ASX ANNOUNCEMENT

27 May 2024 ASX: GSN



Duketon Gold Project Exploration Update

Highlights

- GSN has undertaken a process of target generation and target refinement leveraging off the knowledge of consultant geologists with long-term experience in the Duketon Belt and the Company's own geological team
- This work has not only verified the Golden Boulder, Amy Clarke and Southern Star areas as key prospects, but also spawned several new targets areas
- One such area is the Boundary target where recently uncovered historical drill intercepts coincide with an interpreted favourable structural setting, analogous to that which hosts the Garden Well deposit to the north. Historical intercepts include:
 - o 2 m @ 1.4 g/t Au from 14 m in RC drill hole PBY-5 (BPMA), and
 - o 10 m @ 0.5 g/t Au from surface in RAB hole 202 (Kennecott)
- GSN's tenure sits on the prolific gold bearing Duketon-Laverton fault zone, where major gold camps have a semi-regular occurrence every 30 to 40 kilometres. Anomalously, GSN's tenure sits in a 75-kilometre stretch yet to bare a major discovery. This presents a compelling area for gold exploration.

Great Southern Mining Limited (ASX: GSN) ("GSN" or the "Company") has an ongoing process of target generation and ranking within its 100% owned Duketon Gold Project in the Duketon Belt of Western Australia. A number of studies have recently been completed by geological consultants with a long history of exploration within the Duketon Belt, in conjunction with GSN's own geological team. This has led to a refinement and reprioritisation of previously identified target areas. A thorough review of historical data has also uncovered drill intercepts (previously unreported by GSN) which add weight to known target areas.

GSN's Duketon Gold Project sits in the Duketon–Laverton major fault zone within the Eastern Goldfields Province, where there is a semi-regular distribution of major gold camps on 30 to 40 kilometre intervals. GSN's tenure sits in a 75-kilometre stretch yet to yield a major discovery, which, given the lack of modern exploration, bodes well for a major discovery.

GSN's Managing Director, Matthew Keane, commented:

"As we move closer to the next phase of drilling at the Duketon Gold Project, our confidence of significant gold discoveries on our tenure is being enhanced with some high calibre studies by both internal and consultant geologists. We have leveraged off individuals with vast experience in the Duketon Gold Belt to better understand the nature of gold mineralisation and applied this thinking to new and existing target areas. We believe that GSN has some of the most prospective, yet underexplored ground within the belt, with key targets including the Southern Star, Golden Boulder and Amy Clark Target areas".

GSN welcomes comments and queries relating to this announcement on our Investor Hub site, where Company management can answer your questions directly (GSN Investor Hub link).



Duketon Gold Project

The Duketon Gold Project is located in the Eastern Goldfields Province within the Duketon–Laverton major fault zone. It has been identified through statistical wavelet (fixed zero-mean function) data analysis by Doutre et al., (2015) that major gold deposit distribution in this fault zone follows a rhythmic spacing of 30 to 40 kilometres, with clusters of large camps spaced at circa 100 kilometres. These distances are analogous to the thickness of the whole crust or lithosphere, suggesting consistent and self-organising crustal controls on gold deposit formation. In the Eastern Goldfields Province, gold deposits formed during a regional mineralisation event between 2655-2620 Ma (Duuring et al. 2007; Blewett et al. 2010) in a range of mineralisation styles. The Eastern Goldfields Province is host to greater than 130 Moz gold with major deposits including Sunrise Dam (>8 Moz, Anglo Gold Ashanti), the Wallaby - Granny Smith camp (+9 Moz, Gold Fields Ltd), The Laverton gold lamp (>2 Moz) and the Garden Well – Rosemont camp (>4 Moz, Regis Resources NL). Anomalously, GSN's tenure sits along a circa 75-kilometre stretch, between the Laverton and Garden Well – Rosemont camps without a major discovery (Figure 1). GSN attributes this not to a lack of prospectivity, but rather insufficient depth of historical drilling and a lack of modern exploration.

