

## Duketon Gold Project Exploration Update

### Highlights:

- **Southern Star:** Soil geochemical survey has identified new gold anomalies along strike to the south of the Southern Star prospect, located just 4km south and along strike of Regis Resources' (ASX:RRL) +350koz gold Ben Hur deposit
- **Amy Clarke:** Gold anomaly extended by 1.4km to the south, with gold anomalism identified in shallow aircore drilling and soil geochemistry now extending for 5km, incorporating the previously reported best intercept of 5m @ 8.2 g/t Au, including 1m @ 33.5 g/t Au from 33m
- **Golden Boulder:** Surface samples grading up to 241g/t gold at the Golden Boulder prospect, which incorporates at least three trends of historic gold workings with intense alteration over an area >3km in length and 500m width
- **Drilling planned for late 2022 to early 2023 to test for extensions to Southern Star mineralisation, as well as the newly identified gold targets at Southern Star and Amy Clarke**

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Great Southern Mining Limited (ASX: GSN) (“**GSN**” or the “**Company**”) is pleased to announce an exploration update at its Duketon Gold Project, located 60km north of Laverton, Western Australia.

In preparation for the next round of drilling, which is due to commence in late 2022 to early 2023, the Company has completed further targeting work proximal to known gold mineralisation within the Southern Star, Amy Clark and Golden Boulder prospect areas (Figure 1).

Soil geochemical surveys have defined new targets along strike to the south of the Southern Star prospect and extended previously defined gold anomalism at the Amy Clarke prospect by a further 1.4km to 5km. Field mapping and rock chip sampling at the Golden Boulder prospect has defined at least three trends of historic gold workings with intense alteration noted over an area >3km in length and 500m wide. This area has had very limited historic drilling but will likely become a key focus for GSN's 2023 drilling programs.

### **GSN's Managing Director, Matthew Keane, commented:**

*“Our latest round of exploration has generated further compelling targets at our Duketon Gold Project. The upcoming drilling programs are going to be very exciting as we test extensions to known mineralisation at Southern Star and probe new targets at both Amy Clark and Southern Star that were defined from our recent aircore drilling and geochemical surveys. The Company's goal for 2023 is to define a substantial gold inventory from the three key prospect areas, namely Southern Star, Amy Clarke and Golden Boulder.”*

