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7 December 2017

ASX ANNOUNCEMENT

Maiden lithium Mineral Resource estimate for Sadisdorf project

HIGHLIGHTS

- **Maiden lithium Inferred Mineral Resource estimate of 25 Mt @ 0.45 % Li_2O announced for the Sadisdorf tin-lithium project in Saxony, Germany.**
- **LIT's wholly owned SiLeach® hydrometallurgical process suited to unlocking the lithium value of historical tin deposits such as those at Sadisdorf.**
- **Sadisdorf ideally located to supply the European battery and electric vehicle market.**

MAIDEN LITHIUM RESOURCE ESTIMATE

A maiden lithium Mineral Resource estimate has been completed for the Sadisdorf tin-tungsten project, located in Saxony, Germany. There, Perth-based lithium explorer and processing technology developer Lithium Australia NL (ASX: LIT) is farming into a joint venture (JV) with Tin International AG (refer ASX announcement dated 25 May 2017).

Consultant CSA Global has estimated an Inferred Mineral Resource of 25 million tonnes grading 0.45% Li_2O (refer to Table 1 below), based on re-analysis and re-interpretation of historical drilling and underground sampling at Sadisdorf. Reporting in accordance with JORC 2012 and ASX listing rule 5.8.1 is included in Appendix A of this announcement.

Sadisdorf Tin and Lithium Project Mineral Resource Estimate, as at 23rd November 2017 Classified in accordance with the JORC Code (2012 Edition)			
Classification	**Domain**	**Tonnes (Mt)**	**Li_2O (%)**
Inferred	Inner greisen	17	0.47
Inferred	Outer greisen	8	0.43
Inferred	**Total**	**25**	**0.45**
Notes: MRE defined by 3D wireframe interpretation with sub-cell block modelling. Grades estimated using Ordinary Kriging. The MRE is reported at a cut-off of 0.15% Li (0.3% Li_2O). The block model has been depleted to reflect historical mining.			

Table 1. Inferred Mineral Resource estimate for Sadisdorf.

This result substantially enhances the potential for progressing the historical Sadisdorf tin-tungsten mine to a polymetallic deposit with value contributions from lithium, tin and tungsten, as well as potentially from a range of by-products (e.g. potassium sulphate fertiliser, sodium silicate) made available by virtue of LIT's novel SiLeach® hydrometallurgical technology.

BACKGROUND

Lithium is an important commodity, especially in the manufacture of batteries. According to most analysts, demand for lithium will increase significantly in line with the growing market for electric vehicles (EVs) powered by lithium-ion batteries. German auto-manufacturers are already gearing up to produce large numbers of EVs, as are many other manufacturers globally.

The historic Sadisdorf tin mine is characterised by greisens (altered granites) known to contain abundant lithium mineralisation in the form of zinnwaldite, a lithium mica ideally suited to processing with LIT's 100%-owned SiLeach® process.

Sadisdorf JV partner Tin International AG, previously defined a JORC (2012) tin Mineral Resource (3.36 Mt Inferred Mineral Resource grading 0.44% Sn at a cutoff of 0.25% Sn).

Quantitative X-ray diffraction (QXRD) analysis has shown quantities of lithium-bearing zinnwaldite mica ranging from 9% (average of outer greisen zone) to 12.5% (average of inner greisen zone) with local values in the inner greisen zone of up to 38% zinnwaldite. Zinnwaldite, a lithium mica, can be very easily processed using SiLeach®, making this a prime target for the supply of lithium into the European battery industry.

Preliminary SiLeach® testwork on the Sadisdorf outer greisen material returned encouraging results, with lithium leach extractions of zinnwaldite concentrates from Sadisdorf greisen mineralisation averaging 95%.

Sadisdorf greisen sample	Lithium head grade (ppm)	Li_2O equivalent head grade (%)	Lithium SiLeach® extraction (%)
Greisen 1	2,510	0.54	96.8
Greisen 2	2,250	0.48	97.4
Greisen 3	1,400	0.30	91.0
Average	2,053	0.44	95.0

Table 2. SiLeach® test results for Sadisdorf greisen samples.

Lithium Australia's Managing Director Adrian Griffin commented:

"Our previous testing demonstrates that SiLeach® can unlock the potential of Sadisdorf as a true polymetallic operation, recovering lithium from the residues of conventional tin concentration processes. The size of the Sadisdorf resource is already significant, with the potential to feed a 25,000 tonnes per annum lithium carbonate plant for 10 years. Further exploration is likely to expand the resource significantly. It is noteworthy that Sadisdorf has similar grades to those of the nearby Cinovec deposit (Czech Republic) and is not far from the Zinnwald deposit of Deutsche Lithium GmbH. All of these deposits have similar characteristics, making them difficult, if not impossible, to commercialise using conventional lithium processing technology – SiLeach® provides the solution".

"We are in the backyard of the most rapidly expanding consumption of lithium outside China, with most European vehicle manufacturers announcing their plans to go electric. The synergies are obvious, and at Lithium Australia we are well placed to take advantage of that expanding market."

Adrian Griffin
Managing Director
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About Lithium Australia NL

LIT is a dedicated developer of disruptive lithium extraction technologies and 100% owner of the SiLeach® process for the recovery of lithium from all silicates. LIT has strategic alliances with, and investments in, a number of companies, potentially providing it with access to a diversified lithium mineral inventory. LIT aspires to create a union between resources and the best available technology, and in so doing establish a global lithium processing business.

MEDIA CONTACT

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Competent Persons' Statement – Lithium Mineral Resources

The information in this announcement that relates to in situ lithium Mineral Resources for Sadisdorf is based on and fairly represents information compiled by Mr Thomas Branch under the direction and supervision of Dr Andrew Scogings who are both full-time employees of CSA Global Pty Ltd, in accordance with the requirements of the JORC Code 2012. Dr Scogings takes overall responsibility for the report. Dr Scogings is a Member of both the Australian Institute of Geoscientists and Australasian Institute of Mining and Metallurgy and has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration, and to the activity he is undertaking, to qualify as a Competent Person in terms of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (JORC Code 2012). Dr Scogings consents to the inclusion of such information in this announcement in the form and context in which it appears.

ASX Listing Rule 5.8.1 summary

The following summary presents a fair and balanced representation of the information contained within the Mineral Resource estimate technical report (refer Appendix A):

- Lithium mineralisation occurs within two mineralised units described as the Inner Greisen and the Outer Greisen.
- Lithium assay data was compiled manually from historical hard-copy sources with additional verification analyses of historical pulps using accepted methods at the ISO accredited ALS Loughrea laboratory in Ireland. QXRD and Petrography analysis was also undertaken by ALS on samples from underground workings and historical diamond drill core (DD) pulps and quarter core. The quality of sampling and analysis, as assessed by the Competent Person, is of an acceptable standard for use in a Mineral Resource estimate publicly reported in accordance with the JORC Code.
- Grade estimation was completed using Ordinary Kriging (OK).
- Mineral Resources were estimated within constraining wireframe solids using a nominal 0.15 % wt Lithium cut-off within geological boundaries. The Mineral Resource is quoted from all classified blocks within these wireframe solids.
- The estimate was classified as an Inferred Mineral Resource based on an assessment of the quality and continuity confidence of data from underground mapping and sampling, drill hole sample analytical results, drill hole logging, and measured density values.
- The likelihood of eventual economic extraction is considered in terms of possible open pit or underground mining, favourable metallurgy and potentially favourable logistics to European markets. It is the opinion of the CP that the Sadisdorf tin-lithium deposit could be eventually extracted economically.