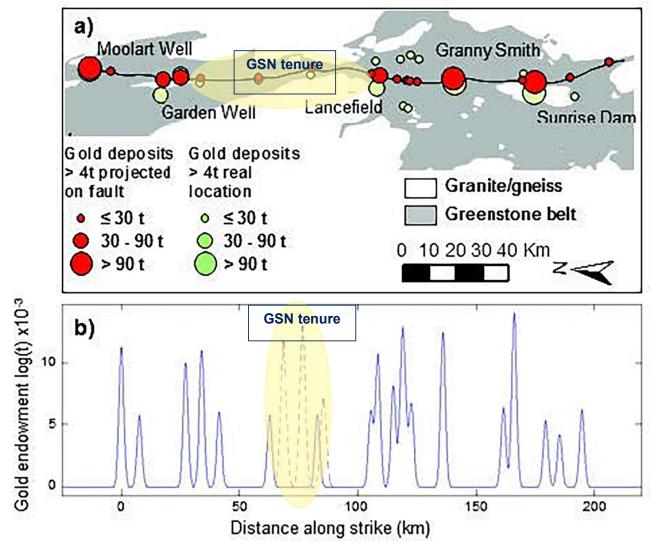


Figure 1. (a) Major gold deposits along the Duketon-Laverton fault zone (Eastern Goldfields Province) showing the position of GSN tenure and (b) Distributional scalogram of the profile showing the spatial distribution of gold endowment across all scales with prediction of missing repeat of major mineralisation within GSN tenure. Adapted from Doutre et al., 2015.



Target refinement and ranking

GSN has undertaken significant digitising of pre-digital historical data, which has added to its surface and drilling databases and, after levelling, has allowed reinterpretation and refined targeting from regional data. This data, while being analysed in-house, has also been outsourced to multiple external consultants with significant experience in the Duketon–Laverton Belt for independent reviews. This work, which includes detailed structural mapping and interpretation, limited drilling, ground truthing and geophysical and geochemical analysis, has culminated in the identification of several targets, which are unanimously favoured by all geologists to have potential to host the next major gold deposit in the belt (Figure 2).

As part of the structural review, a number of favourable sets of structures have been highlighted, including intersecting north and northeast or northwest structures with a mineralisation model likely to be similar to that of other complex, highly deformed and narrow gold provinces globally with similar structural architecture where high order faults are linked with accompanying drag folds. Within these structural settings, targets have been further narrowed with newly acquired mapping and structural data providing rheological and geochemical context for potential gold conduits and traps. In the Duketon Belt, gold-bearing fluids are known to occur both on lithological contacts within the forementioned settings and within both mafic and felsic intrusive lithologies. Three main mantle-tapping structures are known to host major gold deposits in the Duketon Belt, and all of which converge within GSN's tenure (Figure 3).

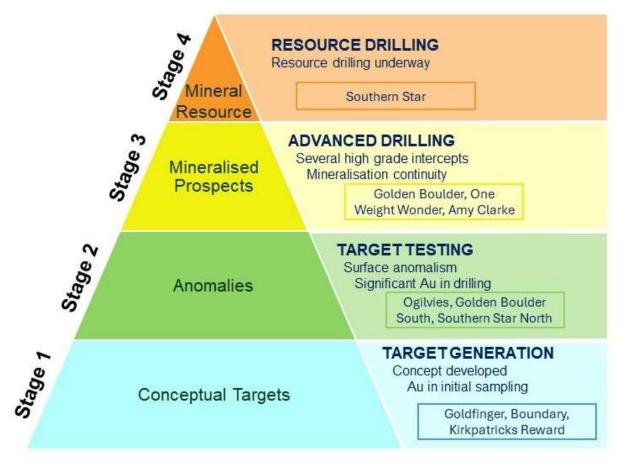


Figure 2. GSN ranking of exploration targets with Duketon Gold Project. See Figure 3 below for target locations.



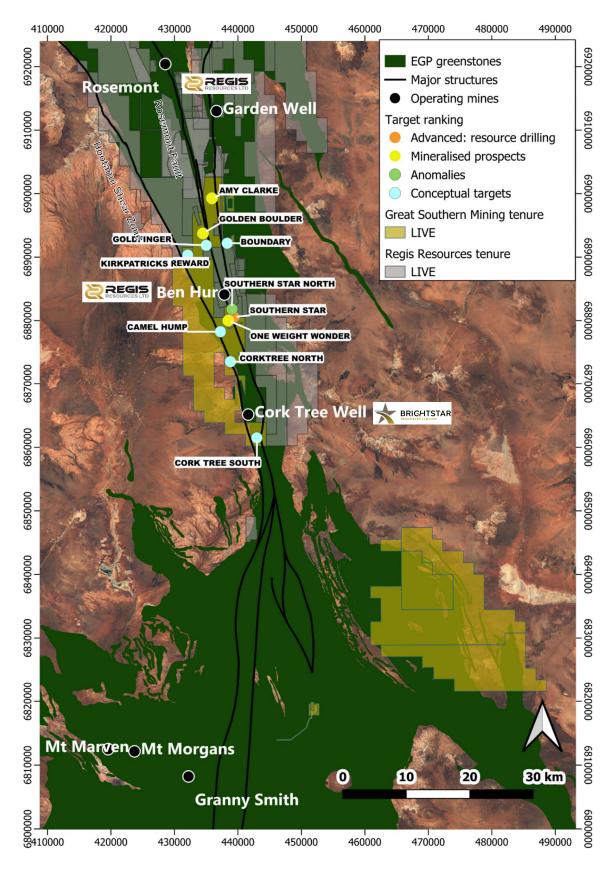


Figure 3. GSN tenement holding within the Duketon Belt highlighting key target areas, gold bearing structures, operational and historical gold mines and processing facilities to the north on Regis Resources' NL (RRL) tenure.