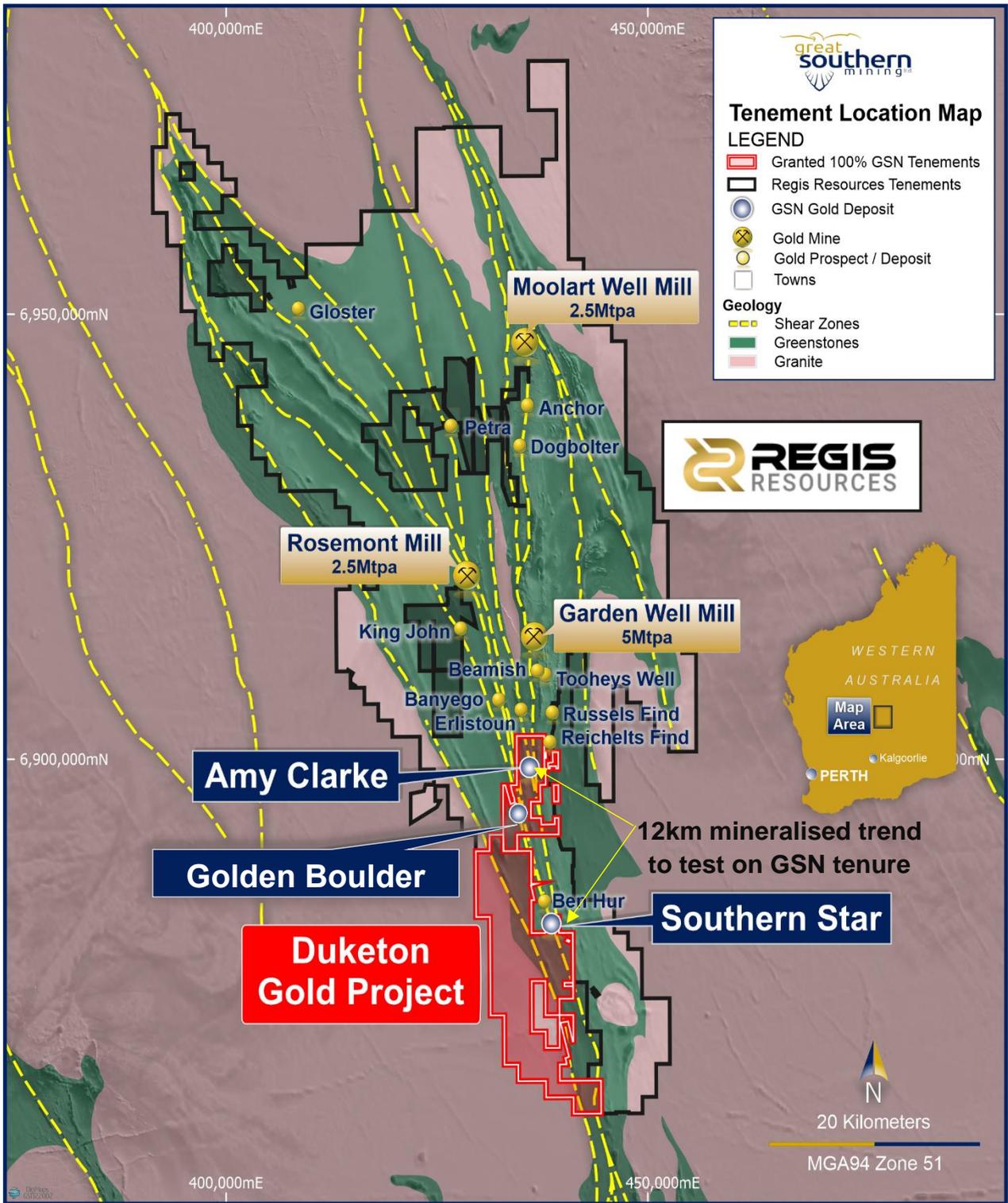


Figure 1. Plan view of the Duketon Gold Project (red) highlighting key prospect areas, mineralised corridors (in yellow) and Regis Resources Limited owned gold deposits and operating mills.

## Southern Star Update

Southern Star sits on a well-endowed gold trend that hosts RRL's Rosemont and Ben Hur deposits (>1Moz and >350koz respectively). Ben Hur, which is located just 4km north of Southern Star, is due to be developed in RRL's current mine schedule (refer to RRL presentation dated 6 September 2022). Mineralisation defined to date at Southern Star is open along strike and at depth with the potential to expand mineralisation into a sizeable mineral resource considered highly probable.

Best results from the Company's drilling to date include:

- **69m @ 1.1 g/t Au** from 39m, including a higher-grade core of **10m @ 3.5g/t Au** including **2m @ 12.0g/t Au** in 22SSRC0006<sup>1</sup>
- **59m @ 2.1 g/t Au** incl. **9m @ 4.5 g/t Au** and **16m @ 3.2 g/t Au** from 53m in 21SSRC0009<sup>2</sup>
- **68m @ 1.9 g/t Au** from 61m, including **4m @ 15.3 g/t Au** from 89m and **5m @ 7.0 g/t Au** from 114m in 21SSRC0036
- **46m @ 1.2 g/t Au** incl. **11m @ 3.4 g/t Au** from 40m in 21SSRC00011
- **7m @ 13.9 g/t Au** incl. **1m @ 91.7g/t Au** from 123m in 21SSRC0017
- **17m @ 7.0 g/t Au** from 111m incl. **2m @ 56.7g/t Au** in 21SSRC0039.

Extensive soil surveys have now been completed both north and south of Southern Star over the favourable quartz dolerite host rock with the objective of delineating drill targets along strike beyond the already defined 1km long zone of gold mineralisation (See Figure 2).

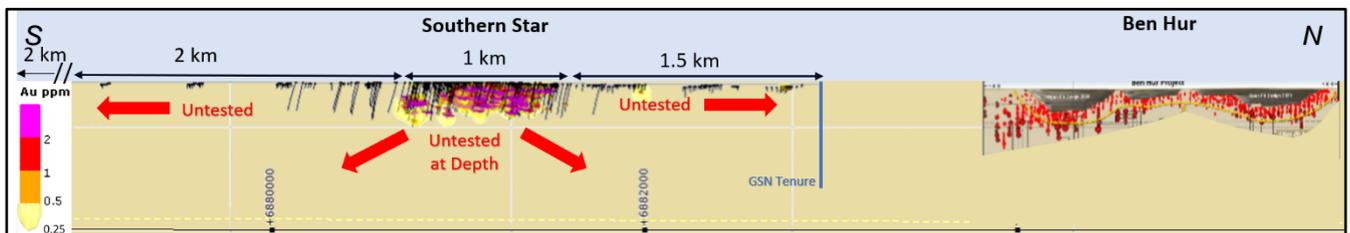


Figure 2. Long section of Southern Star highlighting the underexplored and poorly tested areas along strike and at depth and the location of Regis Resources Ben Hur deposit.

### Southern Star southern soil results

Results in this announcement relate to a 497-sample soil program completed along strike to the south of Southern Star. Samples were taken on a 100m wide line spacing, 25m apart over a 4km strike of the prospective quartz dolerite geology. (Figure 3). Assay results indicate a strong 700m long gold in soil anomaly in the southern portion of the survey area with a peak gold assay of 158 ppb. Other key pathfinder elements, including arsenic and antimony, form a very coherent trend over

<sup>1</sup> Refer ASX announcement 29/6/22

<sup>2</sup> Refer to ASX announcements 5/10/21, 11/10/21, 23/8/21 and 2/8/21.

a 1.7km strike, which also correlates with the position of the favourable sheared quartz dolerite geology. This rock type is interpreted to be the primary host of high-grade mineralisation at Southern Star.

Sulphur values are also of interest and have been used as an effective tool in ranking and identifying targets due to the high sulphide content of Duketon gold mineralisation. High-grade mineralisation at Southern Star is associated with strong to intense quartz-albite-carbonate ± sericite alteration, quartz veining and disseminated sulphides (pyrite/pyrrhotite >3%). An area of highly anomalous sulphur (+0.1%) was noted around the core of the aforementioned high arsenic-antimony trend (Figure 4).

The correlation of favourable soil geochemistry overlying the favourable quartz dolerite unit forms a compelling drill target in an area that has seen little to no historical drilling.