This release may include forward-looking statements. These forward-looking statements are not historical facts but rather are based on Lithium Australia NL's current expectations, estimates and assumptions about the industry in which Lithium Australia NL operates, and beliefs and assumptions regarding Lithium Australia NL's future performance. Words such as "anticipates", "expects", "intends", "plans", "believes", "seeks", "estimates", "potential" and similar expressions are intended to identify forward-looking statements. Forward looking statements are only predictions and not guaranteed, and they are subject to known and unknown risks, uncertainties and assumptions, some of which are outside the control of Lithium Australia NL. Actual values, results or events may be materially different to those expressed or implied in this release. 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. Given these uncertainties, recipients are cautioned not to place reliance on forward looking statements. Any forward-looking statements in this release speak only at the date of issue of this release. Subject to any continuing obligations under applicable law and the ASX Listing Rules, Lithium Australia NL does not undertake any obligation to update or revise any information or any of the forward-looking statements in this release or any changes in events, conditions or circumstances on which any such forward looking statement is based.

Appendix A

Summary technical report for Sadisdorf lithium Inferred Mineral Resource

- including JORC (2012) Table 1

MEMORANDUM

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To:	Adrian Griffin
Cc:	Albert Gruber
Date:	4/12/2017
From:	Thomas Branch, Andrew Scogings and Galen White
CSA Global Report Nº:	R427.2017

Re: **Maiden Lithium Mineral Resource estimate for the Sadisdorf Deposit, Saxony, Germany**

TERMS OF REFERENCE

Lithium Australia NL ("LIT") requested that CSA Global Pty Ltd ("CSA Global") provide them with a maiden lithium Mineral Resource estimate (MRE) for the Sadisdorf Deposit in Germany.

The Sadisdorf project is owned by Tin International AG ("TIN"), who are an unlisted Germany-based company that focuses on the exploration and development of the Gottesberg tin project and Sadisdorf tin-lithium project.

Lithium Australia NL is an Australia-based company, listed on the Australian Stock Exchange (ASX:LIT) and are engaged in the acquisition, mineral exploration and process development of lithium projects.

LIT and TIN have executed a joint venture agreement, as set out in an ASX release dated 25 May 2017, available on LIT's website.

SUMMARY

The Sadisdorf MRE is set out in Table 1 below. Summary supporting technical information is set out in this memorandum and JORC 2012 Table 1 disclosure is contained in the Appendix.

Table 1: Mineral Resource Estimate for the Sadisdorf Deposit

Sadisdorf Tin and Lithium Project Mineral Resource Estimate, as at 23rd November 2017 Classified in accordance with the JORC Code (2012 Edition)				
Classification	**Domain**	**MTonnes**	**Li_2O %**	**Density t/m^3**
Inferred Mineral Resource	Inner Greisen	17	0.47	2.70
	Outer Greisen	8	0.43	2.76
	Total	25	0.45	2.72

MRE defined by 3D wireframe interpretation with sub-cell block modelling.

Grades estimated using Ordinary Kriging.

The MRE is reported at a cut-off of 0.15% Li (0.3% Li_2O).

The block model has been depleted to reflect historical mining.

COMPETENT PERSON'S STATEMENT – LITHIUM MINERAL RESOURCES

The information in this announcement that relates to in situ lithium Mineral Resources for Sadisdorf is based on and fairly represents information compiled by Thomas Branch under the direction and supervision of Andrew Scogings who are both full-time employees of CSA Global Pty Ltd, in accordance with the requirements of the JORC Code 2012. Dr Scogings takes overall responsibility for the report. Dr Scogings is a Member of both the Australian Institute of Geoscientists and Australasian Institute of Mining and Metallurgy and has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration, and to the activity he is undertaking, to qualify as a Competent Person ("CP") in terms of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (JORC Code 2012). Dr Scogings consents to the inclusion of such information in this announcement in the form and context in which it appears.

ASX LISTING RULE 5.8.1 SUMMARY

The following summary presents a fair and balanced representation of the information contained within this Mineral Resource Estimate report:

- Lithium mineralisation occurs within two mineralised units described as the Inner Greisen and the Outer Greisen.
- Lithium assay data was compiled manually from historical hard-copy sources with additional verification analyses of historical pulps using accepted methods at the ISO accredited ALS Loughrea laboratory in Ireland. QXRD and Petrography analysis was also undertaken by ALS on samples from underground workings and historical diamond drill core (DD) pulps and quarter core. The quality of sampling and analysis, as assessed by the Competent Person, is of an acceptable standard for use in a Mineral Resource estimate publicly reported in accordance with the JORC Code.
- Grade estimation was completed using Ordinary Kriging (OK).
- Mineral Resources were estimated within constraining wireframe solids using a nominal 0.15 %wt Lithium cut-off within geological boundaries. The Mineral Resource is quoted from all classified blocks within these wireframe solids.
- The estimate was classified as an Inferred Mineral Resource based on an assessment of the quality and continuity confidence of data from underground mapping and sampling, drill hole sample analytical results, drill hole logging, and measured density values.
- The likelihood of eventual economic extraction is considered in terms of possible open pit or underground mining, favourable metallurgy and potentially favourable logistics to European markets. It is the opinion of the CP that the Sadisdorf tin-lithium deposit could be eventually extracted economically.

PROJECT OVERVIEW

History

Sadisdorf is a historic tin mine located in Saxony, Germany, close to the border with the Czech Republic. The closest cities to the project are Dresden, Altenberg, Chemnitz and Freiberg.

The first recorded mining was in the 16th century, with small scale surface mining being undertaken periodically until the 1900's. Between 1666 and 1769 it is thought that some 75,000t of ore was mined (Reh et al, 1950). During the 20th century underground mining was undertaken, including production between 1947 and 1953 of approximately 47,500 tonnes of ore at a grade of 0.62 % Sn (Tischendorf & Peterson, 1976). In addition to Sn, Cu, WO_3, MOS_2 and Bi have also been mined historically (1914-1921) as accessories.

Mining ceased in 1953, and the bottom levels of the mine were allowed to fill with water.

Property Description and Location

The Sadisdorf project is located in Saxony, south eastern Germany, close to the border with the Czech Republic. A plan of the project area presented in Figure 1 and licence corner coordinates tabulated in Table 2.

Tin International AG holds the exploration licence of the Sadisdorf project. The licence (reference number 12-4741.1/668), covers an area of 2,250,300 m^2, and was granted to TIN by the Upper Mining Authority of Saxony on 6th February 2013. On the 19th September 2017 the licence was extended for another three years until 31st December 2020. The licence allows exploration for tin, tungsten, copper, molybdenum, bismuth, tantalum, zinc, indium, gallium, germanium, gold, silver, cesium, rhenium, lithium and vanadium. LIT and TIN have executed a joint venture agreement, as set out in a public release dated 25 May 2017 on LIT's website.

Table 2: Sadisdorf Project licence coordinates

Corner	X	Y
1	5404113	5633416
2	5406120	5633880
3	5406114	5632793
4	5404996	5632235
5	5404574	5632202

Accessibility and Infrastructure

The concession area is situated approximately 24 km south of the city of Dresden, a modern city with a population of 0.5 million.

The area has a moderate topography, dropping towards the south east into a river valley with the Sadisdorf mine located on forested land surrounded by farm lands. It can be accessed by public road and there are a number of dirt tracks across the area, which are easily accessible.

There is also direct access to the national electrical grid and local water sources are common.