Recently uncovered historical data adds weight to known target areas

A comprehensive review of historical data has uncovered some historical drill intercepts which support the prospectivity of a known target area on the Garden Well Trend, namely the Boundary target (Figure 4). As with Southern Star, Golden Boulder and Amy Clarke, Boundary will be a focus for GSN's upcoming field season, now underway. At Boundary, historical drilling highlights include 2m @ 1.4 g/t gold from 14m in BHP RC drill hole PBY-5 and 10m @ 0.5 g/t gold from surface in Kennecott RAB hole 202.

Figure 4 shows how anomalous gold was historically noted on a northeast shear, which intercepts the Garden Well structural trend. The mineralised shear extends for 1.4 km at the Boundary prospect, with approximately 1 km to the north of the anomalous intercept and 400 m to the south. Hole PBY-5 intersected sheared ultramafic, weakly sulphidic cherts, and black shales. This stratigraphic and structural setting is analogous to that at Garden Well, which is located north along the same main structural zone, indicating that the Boundary prospect could be a southern repeat of Garden Well (Figure 5).

In addition to continuing soil sampling and detailed structural mapping in these key target areas, GSN is planning detailed geophysical surveys in order to accurately map the structural architecture of the prospects and refine targeting at depth.

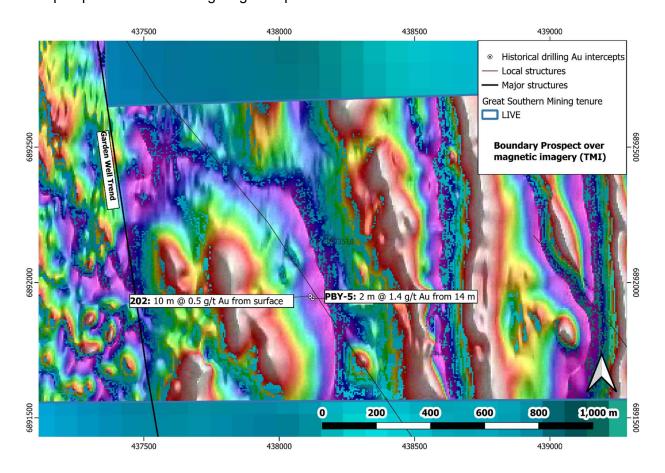


Figure 4. Map of the Boundary prospect showing historic drill intercepts and interpreted structures, interpreted to provide a favourable setting for gold mineralisation in the Duketon Belt.



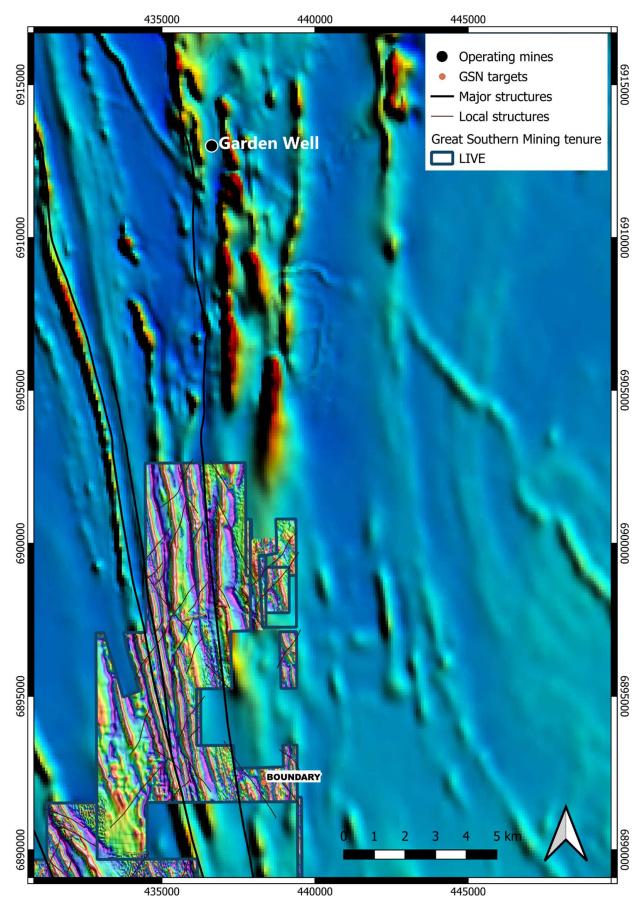


Figure 5. Location and structural setting of the Boundary target compared with the Garden Well gold deposit to the north, shown over regional magnetics.