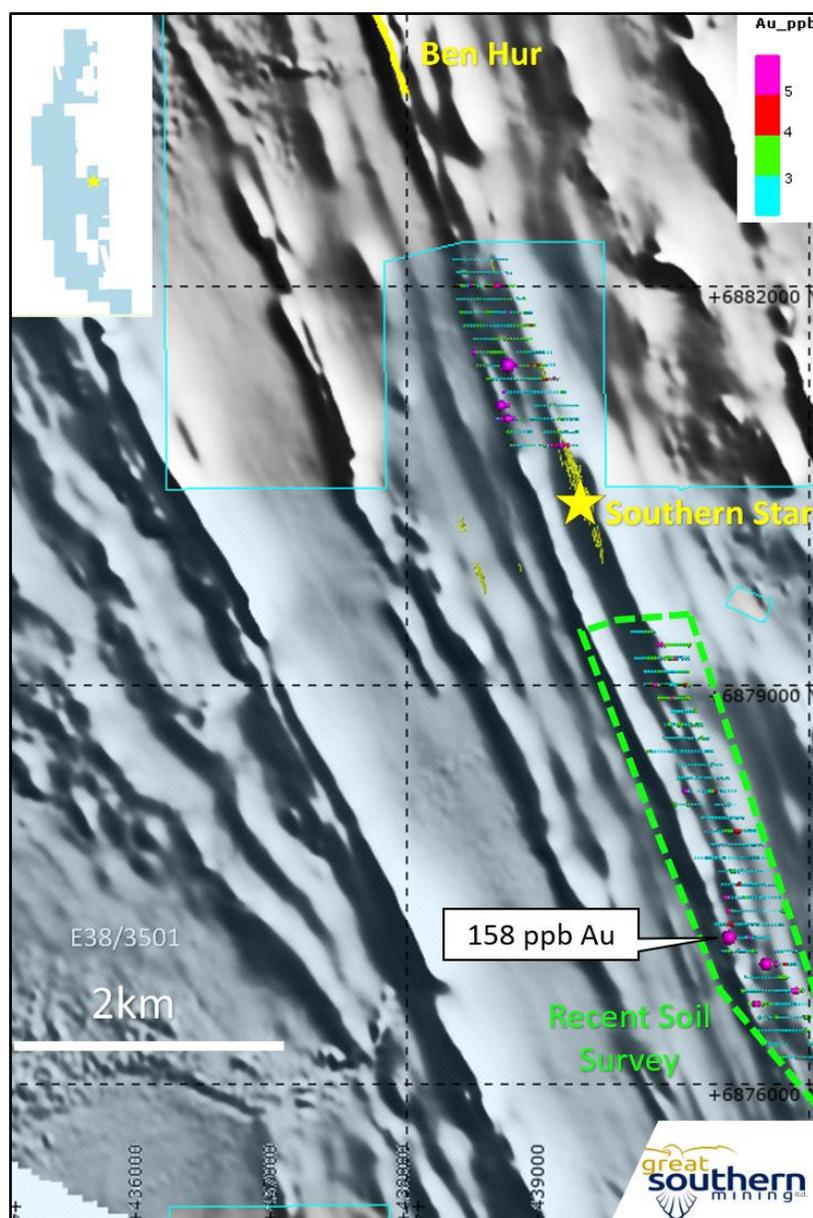


Figure 3. Map showing the area covered by the recent geochemical survey to the south along strike from Southern Star.