DATUM AND PROJECTION

The coordinate data system used historically is that of the Deutsches Hauptdreiecksnetz system and the Gauss Zone 5 grid. Using Franson CoordTrans v2.3, CSA has converted data to WGS84 UTM Zone 33N.

SOURCES OF INFORMATION

LIT and TIN supplied CSA with the following information pertinent to the project:

- Historic drill hole data files (in Excel format).
- Recent confirmatory sampling completed by LIT, comprising underground grab sampling, drill core, and underground sample pulps.
- Historic maps and level plans.
- Petrography (ALS, 2017a) analyses completed in 2017 by ALS Ireland and QXRD study (ALS, 2017b) completed in 2017 by ALS Perth
- NAGROM metallurgical testing on bulk composite samples from the Outer Greisen (SiLeach 2017).

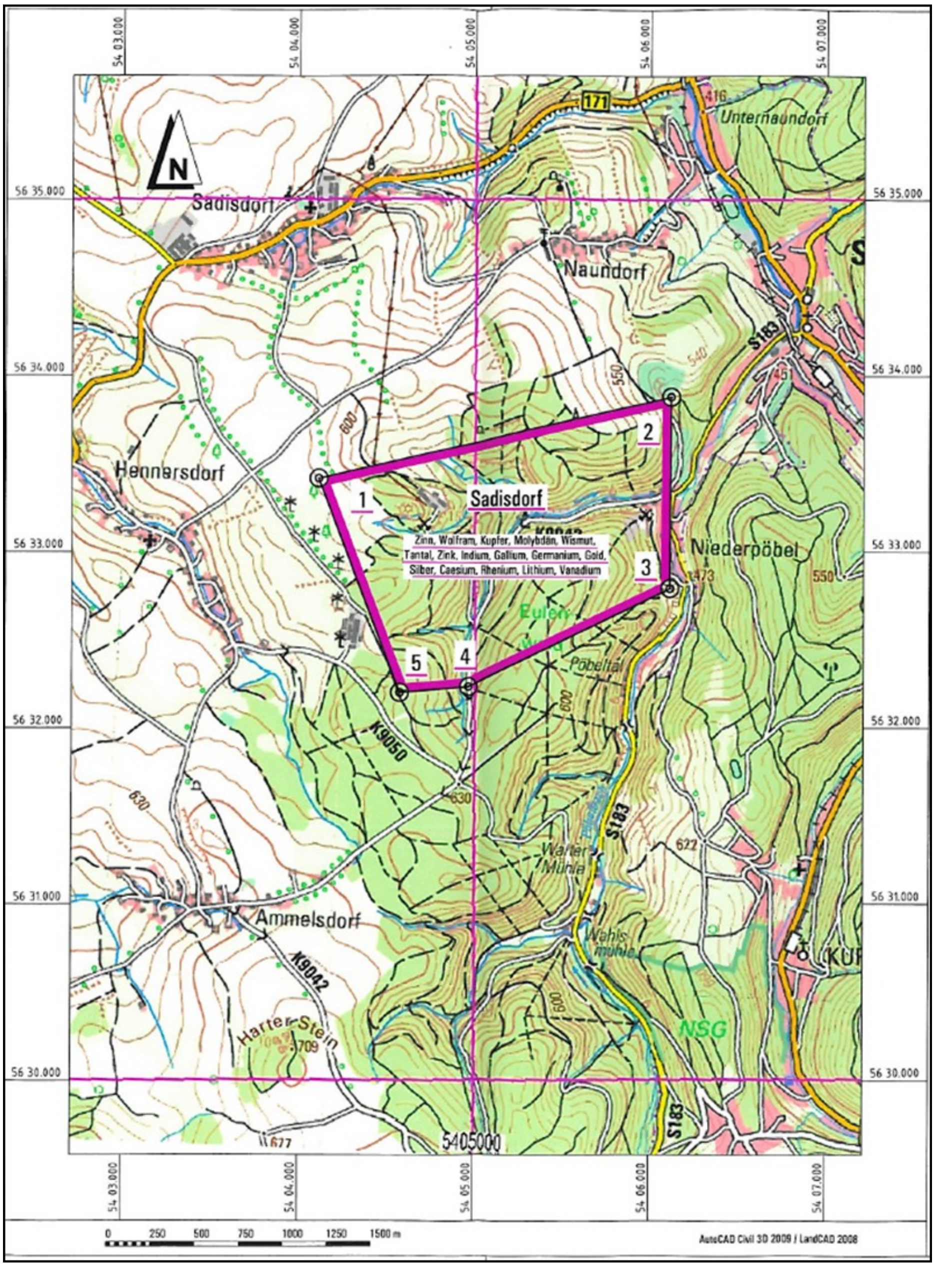


Figure 1: Sadisdorf Project area showing the Outline of the Exploration Licence (TIN)

GEOLOGY

Regional Geology

The project area is located within the Eastern Erzgebirge region of Germany (Figure 2).

The regional geology is dominated by late Variscan orogenic structures and magmatic events, including crustal extension and rapid uplift. As a result, tectonic fracture activation in the upper crust is observed, localised in upper Proterozoic gneisses in the greater Sadisdorf area. Volcanic and sub-volcanic rocks intruded along a NNW-SSE striking fault zone and formed the Teplice-Altenberg granite. Subsequent caldera collapse caused pipe-like apical intrusions in the area, predominantly leucogranites. These intrusives are structurally and genetically connected with polyphase formations of explosive and intrusive breccias. Commonly granite zonation is observed, between syeno - monzo - albite granites (G1-G4) with associated metasomatic mineralisation. Granite related tin, tungsten and lithium mineralisation occurs in the following settings:

- Lode/stringer type mineralisation (endo-/exo-contact),
- Stockworks (endo-/exo-contact),
- Mineralised cupolas and bed-like bodies (endo contact),
- Breccia pipes (endo-/exo contact) and bedding parallel metasomatic mineralisation.