Figure 6. Sheared ultramafic rocks sub-cropping at the Boundary prospect, which occur on a sheared contact with sedimentary rocks, and is analogous to the Garden Well gold deposit.



Figure 7. Fieldwork continues at the Duketon Project



About Great Southern Mining

Great Southern Mining Limited is a leading Australian listed exploration company. With significant land holdings in the world-renowned mining districts of Laverton in Western Australia (Figure 8) and Mt Carlton in north Queensland, all projects are located within 40km of operating mills and major operations.

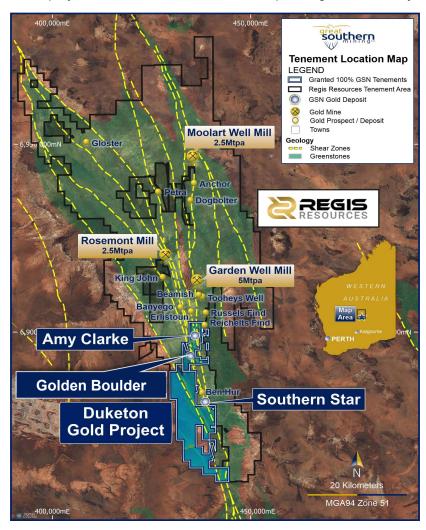


Figure 8. Plan view of GSN's tenement holding in the Duketon Gold Belt highlighting the locations of prospects and proximity to Regis' Garden Well, Rosemont and Moolart Well mills. Mineralised gold trends are in delineated in yellow.

The release of this ASX announcement was authorised by the Managing Director on behalf of the Board of Directors of the Company.

For Further Information Contact:

Matthew Keane Managing Director

On Investor Hub: GSN Investor Hub link

Email: admin@gsml.com.au
Phone: +61 8 9240 4111



Competent Person's Statement

The information in this report that relates to exploration results at the Duketon Gold Project is based on, and fairly represents, information and supporting documentation compiled and/or reviewed by Ms Rachel Backus. Ms Backus is an employee and Senior Exploration Geologist of Resourceful Exploration Services Pty Ltd (ABN 29 661 905 193) and has been engaged by Great Southern Mining Limited. She has sufficient experience relevant to the assessment and of this style of mineralisation to qualify as a Competent Person as defined by the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves – The JORC Code (2012)". Ms Backus consents to the inclusion in this report of the matters based on the information in the form and context in which they appear.

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

	Commentary										
Sampling	PBY-5: The 1 m drill samples were composited over 2 m.										
techniques	202: composited in 5-metre composites but no other information is available from the historical reporting.										
	HoleID	HoleID Sampl Depth eID From		Dept h To	Field Prep	old Prep Date Sampled	Comments	Au ppm	As ppm		
								0.02 LDL			
							H'PAN S'CRETE / CHERTY	AU-PM3			
	202	68710	0.00	5.00	Unknown	24/07/1987	META	0.429	90		
	202	68711	5.00	10.0 0	Unknown	24/07/1987	FERUC. CHERT, +U/MAF INTERBEDDED	0.49	280		
	PBY-5	L9808	0	2	Unknown	25/08/1988		0.06			
	PBY-5	L9809	2	4	Unknown	25/08/1988		<0.02			
	PBY-5	L9810	4	6	Unknown	25/08/1988		<0.02			
	PBY-5	L9811	6	8	Unknown	25/08/1988		<0.02			
	PBY-5	L9812	8	10	Unknown	25/08/1988		<0.02			
	PBY-5	L9813	10	12	Unknown	25/08/1988		0.06			
	PBY-5	L9814	12	14	Unknown	25/08/1988		0.22			
	PBY-5	PBY-5	14	16	Unknown	25/08/1988		1.38			
	PBY-5	PBY-5	16	18	Unknown	25/08/1988		0.28			
	PBY-5	PBY-5	18	20	Unknown	25/08/1988		<0.02			
	PBY-5	PBY-5	20	22	Unknown	25/08/1988		<0.02			
	PBY-5	PBY-5	22	24	Unknown	25/08/1988		<0.02			
	PBY-5	PBY-5	24	26	Unknown	25/08/1988		0.1			
	PBY-5	PBY-5	26	28	Unknown	25/08/1988		0.02			
	PBY-5	PBY-5	28	30	Unknown	25/08/1988		0.04			
	PBY-5	PBY-5	30	32	Unknown	25/08/1988		0.1			
	PBY-5	PBY-5	32	34	Unknown	25/08/1988		0.04			
	PBY-5	PBY-5	34	36	Unknown	25/08/1988		0.06			
	PBY-5	PBY-5	36	38	Unknown	25/08/1988		0.22			
	PBY-5	PBY-5	38	40	Unknown	25/08/1988		0.12			
	PBY-5	PBY-5	40	42	Unknown	25/08/1988		0.06			
	PBY-5	PBY-5	42	44	Unknown	25/08/1988		0.24			
	PBY-5	PBY-5	44	46	Unknown	25/08/1988		0.08			
	PBY-5	PBY-5	46	48	Unknown	25/08/1988		0.02			
rilling	PBY-5	PBY-5	48	50	Unknown	25/08/1988		0.06			
echniques	One reported reverse circulation (RC) hole (PBY-5) was drilled within P38/328 at the Boundary Prospect (A26202).										
Orill sample	The reported hole (202) was drilled rotary air blast (RAB) at 260/-60 azimuth and dip. No drill recovery was reported.										
recovery		,	•								



