figure 7). Mapping of camp-scale alteration halo’s at Mt Carlton via handheld ASD mineral spectrometers has been shown to be a particularly successful exploration tool to focus exploration into key areas. This technique will be utilised in future exploration.



**Figure 6: Conceptual alteration zonation around high-sulphidation epithermal deposits.**

### Future Exploration

Follow-up exploration activities will be determined on the basis of findings of an ongoing review of all available information. GSN will undertake further detailed geological mapping and geochemical (soil and rock chip) programs and extend those programs to cover additional targets delineated as part of this phase of work.

The hyperspectral responses are clearly stronger within elevated topography with better outcrop patterns, and there are clear subdued or subtle responses around lower terrain and more heavily vegetated areas or areas with limited outcrop.

The hyperspectral data is currently being interpreted for alteration mineralogy associated with IRGS and porphyry-style hydrothermal systems, including mapping/interpreting the illite-smectite-kaolinite (interpreted as argillic/phyllitic) halo's to the current advanced argillic targets.

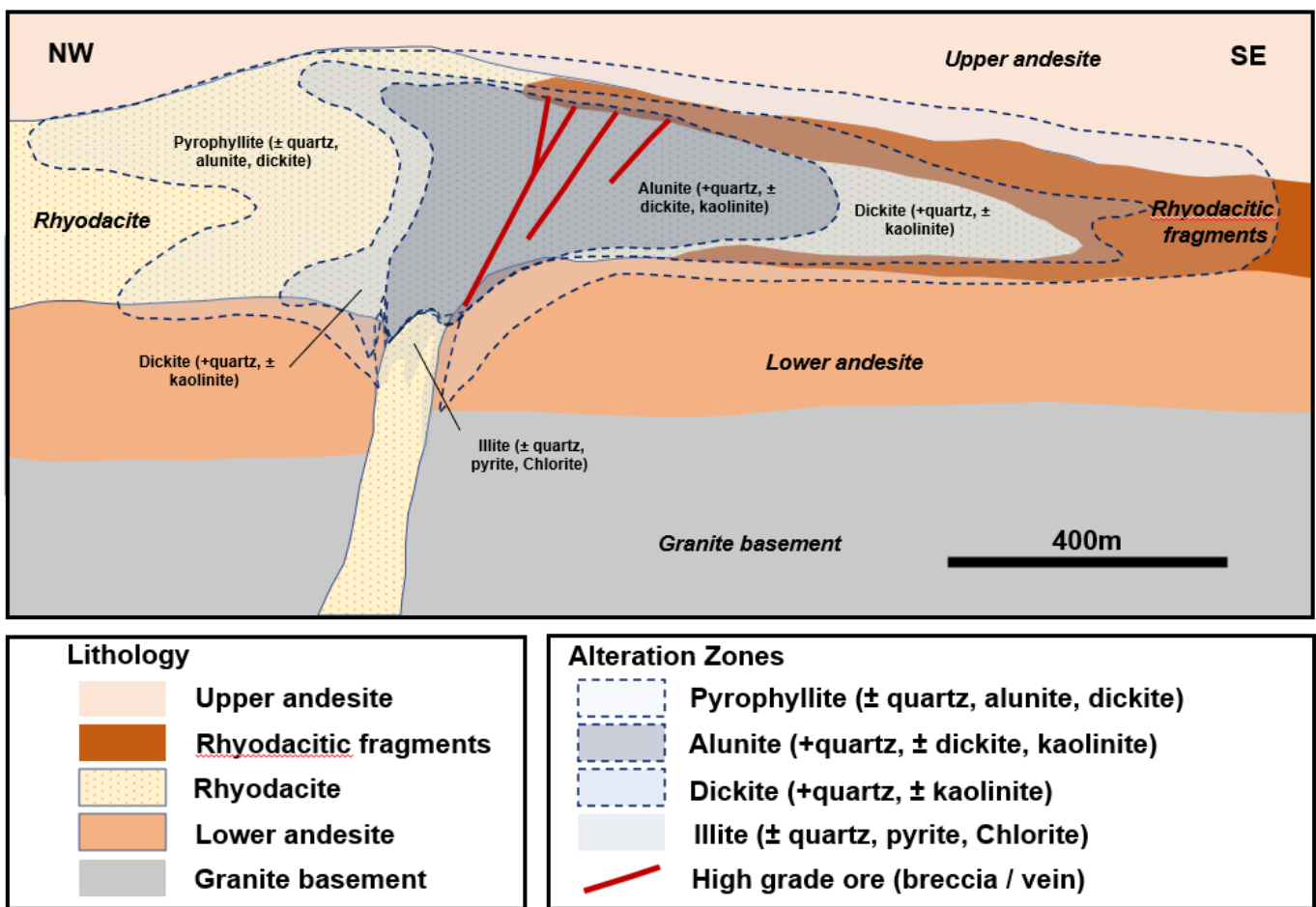


Figure 7: Cross-section through the V2 deposit (Mt Carlton) showing geology and alteration halo.

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The release of this ASX announcement was authorized by the Board of Directors of the Company.



## ABOUT GREAT SOUTHERN MINING LIMITED

Great Southern Mining Limited is a Western Australian based Company listed on the ASX. Its aim is to become a leading gold exploration Company in Australia. With significant land holdings in the world-renowned gold districts of Laverton in Western Australia and the Mt Carlton Region of North Queensland, all projects are located within 25km of operating gold mills and major gold operations.

The Company's focus is on creating and capturing shareholder wealth through efficient exploration programs and strategic acquisitions of projects that complement the Company's existing portfolio of quality assets.

For further information regarding Great Southern Mining Limited please visit the ASX platform (ASX: GSN) or the Company's website [www.gsml.com.au](http://www.gsml.com.au).