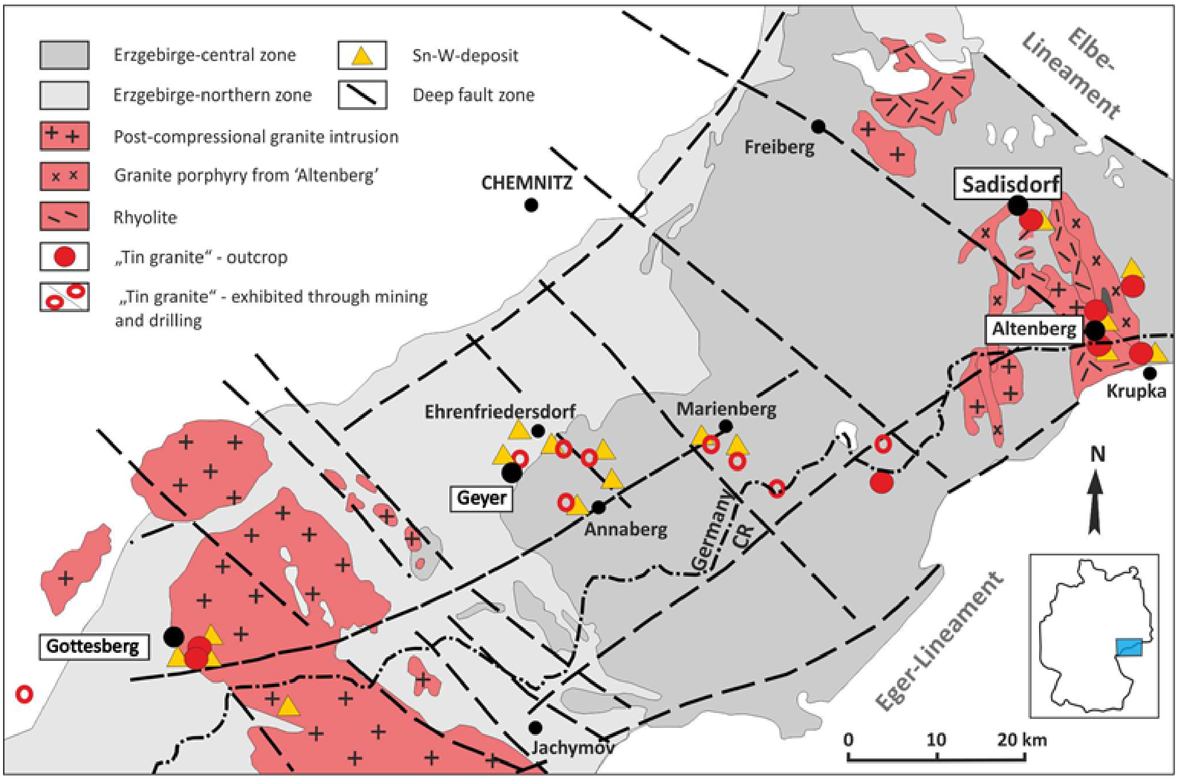


Figure 2: Sketch Map showing the regional distribution of Variscan silicic plutonic and volcanic rocks in the Erzgebirge, and the location of Sadisdorf (modified after Seifert & Kempe, 1994).

Project Geology

The Sadisdorf project is located at the NW edge of the Teplice-Altenberg caldera at the intersection of a NNW-SSE striking cataclasite zone and a NE-SW trending brittle fracture zone related to the regional tectonic regime. These intersecting structures produced a polymict cataclastic breccia zone emplaced in gneissic country rock.

Four deposit-relevant phases of granites intruded into this zone. The earliest (G1-3) granites formed stock- to pipe-like intrusions. The subsequent granite intruded at the N edge of the G1-3 granites and had no further influence on the formation of the Sadisdorf tin deposit. The last (G4) granite formed a dome-shaped stock within the NW and E portion of the G1-3 granites. The G4 granite shows a large grained quartz pegmatite zone in the upper part which is completely silicified in its apex (Figure 3). The granites G1-G3 are generally fine-grained porphyric, the G4 granite fine-to medium-grained.

Mineralisation is related to the G1 – G4 intrusions and their related metasomatic processes. Relative to depth, the following styles of mineralisation are important at Sadisdorf, with the uppermost (in mRL) being listed first.

Outer Greisen:

- Vein-/veinlet- to lode-like stockwork (or breccia) mineralisation, structurally controlled (50-60 degrees strike) and accompanied by zones of greisenisation (G1-3, gneiss). **This is the dominant tin-bearing phase, with a larger, wider halo associated with lithium bearing Outer Greisen and referred to as the "LOG".**
- Tube- or pipe-like greisen zones with smaller (<10m) less continuous pipe-shaped metablastite high grade zones (G1-3, gneiss): **associated with discrete tin-bearing phases**

Quartz Bell ("quartzglocke"):

- Quartz-rich metasomatite situated within the upper part of the G4 granite. **This is a low lithium, high tungsten zone and mostly mined out**

Inner Greisen cupola zone:

- This is located within the upper contact of the G4 granite and host gneiss. **This is the largest lithium-bearing domain and referred to as the Inner Greisen; "LIG".**

See Figure 4 for the 2017 mineralisation model (within which lithium resource were estimated) and Figure 5 for core photographs of Inner and Outer Greisens.

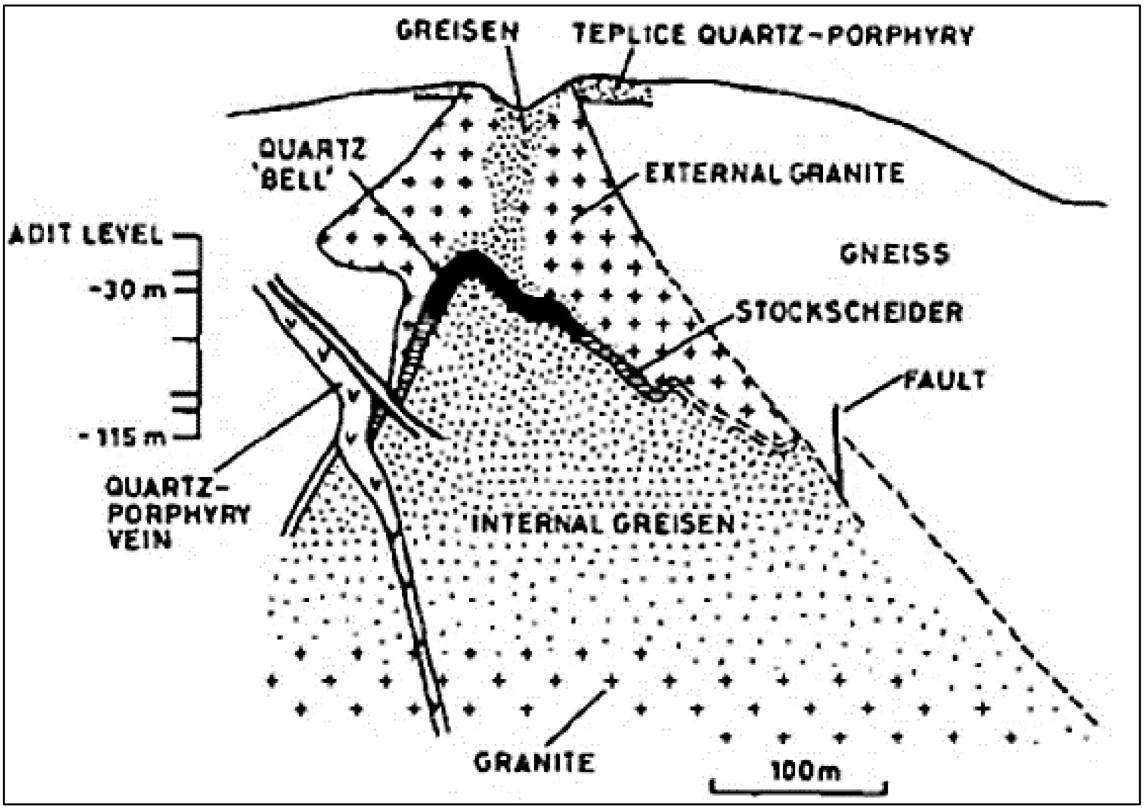


Figure 3: Proposed genetic model of Sadisdorf Sn-Li Deposit.