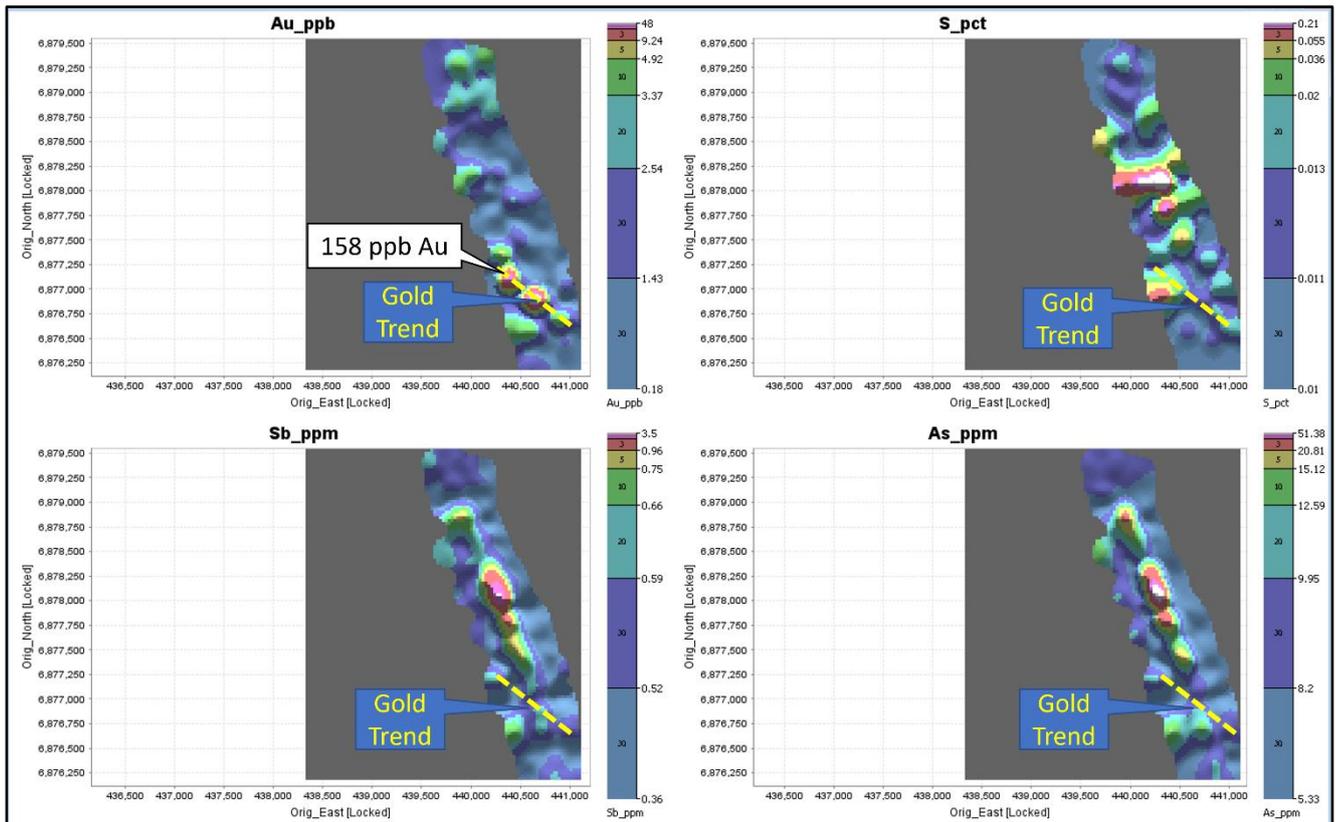


Figure 4. Gridded maps using loGas standard algorithm, based on data percentiles, to determine anomalism, highlighting relationships of Antimony (Sb), Arsenic (As) and Sulphur (S) with gold.

### Next steps

The Company is planning follow up reverse circulation (RC) drill programs in late 2022 to early 2023 to test newly identified geochemical targets along strike from the main mineralised zone of Southern Star. This includes the four targets previously identified along strike to the north (see Figure 5 below and refer to GSN ASX announcement dated 8 September 2022). RC drilling is also planned to test depth extensions to known mineralisation at Southern Star.

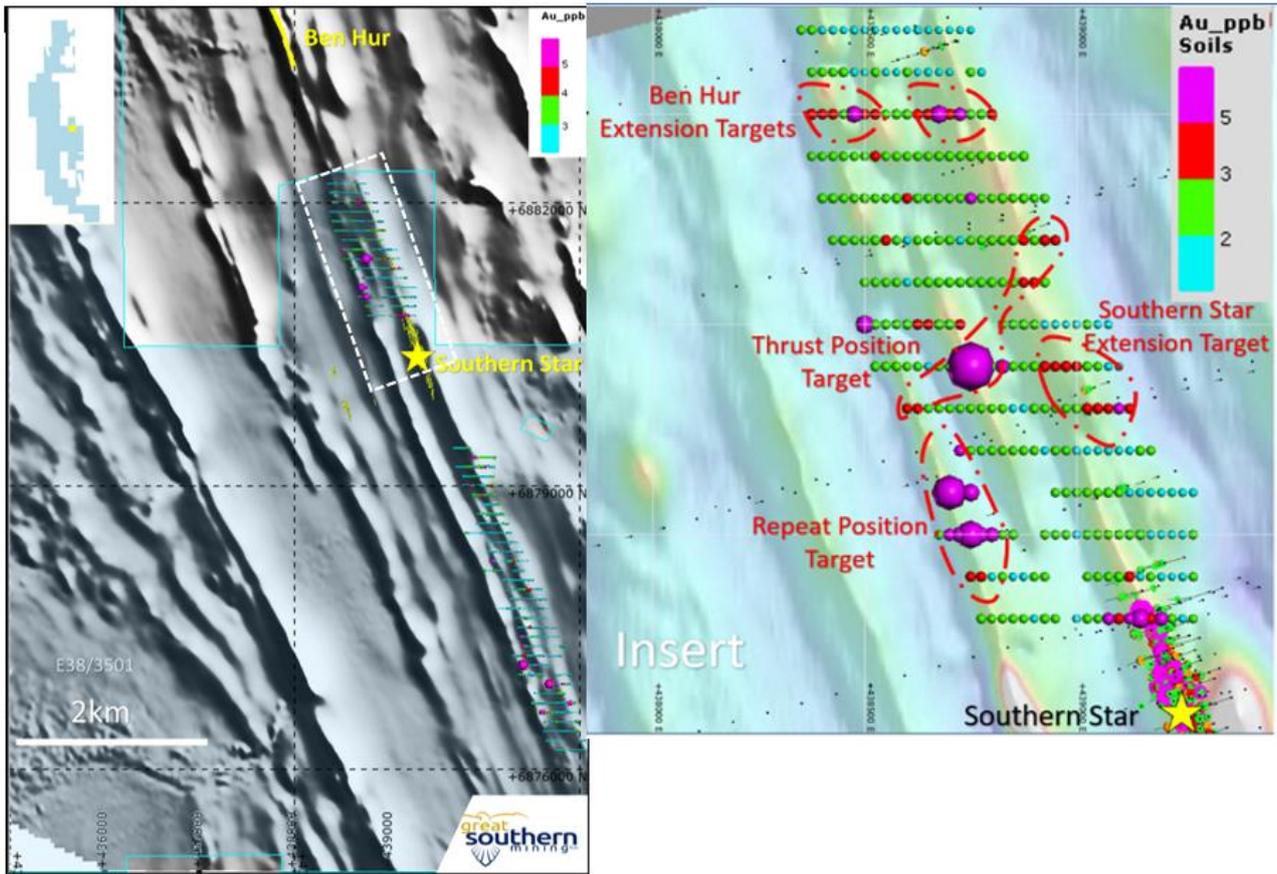


Figure 5. Extensive soil programs recently completed north and south of Southern Star highlighting newly identified gold in soil targets along the quartz dolerite target.