### Competent Person's Statement

*The information in this report that relates to exploration targets and exploration results on EPM's 26810, 26527, 27130, 27131, and 25196 is based on, and fairly represents, information and supporting documentation compiled by Dr Bryce Healy. Dr Healy is an employee of Noventum Group Pty Ltd (ACN 624 875 323) and has been engaged by Great Southern Mining Limited as Head of Exploration. He has sufficient experience relevant to the style of mineralization and type of deposit under consideration. Dr Healy is a Member of the Australian Institute of Geoscientists and as such, is a Competent Person for the Reporting of Exploration Results, Mineral Resources and Ore Reserves under the JORC Code (2012). Dr Healy consents to the inclusion in the report of the matters based on his information in the form and context in which they occur.*

### Forward Looking Statements

*Forward- looking statements are only predictions and are not guaranteed. They are subject to known and unknown risks, uncertainties and assumptions, some of which are outside the control of the Company. Past performance is not necessarily a guide to future performance and no representation or warranty is made as to the likelihood of achievement or reasonableness of any forward-looking statements or other forecast. The occurrence of events in the future are subject to risks, uncertainties and other factors that may cause the Company's actual results, performance or achievements to differ from those referred to in this announcement. Given these uncertainties, recipients are cautioned not to place reliance on forward looking statements. Any forward- looking statements in this announcement speak only at the date of issue of this announcement. Subject to any continuing obligations under applicable law and the ASX Listing Rules, the Company, its directors, officers, employees and agents do not give any assurance or guarantee that the occurrence of the events referred to in this announcement will occur as contemplate.*

# APPENDIX A - JORC Code, 2012 Edition – Table 1

## EDINBURGH PARK HYPERSPECTRAL SURVEY

The following information follows the requirements of the JORC 2012 Table 1 Sections 1 and 2 for ASX release related to the Edinburgh Park hyperspectral survey and results.