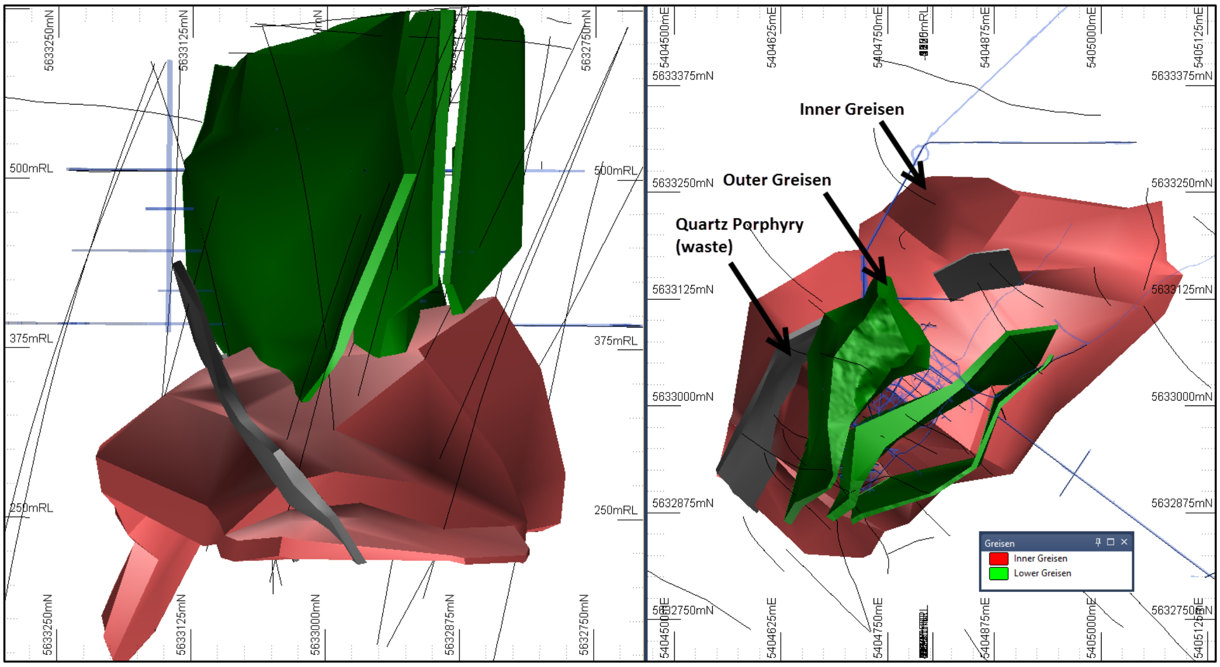


Figure 4: Digital geological lithium model (source: CSA, 2017)

Figure 5: Photos of core from Sadisdorf showing the significant textural difference between the Outer (top) and Inner (bottom) greisens (source CSA, 2017).

MINERALOGY

Petrography

Six thin sections and polished blocks were examined by ALS (2017[a]) with particular reference to tin and lithium-bearing minerals. The reader is referred to Figure 6 for general sample locations relative to lithium mineralisation domains.

Four of the samples were described as pegmatite vein samples, consisting of coarse-grained quartz with interstitial muscovite and medium-grained clinopyroxene. These were all sourced from the LIG domain (Figure 9, Table 3 and Table 4). In the light of field observations, CSA Global is however of the opinion that the term 'coarse grained greisen' may be more apt than the 'pegmatite' description used in the ALS petrographic report (ALS,2017b).

It was concluded that the extinction angle of the clinopyroxene was about 35 degrees which was considered too large for spodumene. The association of chlorite as an alteration product suggests that the pyroxene is a Mg or Fe-bearing phase. ALS recommended microprobe analysis to determine mineral compositions.

ALS considered it likely that the lithium content of the samples is contained in the muscovite-type minerals such as zinnwaldite or lepidolite.

Cassiterite was a trace phase in these pegmatite samples, being present as disseminated crystals. It is generally fine-grained and usually located interstitial to quartz and muscovite.

The remaining two samples are fine-grained quartz-biotite schists (Figure 8, Table 3 and Table 4) that have been variably intruded by quartz-rich veins. There was no obvious source of Li mineralisation within these samples beyond the mica phases. These two samples were from the LOG domain

Fine-grained cassiterite mineralisation was noted to be closely associated with intrusive quartz veinlets, often associated with fluorite (Figure 8 and Figure 10). The cassiterite is usually present on the inner edge of the vein boundary and within the alteration selvage in the groundmass. ALS noted that the cassiterite content of these samples is higher than the pegmatite samples.

Table 3: Petrographic sample ID and brief lithology descriptions

ID	Domain	Description
C17-01	LIG	Quartz muscovite pyroxene pegmatite
C17-02	LOG	Biotite schist with quartz veins
C17-03	LOG	Biotite schist with quartz veins
C17-09	LIG	Quartz muscovite albite pyroxene pegmatite
C17-15	LIG	Quartz muscovite albite pyroxene pegmatite
C17-16	LIG	Quartz muscovite albite pyroxene pegmatite

Table 4: Petrographic samples – diagnostic minerals

ID	Quartz	Muscovite	Biotite	Feldspar	Pyroxene	Cassiterite	Fluorite
C17-01	43.4	47.3			3	0.3	0.2
C17-02	52.5		45.3			1	0.4
C17-03	73.4		23			2.7	0.2
C17-09	56.5	17		18.6	4.7		
C17-15	43.3	29.7		18	5.5		0.1
C17-16	34	18.2		35.7	10.4		

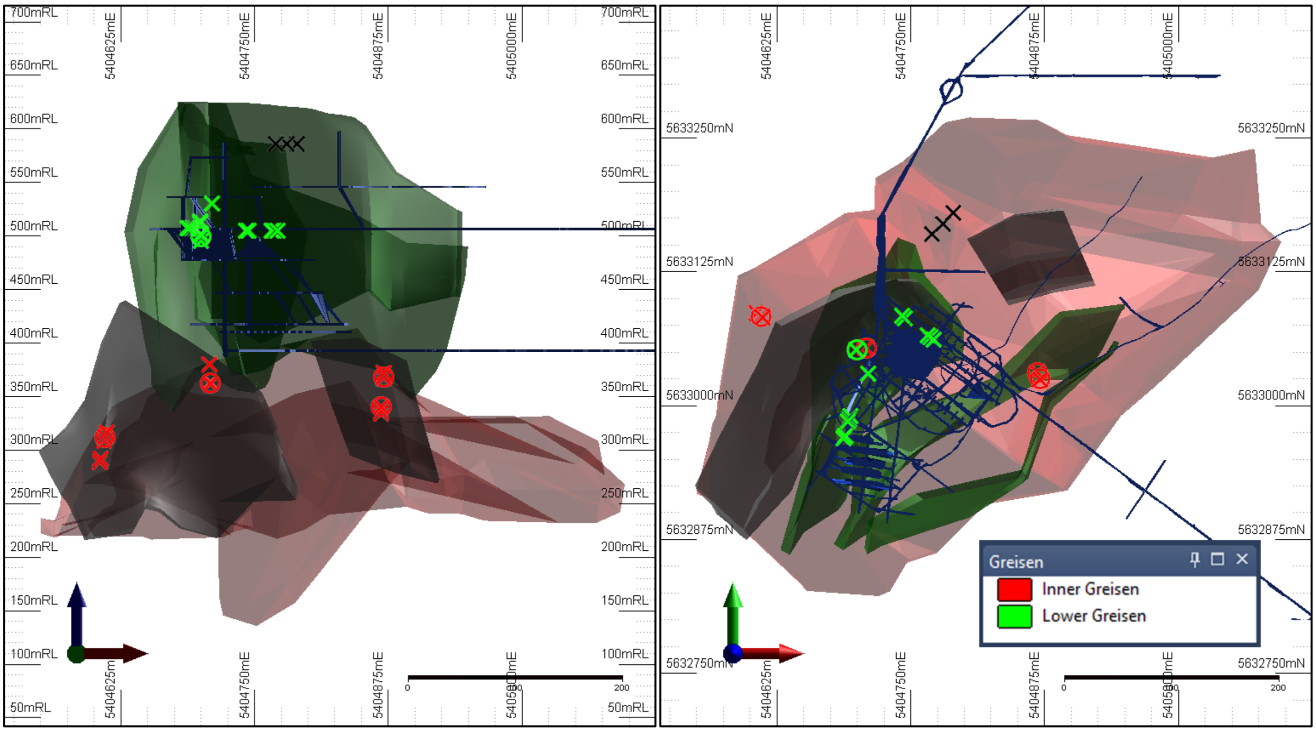


Figure 6: View of the mineralisation model from the south (left) and plan (right) showing petrographic sample positions (circles) and QXRD sample positions (crosses).