## Amy Clarke Update

A maiden aircore drill program was completed in early 2022, which included a best intercept of 5m @ 8.2 g/t Au, including 1m @ 33.5 g/t Au from 33m in hole 21ACAC147 (refer to GSN ASX announcement dated 13 April 2022). This hole was located at the southern limit of a previously defined soil anomaly, which prompted GSN to extend the soil geochemical survey further south. Assays have now been received for this extensional survey which consisted of 298 sites undertaken on a 100m wide line spacing, 50m apart over a prospective strike of ~1.8km (Figure 6). Results show the Amy Clarke gold-in-soil anomaly extending by a further 1.4km to the south, with the gold anomalism now defined over a 5km strike length. The scale of this anomaly bodes well for a large underlying mineralised gold system at Amy Clarke.

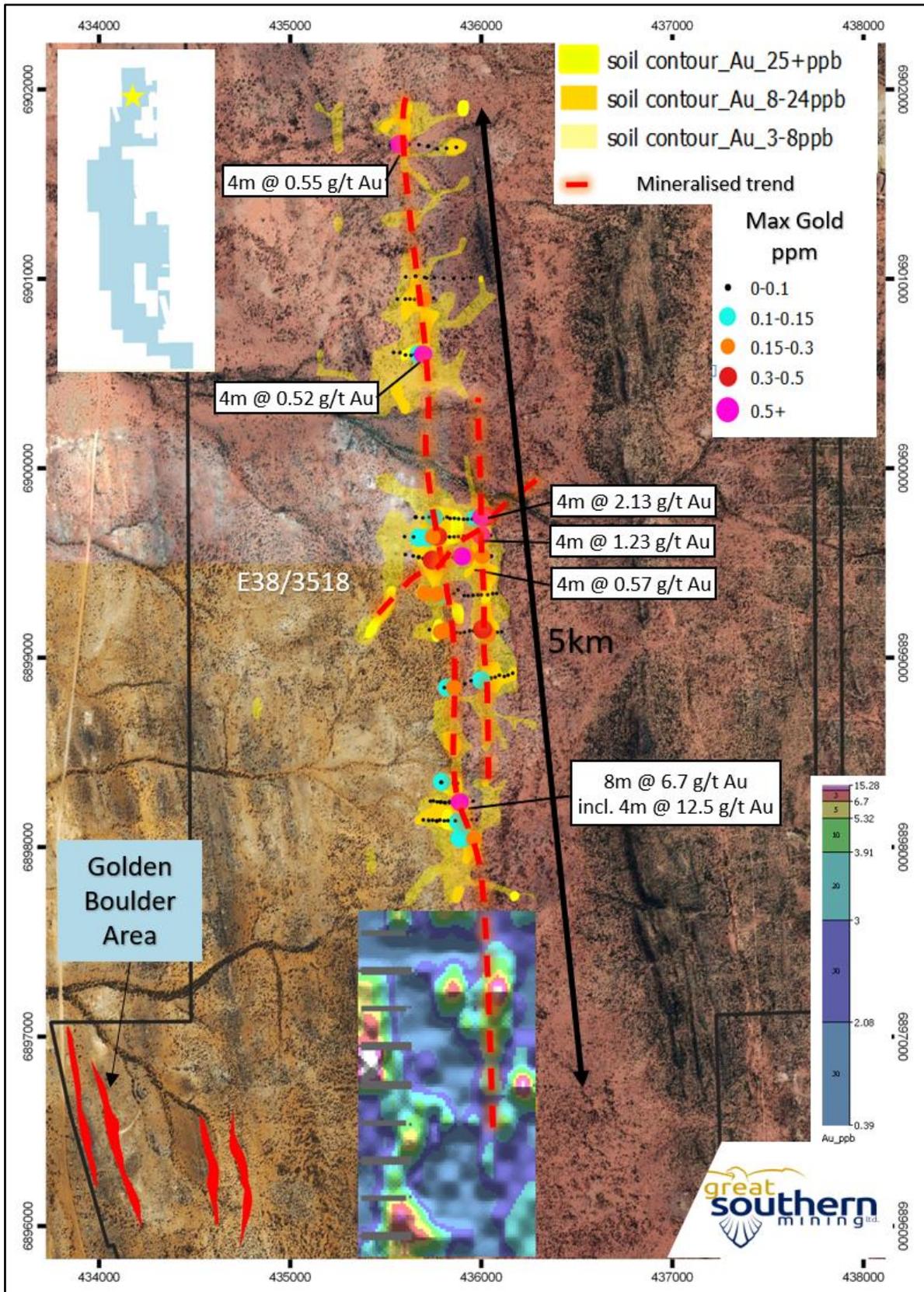


Figure 6. New soil survey extension at Amy Clarke with gold plotted using IoGas standard algorithm, based on data percentiles.