### Section 1 Sampling Techniques and Data

Criteria	Commentary																																																																																																
<b>Sampling techniques</b>	<p>Great Southern Mining Ltd (ASX: GSN) is reporting a new hyperspectral survey conducted in October 2019 by SpecTIR International at the Company's Edinburgh Park Project.</p> <p><b>Hyperspectral Survey October 2019</b></p> <p>GSN entered an agreement with Evolution Mining Limited to acquire Hyperspectral Survey data over the Project. Refer to ASX announcement of 8 October 2019. EVN contracted US-based contractor SpecTIR International Ltd (SpecTIR) to carry out the hyperspectral survey which included GSN tenements EPM 26810, 26527, 27130, 27131, 25196 covering a survey acquisition area of approximately 845 square kilometres.</p> <p>Equipment and sampling techniques employed in the survey are listed below:</p> <table border="1"> <thead> <tr> <th colspan="2">OPTICAL CHARACTERISTICS</th> <th colspan="2">TYPICAL SPECIFICATIONS</th> </tr> <tr> <td></td> <td></td> <td>VNIR</td> <td>SWIR</td> </tr> </thead> <tbody> <tr> <td>Spectrograph</td> <td colspan="3">High efficiency transmissive imaging spectrograph. Throughput practically independent of polarization. Smile and keystones &lt; ±0.35 pixels</td> </tr> <tr> <td>Numerical aperture</td> <td colspan="3">F/2.4</td> </tr> <tr> <td>Spectral Range</td> <td>380 - 970 nm</td> <td colspan="2">970 - 2 500 nm</td> </tr> <tr> <td>Spectral resolution</td> <td>4.5 nm</td> <td colspan="2">14 nm</td> </tr> <tr> <td>Calibration</td> <td colspan="3">Sensor provided with wavelength and radiometric calibration file.</td> </tr> <tr> <th colspan="4">FORE OPTICS</th> </tr> <tr> <td>FOV</td> <td colspan="3">40 degrees</td> </tr> <tr> <td>IFOV</td> <td colspan="3">0.039 degrees</td> </tr> <tr> <td>Swath width</td> <td colspan="3">0.73 x altitude</td> </tr> <tr> <td>Altitude for 1 m pixel size</td> <td colspan="3">1 400m</td> </tr> <tr> <th colspan="4">ELECTRICAL CHARACTERISTICS</th> </tr> <tr> <td>Detector</td> <td>CMOS</td> <td colspan="2">Stirling cooled MCT</td> </tr> <tr> <td>Spectral binning options</td> <td colspan="3">2x / 4x / 8x</td> </tr> <tr> <td>Number of spectral bands</td> <td>348 / 147 / 87</td> <td colspan="2">256</td> </tr> <tr> <td>Spectral sampling/band</td> <td>1.7 nm / 3.4 nm / 6.8 nm</td> <td colspan="2">6.3 nm</td> </tr> <tr> <td>Frame rate, up to (frames/s)</td> <td colspan="3">100</td> </tr> <tr> <td>Spatial pixels</td> <td colspan="3">1 024</td> </tr> <tr> <td>Output</td> <td>12 bits CL</td> <td colspan="2">16 bits CL</td> </tr> <tr> <td>SNR</td> <td>600 - 1 000:1 (peak)</td> <td colspan="2">1 250:1 (peak)</td> </tr> <tr> <td></td> <td colspan="3">More detailed SNR data in various conditions available from SPECIM</td> </tr> <tr> <td>Integration time</td> <td colspan="3">Adjustable within frame time</td> </tr> <tr> <td>Shutter</td> <td colspan="3">Electromechanical shutter for dark background registration, user controlled by software</td> </tr> </tbody> </table>	OPTICAL CHARACTERISTICS		TYPICAL SPECIFICATIONS				VNIR	SWIR	Spectrograph	High efficiency transmissive imaging spectrograph. Throughput practically independent of polarization. Smile and keystones < ±0.35 pixels			Numerical aperture	F/2.4			Spectral Range	380 - 970 nm	970 - 2 500 nm		Spectral resolution	4.5 nm	14 nm		Calibration	Sensor provided with wavelength and radiometric calibration file.			FORE OPTICS				FOV	40 degrees			IFOV	0.039 degrees			Swath width	0.73 x altitude			Altitude for 1 m pixel size	1 400m			ELECTRICAL CHARACTERISTICS				Detector	CMOS	Stirling cooled MCT		Spectral binning options	2x / 4x / 8x			Number of spectral bands	348 / 147 / 87	256		Spectral sampling/band	1.7 nm / 3.4 nm / 6.8 nm	6.3 nm		Frame rate, up to (frames/s)	100			Spatial pixels	1 024			Output	12 bits CL	16 bits CL		SNR	600 - 1 000:1 (peak)	1 250:1 (peak)			More detailed SNR data in various conditions available from SPECIM			Integration time	Adjustable within frame time			Shutter	Electromechanical shutter for dark background registration, user controlled by software		
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<b>Criteria</b>	<b>Commentary</b>
<b><i>Drilling techniques</i></b>	Not Applicable
<b><i>Drill sample recovery</i></b>	Not Applicable
<b><i>Logging</i></b>	Not Applicable
<b><i>Sub-sampling techniques and sample preparation</i></b>	Not Applicable
<b><i>Quality of assay data and laboratory tests</i></b>	Not Applicable
<b><i>Verification of sampling and assaying</i></b>	Not Applicable
<b><i>Location of data points</i></b>	Datum: WGS 84 Projection: Universal Transverse Mercator (UTM) Zone: 55 South  Hyperspectral survey imagery was located with an integrated INS/GPS System and an interpolated SRTM DEM was used to generate IGM and GLT files to geo-correct the raw data.
<b><i>Data spacing and distribution</i></b>	The survey comprised 22 flight lines (for a total of 1044 sq km). Image data was collected with a nominal 2.0m spatial resolution resulting in swath widths of approximately 2000m. Flight-lines were flown N-S with 25% overlap.
<b><i>Orientation of data in relation to geological structure</i></b>	Hyperspectral sensors acquire data in multidimensions, although the lines were flown perpendicular to the regional structure and stratigraphy with flight line direction: 090 – 270 degrees and tie line direction: 000 - 180 degrees.
<b><i>Sample security</i></b>	Survey data are available in the ENVI format and was transferred directly to GSN Head Office in Perth.
<b><i>Audits or reviews</i></b>	The hyperspectral data were initially processed and verified by a qualified person at SpecTIR International Ltd. After completion of the survey spectral processing of the data was conducted to generate mineral maps by Western Geospectral (Brian Bennett) who also conducted interpretation and compilation of results.