Criteria	Commentary									
Logging	Soil sample site sites are described noting regolith regime and sample depth. Rock descriptions are also taken in hand-written logs									
Sub- sampling techniques	PBY-5 composites were submitted for gold analysis by AAS with aqua regia digestion (detection limit 0.02 ppm), completed at a BPMA-operated (onsite) laboratory.									
and sample preparation	Hole 202 was composited in 5-metre composites but no other information is available from the historical reporting.									
Quality of assay data and laboratory tests	The quality of the lab data can not be verified as the intercepts are historical, although it is assumed that quality of the results is representative and the nature of the geochemical analysis was exploratory, and mineralised intercepts are of a magnitude commonly noted and in similar geological context to other anomalies in the region. No QAQC is reported.									
Verification of sampling and assaying	Sampling and logging records have been validated against historical descriptions of location and topography.									
Location of data points	All sites were recorded in a historical local grids, which were converted first to AMG84 and then to in MGA94 – Zone 51 by converting with four mapped reference points. Data was than qualitatively validated using historical descriptions and measurements to nearby topographic features. Topographic control in nominal.									
	Site ID	Local_E	Local_N	MGA94_E	MGA94_E	Total Depth	Company	Azimuth	Dip	
	202	9015	13450	438115	6891950	10	Kennecott	260	-60	
	PBY-5	9022	13440	438123	6891942	50	ВРМА	260	-60	
Data spacing and distribution	Data spacing is variable with RAB drilling completed on 120 m spaced lines, with hole spacing between 20 m and 80 m. Individual, targeted RC was used as a follow-up.								between 20	
Orientation of data in relation to geological structure	No sample bias has been detected at this stage. No drilling orientation and/or sampling bias has been recognised at this time.									
Sample security	Sample security for these intercepts is unknown.									
Audits or reviews	No audits or reviews have been conducted.									



Section 2 Reporting of Exploration Results

Criteria	Commentary			
Mineral tenement and land tenure status	The Duketon tenement E38/3518 is in good standing along with the rest of the combined reporting group tenements. Great Southern Mining Ltd, or its wholly-owned subsidiary, Ea Laverton Exploration Pty Ltd, are the holders.			
Exploration done by other parties	Relevant exploration done by other parties are outlined in the body of this report or previous GSN ASX announcements.			
Geology	The Duketon Greenstone Belt is comprised of mafic and ultramafic rocks, felsic volcanic and volcaniclastic rocks, and associated clastic sedimentary rocks. The contacts with bounding granitic rocks are typically intensely deformed. Axial surfaces of folds typically trend north-northwest with limbs commonly sheared by major structures. The major regional scale structures are a key element for large scale gold deposition and three of these mineralised structures strike through the Duketon tenements and are highly prospective areas for gold.			
Drill hole Information	Drill hole data is tabulated in Section 1 of this table.			
Data aggregation methods	Historical anomalies are reported. Metal equivalent values are not reported.			
Relationship between mineralisation widths and intercept lengths	Anomalous intercepts are reported based on the available composite data.			
Diagrams	Relevant diagrams are included in the body of this report.			
Balanced reporting	All matters of importance have been included.			
Other substantive exploration data	All relevant information has been included.			
Further work	Future exploration includes follow-up drilling, mapping, sampling and geophysics, followed by interpretation and targeting. Diagrams highlight the areas of interest for follow-up work.			