### Geochemical analysis of Amy Clarke southern soil survey

Similar to the Southern Star soil geochemistry, arsenic and antimony correlate exceptionally well with gold at Amy Clarke. The highest gold-arsenic-antimony anomaly is also coincident with a prominent north-south shear zone evident in outcropping geology.

Gold association with pathfinder elements such as bismuth and antimony indicate that the source of the anomalies is less likely to be transported, as these elements are less mobile within the weathering regime. Analysis of the geochemical data shows a strong relationship between gold, bismuth and antimony (Figure 7). Collectively, these element associations generate a compelling target that warrants drill testing.

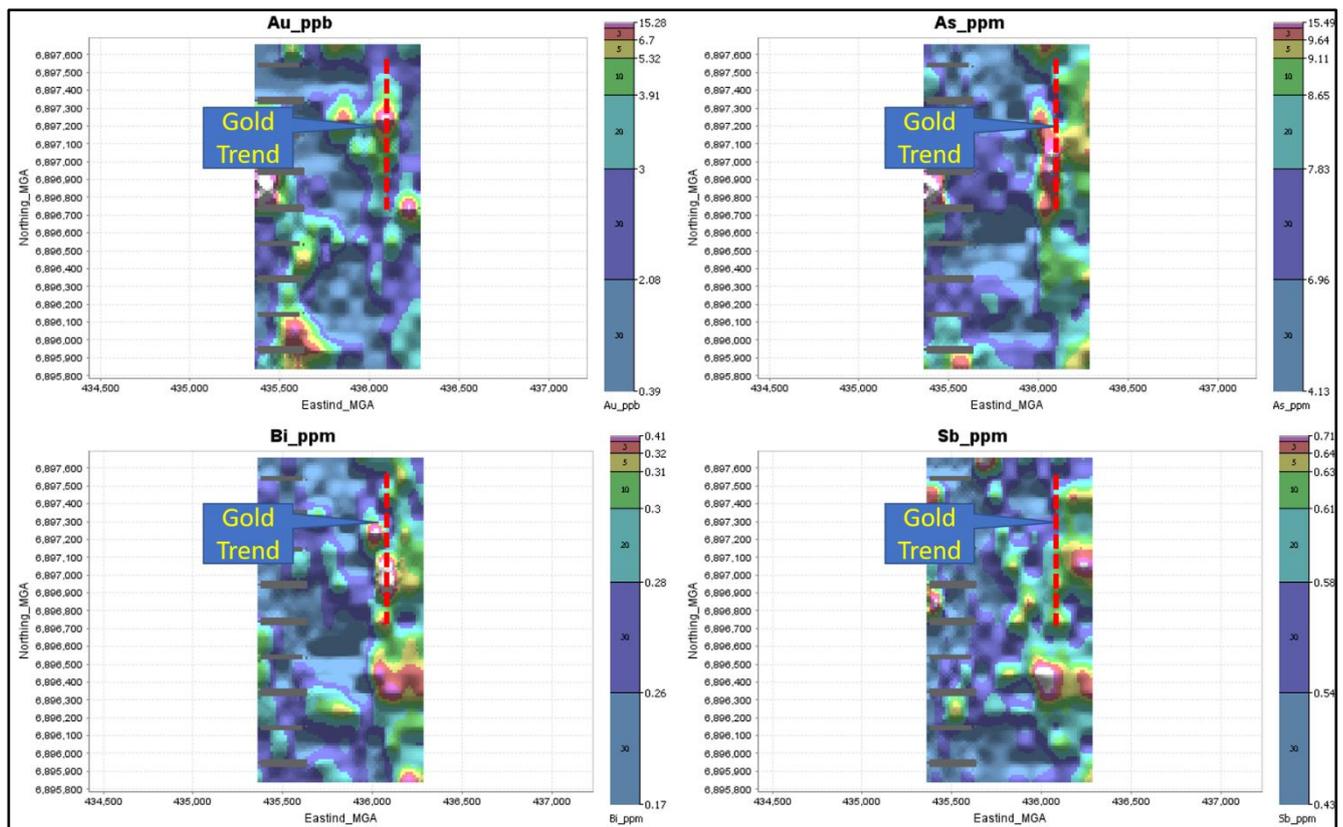


Figure 7. Gridded maps using loGas standard algorithm, based on data percentiles to determine anomalism, highlighting relationships of Arsenic (As), Antimony (Sb) and Bismuth (Bi) with gold.

### Next steps

GSN is planning follow up aircore and RC drilling in late 2022 to early 2023. The aim of this drilling is to infill around areas with higher grade drill intercepts and stronger soil anomalism and to extend drill lines into the newly defined anomalism to the south. Of particular interest is a zone of higher grade gold anomalism in the south which is coincident with a porphyritic rock unit. Regis Resources' Erlistoun pit (containing ~320Koz gold), which is located directly north of Amy Clarke on the same structural trend, also shows an association of gold mineralisation with porphyritic rocks.