## Section 2 Reporting of Exploration Results

Criteria	Commentary
<b>Mineral tenement and land tenure status</b>	The results reported in this report are on granted Exploration Permit for Minerals (EPM) 26810, 26527, 27130, 27131, 25196 being 100% owned by Great Southern Mining Limited.  At the time of reporting the tenements are in good standing.
<b>Exploration done by other parties</b>	No other exploration done by other parties is relevant to the exploration results being reported here.
<b>Geology</b>	The Edinburgh Park project is located at the northern margin of the Bowen Basin. Within the project area, the Permian-age volcanics comprise undifferentiated packages of broadly flat-lying volcanics and volcanoclastics and minor basal sedimentary rocks which drape the Carboniferous unconformity dominated by intrusive granites. The region is interpreted to represent a magmatic arc setting considered prospective for porphyry copper-molybdenum, Intrusive Related Gold System (IRGS) deposits and epithermal gold-silver deposits.
<b>Drill hole Information</b>	No drilling has been undertaken
<b>Data aggregation methods</b>	No data aggregation has been undertaken
<b>Relationship between mineralisation widths and intercept lengths</b>	No relevant program was undertaken
<b>Diagrams</b>	Appropriate diagrams of the geology are presented in the body of this report
<b>Balanced reporting</b>	The Competent Person (CP) believes this report to be a balanced representation of exploration undertaken.
<b>Other substantive exploration data</b>	No other exploration data is considered relevant to those results reported here.
<b>Further work</b>	The hyperspectral data is currently being interpreted for alteration mineralogy associated with IRGS and porphyry-style hydrothermal systems, including mapping/interpreting the illite-smectite-kaolinite (interpreted as argillic/phyllitic) halo's to the current advanced argillic targets.  The current preliminary interpretation requires ground truthing and a program of ASD VNIR-SWIR spectral sampling of available outcrops to verify, calibrate and refine the results toward 'FINAL' mineral maps.