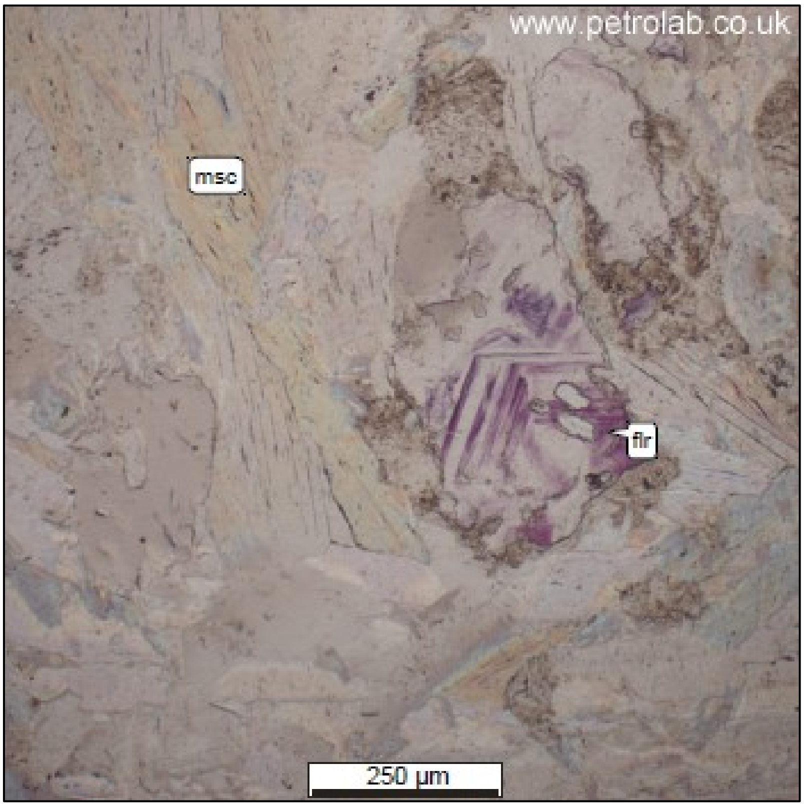


Photo 1:

Figure 7: *Photomicrograph of pegmatite showing interstitial fluorite within muscovite. Sample C17-03*

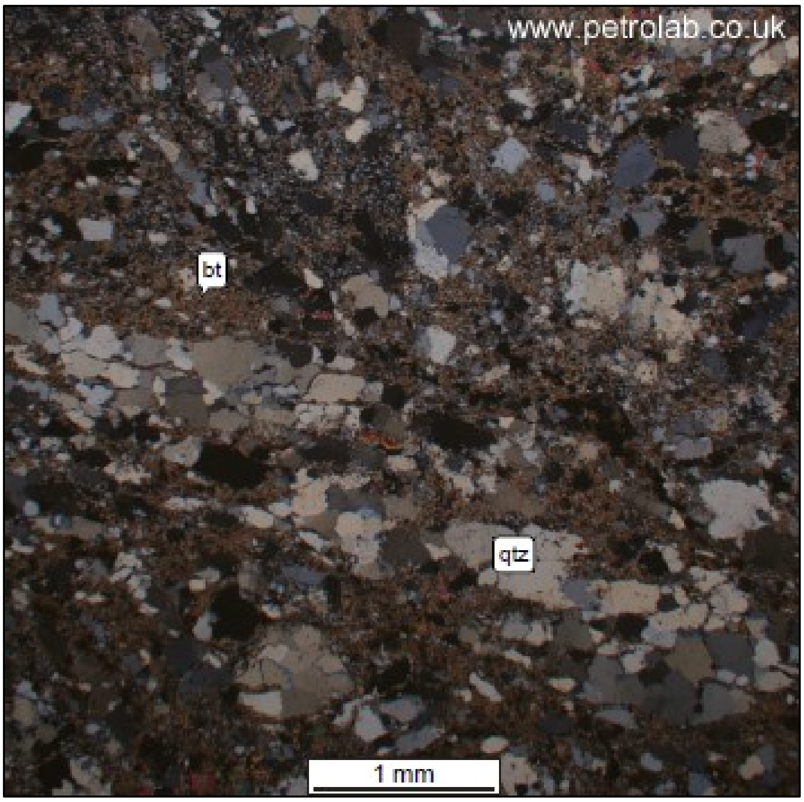


Figure 8: *Photomicrograph of biotite schist showing fabric of alternating quartz and biotite-rich domains. Sample C17-03*

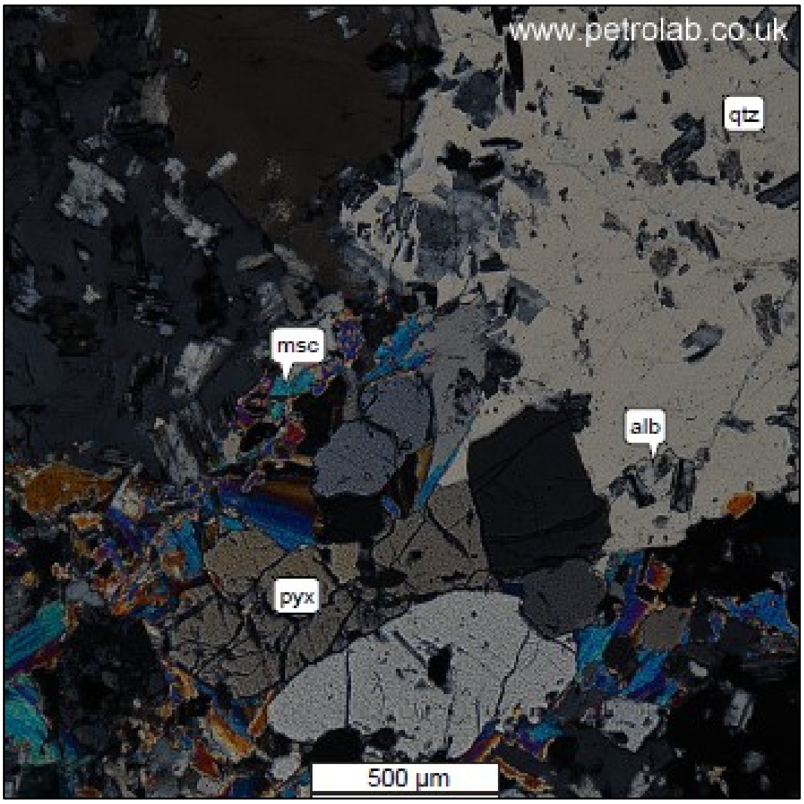


Figure 9: Photomicrograph of pegmatitic quartz with albite inclusions and interstitial pyroxene and muscovite. Sample C17-09