## Golden Boulder Update

The Golden Boulder area was identified by GSN in 2021 as a high priority prospect. GSN drilled an initial 16-hole RC program for 1,858m to investigate if mineralisation persisted along strike and at depth from the extensive >3km long historical workings. Standout intersections from the first pass drilling include:

- **5m @ 3.3 g/t Au** from 49m, including **1m @ 12.3 g/t Au** and **1m @ 1.2 g/t Au** from 73m in 21GBRC0001
- **5m @ 1.2 g/t Au** from 103m, including **1m @ 4.1 g/t Au** in 21GBRC0007
- **7m @ 1.2 g/t Au** from 121m, including **2m @ 3.3 g/t Au** in 21ERRCC0005

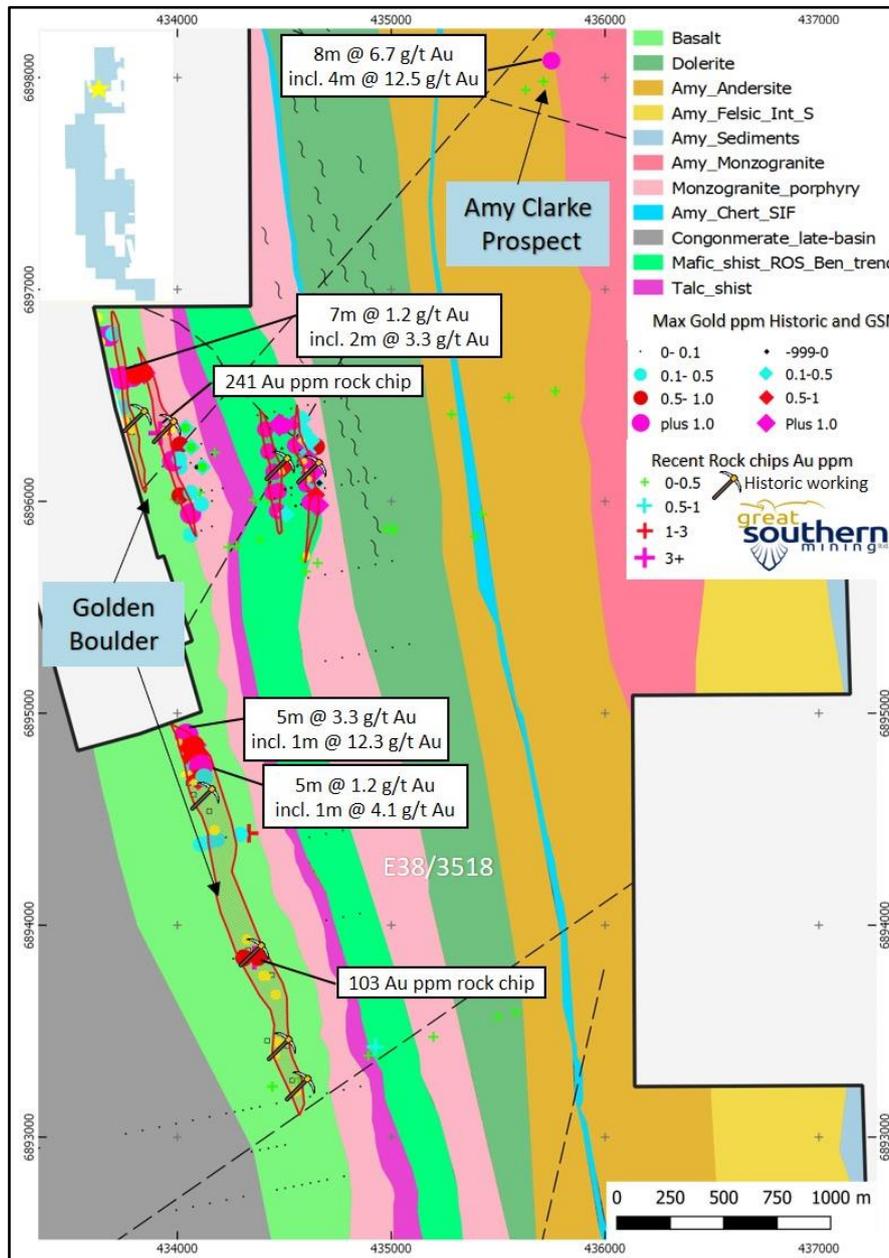


Figure 8 – Recent drilling and rock chip sampling with updated geology interpretation at Golden Boulder.

Limited exploration has been completed on this known mineralised trend with only two lines of historic shallow rotary air blast (RAB) drilling at 600m south of the drilling area at Golden Boulder. GSN has recently undertaken field mapping and sampling of rock outcrops, historic workings and old drill chips.

Multielement sampling was undertaken in an attempt better understand the style of mineralisation present and to determine any pathfinder element association and alteration assemblages. Multielement results indicate that albite alteration is present and is strongest in the northern portion of Golden Boulder, whilst strong sericite was identified in the southern end of the drilling.

Mapping of the area has identified micro scale folding within the chert horizon, which is in close proximity to a line of historic workings (Figure 9). Surface sampling around these workings and along strike from previous GSN drilling produced high grade gold results, including **241gt Au** and **103gt/Au** (refer to Figure 8). This supports the Company's belief that Golden Boulder has the propensity for both grade and scale.

#### *Next steps*

GSN plans to undertake a tight spaced multielement soil geochemical program of the Golden Boulder area to further refine drill targets, with the intention to be drill testing in the first half of 2023.



*Figure 9. Micro scale folding within the chert horizon at Golden Boulder.*

**This ASX announcement was approved and authorised for release by the Board of Great Southern Mining Limited.**

**For further information contact:**

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### **About Great Southern Mining**

Great Southern Mining Limited is a leading Australian listed exploration company. With significant land holdings in the world-renowned districts of Laverton in Western Australia and Mt Carlton in North Queensland, all projects are located within 25km of operating mills and major operations.