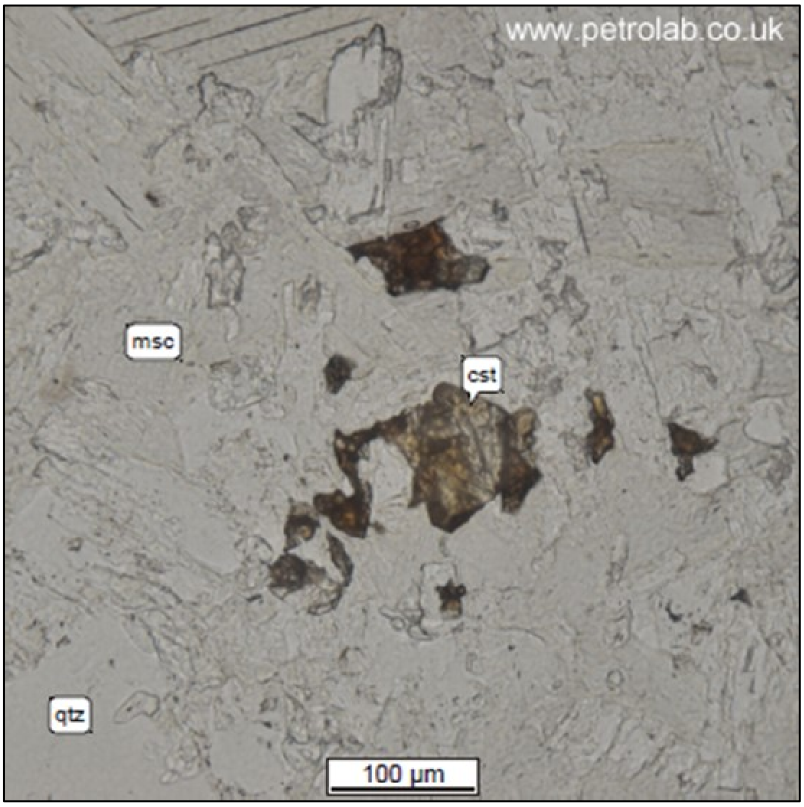


Figure 10: Photomicrograph of coarse-grained quartz and muscovite with fine-grained interstitial cassiterite. Sample C17-15

XRD Analysis

ALS Perth

A batch of 34 samples was submitted to ALS Perth for semi-quantitative XRD analysis. The equipment used was a PANalytical Empyrean instrument, with copper radiation operating at 40 kv and 40 mA (ALS, 2017[b]). The samples were pressed into a back-packed sample holder to minimize preferred orientation of the particles. Powder X-ray diffraction (XRD) was used to analyse the samples and a combination of matrix flushing and reference intensity ratio (RIR) derived constants used to quantify minerals identified (ALS, 2017[b]).

XRD Results

Refer to Figure 6 for generalised sample locations relative to lithium mineralisation domains.

- Quartz and micas are the dominant minerals in all samples
- The dominant micas are from the polylithionite - siderophyllite series, apparently close to zinnwaldite in composition
- More than one type of mica from the polylithionite - zinnwaldite - siderophyllite series is present, in addition to muscovite in most samples, which made quantification difficult. This may have resulted in the overestimation of 'zinnwaldite' in some samples, in particular C17-05, C17-08, C17-09 and C17-14
- Plagioclase is close to albite in composition
- K-feldspar appears to be predominantly microcline
- Beryl was identified in two samples from the Inner Greisen
- Barite was identified in two samples from the Inner Greisen
- Cassiterite is present in most samples
- Minor amounts of fluorite are present in most samples
- Topaz is present in all samples
- Spodumene was 'questioned' in very few samples, as was tourmaline
- Minor amounts of zeolite were identified but the exact type could not be determined
- More than one amphibole is present, but the exact species could not be determined.

XRD – Microanalysis Australia

Three samples from the Sadisdorf mine were submitted in November 2016 by Nagrom to Microanalysis for semi-quantitative XRD analysis, the results of which are reported in Table 4. These samples were taken from underground exposures within the Outer Greisen.

Three surface dump samples at the Sadisdorf mine were also submitted in September 2017 by Nagrom to Microanalysis Australia for semi-quantitative XRD analysis, the results of which are reported in Table 10. Based on clear macroscopic observations, these samples are identified as from the Inner Greisen and lower Quartzglocke.

Petrography and XRD Conclusions

The XRD and Petrography results have been tabulated and sorted by mineralisation domain. The reader is referred to:

- Table 5 to Table 6: for 2017 petrographic and XRD sample descriptions with Li and Sn values
- Table 7 and Table 8: for 2017 XRD results
- Table 9 and Table 10: for 2016 XRD results

From the XRD and Petrography results CSA concludes that:

- Although ALS notes that "the polylithionite phases identified represent the best match available for the micaceous material from the ICDD 4+ database. Due to the similar crystalline habits of many mica minerals, this identification should be treated as confirmation of the presence of a mica and not verification of a species of mica. Polylithionite is part of a solid solution series with trilithionite and zinnwaldite. Both of these minerals had patterns similar to polylithionite and so these can be considered interchangeable."
- However; in the absence of identifying an alternative lithium bearing species the results overwhelming support the supposition that lithium is hosted within a polylithionite -zinnwaldite - siderophyllite series. **Microprobe analysis is recommended to confirm this.**
- This mineralogy supports LIT's proposed processing method which is based on the SiLeach® for processing of lithium micas.

Table 5: LOG domain - petrographic and XRD sample descriptions with Li and Sn values

Type	Location	Lith Type	LabID	Li	Sn
				ppm	%
historic pulp	Drillhole	GN	P17-01	2,800	0.23
historic pulp	Drillhole	GN	P17-02	2,310	0.24
historic pulp	UG - 0m Level	GN	P17-03	2,270	0.70
historic pulp	Drillhole	GN	P17-04	2,840	0.23
historic pulp	Drillhole	GN	P17-05	3,330	0.34
historic pulp	UG - 0m Level	G1	P17-11	2,209	1.50
historic pulp	UG - 0m Level	G1	P17-12	3,312	0.72
historic pulp	UG - 0m Level	GN	P17-13	2,280	0.08
historic pulp	UG - 0m Level	G1	P17-14	3,737	0.27
historic pulp	UG - 0m Level	G1	P17-15	3,737	0.65
historic pulp	UG - 0m Level	G1	P17-16	3,737	0.57
historic pulp	UG - 0m Level	G3	P17-17	2,050	0.27
historic pulp	UG - 0m Level	G3	P17-18	2,020	0.37
historic pulp	UG - 0m Level	GN	P17-19	2,210	0.06
historic pulp	UG - 0m Level	GN	P17-20	2,350	0.07
historic core	Drillhole	GN	C17-02	2,430	0.26
historic core	Drillhole	GN	C17-03	2,430	0.26

Table 6: LIG domain - petrographic and XRD sample descriptions with Li and Sn values

Type	Location	Lith Type	LabID	Li	Sn
				ppm	%
historic core	Drillhole	G4	C17-04	4,290	0.04
historic core	Drillhole	G4	C17-05	5,230	0.03
historic core	Drillhole	G4	C17-06	265	0.64
historic core	Drillhole	G4	C17-07	3,320	0.02
historic core	Drillhole	G4	C17-08	9,220	0.02
historic core	Drillhole	G4	C17-09	2,350	0.01
historic core	Drillhole	G4	C17-10	2,940	0.17
historic core	Drillhole	G4	C17-11	3,250	0.15
historic core	Drillhole	G4	C17-12	5,780	0.02
historic core	Drillhole	G4	C17-13	2,130	0.03
historic core	Drillhole	G4	C17-14	6,150	0.54
historic core	Drillhole	G4	C17-15	2,870	0.06
historic core	Drillhole	G4	C17-16	3,750	0.03
historic core	Drillhole	G4	C17-17	3,220	0.03
historic pulp	UG - 0m Level	G4	P17-06	3,310	0.05
historic pulp	UG - 0m Level	G4	P17-07	4,550	0.03
historic pulp	UG - 0m Level	G4	P17-08	4,020	0.12
historic pulp	UG - 0m Level	G4	P17-09	4,975	0.33
historic pulp	UG - 0m Level	G4	P17-10	4,690	0.2
historic core	Drillhole	G4	C17-01	5,260	0.45