The Company's focus is on creating 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 Results is based on information compiled or reviewed by Simon Buswell-Smith, a Competent Person who is a Member of the Australian Institute of Geoscientists. Mr. Buswell-Smith is a full-time employee of Great Southern Mining Limited. Mr. Buswell-Smith 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 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr. Buswell-Smith consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

## **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 contemplated.

## JORC Code 2012 Edition – Table 1

### Section 1 Sampling Techniques and Data

Criteria	Commentary
<b>Sampling techniques</b>	The soil programs were undertaken in June-August this year covering over an area south of Prospect area known as Southern Star and South of Amy Clarke. Samples were taken below the organic layer (~10cm to 30cm BS) on 100m wide line spacing 50m apart with some lines extended over areas of interest. Samples were sieved in the field to 1.6mm and approximately 1 kilogram sample was then sent to the ALS laboratory in Perth where it was mechanically sieved down to the fine fraction portion (180 microns) and was assayed for gold and 48 other elements using ME-MS61
<b>Drilling techniques</b>	No drilling reported.
<b>Drill sample recovery</b>	No drill recovery was reported.
<b>Logging</b>	Soil sample site sites are described noting regolith regime and sample depth. Rock descriptions are also taken
<b>Sub-sampling techniques and sample preparation</b>	<p>Sample preparation of Great Southern Mining samples follows industry best practice standards at accredited laboratories.</p> <p>Samples were sieved in the field to 1.6mm and approximately 1 kilogram sample was then sent to the ALS laboratory in Perth where it was mechanically sieved down to the fine fraction portion (180 microns)</p> <p>Sieves were cleaned thoroughly between samples, no duplicates or field standards were taken due to the early stage of exploration</p> <p>Samples were taken below the organic layer (~10cm to 30cm BS) to ensure in-situ material.</p> <p>Sample size of ~1kg is deemed appropriate for fine fraction soil survey.</p>
<b>Quality of assay data and laboratory tests</b>	<p>Assay technique is Aqua regia and is considered partial and is an appropriate assay method for the</p> <p>No geophysical tools have been applied to the samples, or down hole, at this stage.</p> <p>No QC was reported.</p> <p>Soil samples were submitted to ALS Perth, Au by aqua regia extraction with ICP-MS finish using Au TL44 (50gm sample) trace level methods by aqua regia digestion and ICP-MS finish are excellent for regolith, where gold anomalies indicating mineralisation below surface are well-characterised. Aqua regia dissolves native gold as well as gold bound in sulphide minerals; however, depending on the composition of the soil, gold determined by this method may or may not match recovery from fire assay methods</p> <p>48 Multielement super trace package ME-MS61 was used, ALS has lowered the detection limits on key pathfinder elements such as As, Sb, Se and Tl to near or below average crustal abundance, revealing anomalous patterns at levels previously unattainable due to technical limitations.</p>
<b>Verification of sampling and assaying</b>	<p>No drilling is reported</p> <p>Primary soil sampling data was collected in hard copy and entered into excel spreadsheets before being transferred to the master SQL database</p> <p>no assay data has been adjusted.</p>
<b>Location of data points</b>	<p>All sites are in MGA94 – Zone 51 grid coordinates using a hand-held GPS +/- 5m</p> <p>Topographic control in nominal.</p>
<b>Data spacing and distribution</b>	<p>Data Spacing is variable see plans in report, in general samples were taken on 100m wide line spacing 50m apart with some lines extended over areas of interest.</p> <p>Unknown due to early-stage exploration</p> <p>No composite sampling</p>

Criteria	Commentary
<b>Orientation of data in relation to geological structure</b>	No sample bias has been detected at this early stage. No drilling orientation and/or sampling bias has been recognised at this time.
<b>Sample security</b>	Samples are collected in polyweave bags and delivered directly from site to the assay laboratories in Perth, by a GSN employee.
<b>Audits or reviews</b>	No audits or reviews have been conducted.

## Section 2 Reporting of Exploration Results

Criteria	Commentary
<b>Mineral tenement and land tenure status</b>	The tenements E38/3501, held by Great Southern Mining Ltd, is in good standing and was granted on February 17, 2021. A wholly owned subsidiary, East Laverton Exploration Pty Ltd, is the holder of E38/3518, granted February 17, 2021.
<b>Exploration done by other parties</b>	Relevant exploration done by other parties are outlined in the body of this report or previous GSN ASX announcements.
<b>Geology</b>	Mineralisation at Sothern Star occurs as several stacked lenses within a sequence of foliated sheet-like gabbroic intrusive units and is associated with quartz veining and sulphide alteration between two strike parallel shear zones. The prospect is hosted in a fractionated dolerite sill, overturned and younging to the west that is over 100m wide in areas. Within this dolerite sill the most fractionated part, a quartz-magnetite rich unit up to 80m wide, appears to be the preferential host of the gold mineralisation.
<b>Drill hole Information</b>	No drillhole information reported No material information has been excluded
<b>Data aggregation methods</b>	Soil samples are reported only. Metal equivalent values are not reported.
<b>Relationship between mineralisation widths and intercept lengths</b>	No drilling results reported.
<b>Diagrams</b>	Relevant Diagrams are included in the body of this report.
<b>Balanced reporting</b>	All matters of importance have been included.
<b>Other substantive exploration data</b>	All relevant information has been included.
<b>Further work</b>	Future exploration includes assessment of recent soil results. Diagrams highlight potential area of interest for follow up work. At this stage, an aircore and RC program is being designed.