Table 7: LOG domain – some key minerals determined by XRD (excluding quartz, which typically forms 50-70 wt %)

Lab ID	Kaolinite	Polylithionite	Muscovite	Plagioclase	Topaz	Beryl	Fluorite	Barite	Cassiterite
	%	%	%	%	%	%	%	%	%
P17-01	8	**8**	7	1	3	0	2	0	< 1
P17-02	10	**8**	8	1	3	0	3	0	< 1
P17-03	2	**10**	15	13	3	0	3	0	2
P17-04	1	**10**	11	6	3	0	2	0	< 1
P17-05	2	**9**	7	3	5	0	1	0	1
P17-11	2	**12**	7	1	2	0	1	0	3
P17-12	1	**9**	7	1	3	0	1	0	2
P17-13	2	**10**	9	1	6	0	1	0	< 1
P17-14	1	**10**	7	2	4	0	1	0	1
P17-15	5	**9**	6	1	3	0	1	0	1
P17-16	3	**13**	6	1	3	0	2	0	1
P17-17	6	**8**	6	7	3	0	1	0	< 1
P17-18	6	**6**	6	9	3	0	1	0	1
P17-19	3	**11**	8	1	4	0	2	0	0
P17-20	2	**8**	9	1	5	0	1	0	< 1
P17-01	8	**8**	7	1	3	0	2	0	< 1
P17-02	10	**8**	8	1	3	0	3	0	< 1

Table 8: LIG domain – some key minerals determined by XRD (excluding quartz, which typically forms 50-70 wt %)

Lab ID	Kaolinite	Polylithionite	Muscovite	Plagioclase	Topaz	Beryl	Fluorite	Barite	Cassiterite
	%	%	%	%	%	%	%	%	%
C17-04	5	**14**	10	26	1	0	2	0	< 1
C17-05	5	***18**	6	1	5	0	1	0	< 1
C17-06	0	**1**	7	1	1	0	< 1	0	1
C17-07	2	**8**	6	17	5	0	1	0	< 1
C17-08	6	***38**	2	37	3	0	1	0	0
C17-09	3	***19**	3	27	2	0	1	0	0
C17-10	8	**9**	9	2	2	0	2	0	< 1
C17-11	1	**14**	17	7	2	0	2	0	< 1
C17-12	< 1	**10**	8	2	4	0	< 1	0	0
C17-13	3	**5**	9	3	< 1	0	< 1	0	0
C17-14	7	***24**	9	2	6	0	3	< 1	1
C17-15	2	**14**	7	25	2	0	1	0	0
C17-16	2	**14**	4	< 1	2	0	2	0	1
C17-17	2	**8**	4	14	3	0	2	0	0
P17-06	1	**6**	8	1	3	5	1	0	< 1
P17-07	1	**10**	7	1	2	1	1	0	0
P17-08	2	**8**	7	10	4	0	1	0	< 1
P17-09	5	**12**	7	1	3	0	1	0	1
P17-10	1	**7**	9	1	2	0	2	2	< 1

* Polylithionite may be overestimated in these samples

Table 9: XRD mineralogy and Li content of greisen samples – some key minerals

Description	Lithium	Kaolinite	Polylithionite	Mica	Topaz	Quartz	Fluorite
	ppm	%	%	%	%	%	%
Greisen 1	2610	1	4	6	9	73	1
Greisen 2	2330	0	3	8	13	69	1
Greisen 3	1410	0	2	6	0	66	1

Table 10: XRD mineralogy for surface dump samples (Inner Greisen) – some key minerals

Description	Lithium	Kaolinite	Polylithionite	Topaz	Beryl	Quartz	Fluorite
	ppm	%	%	%	%	%	%
Mica-poor	2100	0.7	4.6	12.1		45.9	0
Mica-rich	5540	1	22.8	10.4	0.5	50	0
Quartz-topaz	170	1.8	0	18		74.7	0.3

DATA

Drilling and Sampling

A number of historical datasets were provided, these are tabulated below (Table 11). A full collar table is included in the Appendix.

Table 11: The Sadisdorf data set, as presented to CSA comprised a variety of data types.

Sample type	Sample code	number of samples
Core sample	k	2481
Bulk sample	w	130
Channel samples	l	352
Raster point sample	r	76
Composite chip sample	s	3048
Fictitious (hypothetical) sample	0	276
	TOTAL	6363

In summary

- **Core samples** are all from historical drill holes taken from diamond core. Core diameter was reportedly a minimum of BQ (3.5cm diameter) and ranged up to PQ in size (8.4cm diameter). TIN reports that more than 60% of the available historic drill core ranged between BQ and NQ size (3.8 – 4.8 cm diameter). The majority of core has been lost or removed from core boxes, preventing further review of core size or recovery.
- **Bulk samples** were collected during mine production in the 1940-50s from raw ore. A number of shovels were taken from each mine car and collected into one bulk sample. Coarse and fine pieces of the material were taken at the same ratio; each bulk sample had a length of 3-5m, equivalent to one production cut.
- **Channel samples** were collected from historic surface trenches and in limited underground workings.
- **Raster point** were collected along a wall using a raster/grid of 0.5m x 0.5m over a 3m area. At each separate sample point a "handful" size piece of material was collected.
- **Composite chip samples** were collected from accessible levels (+30m and 0m level) in 1988. This resulted in duplication of bulk samples locations and were *prioritized where present*.
- **Fictitious (hypothetical) samples** were inserted where core intervals with significant core loss were encountered. They were not assayed and had a fictitious or possibly interpolated value attributed to them. These were treated as blank and not used in the estimation of resources.

Lithium Data

Summary and Analytical Method

Li data is only available for all 1980s exploration work, which includes the composite chip sampling from 0m and +30m level and surface exploration drill holes. These were digitized from hard-copy documents, with a total of 5,680 historic Li assays digitized by TIN.

Approximately 15% of the entries were double checked for QC by TIN. If an error occurred (typically typos); the two upper and lower assays were also checked. If a drill hole/channel had only few assays, all assays were checked for the hole/channel.

In addition to this:

- 579 recorded duplicate analyses for the historical data were also digitized.
- 408 historical pulps were re-analysed by 4-acid ICP-MS at ALS Loughrea in Ireland, and ISO accredited laboratory.

The majority of historical data and historical duplicate data was analysed using an emission spectrometer, equivalent to Atomic Emission Spectrometer (AES). If samples were elevated in Sn, As, W and/or Bi samples were also analysed by XRF.

Data was provided to CSA in Excel format (Sadisdorf_Data base Master_2017-04-20_MF-AE_MASTER).

QAQC and Opinion regarding Adequacy

Results indicated:

- A slight (2%) positive bias towards original historical samples (799 versus 818 ppm Li), though a consistent trend was not present (Figure 12)
- A positive bias (11%) towards historical values (1667 versus 1503 ppm Li), though a consistent trend was not present (Figure 13)
- Some imprecision at higher values in the historical data, likely a result of over-limits, identified by an anomalous number of values at 3000ppm and 5000ppm (Figure 11).

Overall, duplicate results indicate a relatively robust historical QAQC procedure and re-analysis of historical pulps compared relatively well to the compiled data. As a result, CSA is of the opinion that the data is appropriate for use in the estimation of resources, though some concerns remain about the data (e.g. slight bias). This has an impact on confidence and therefore classification of the Mineral Resource.

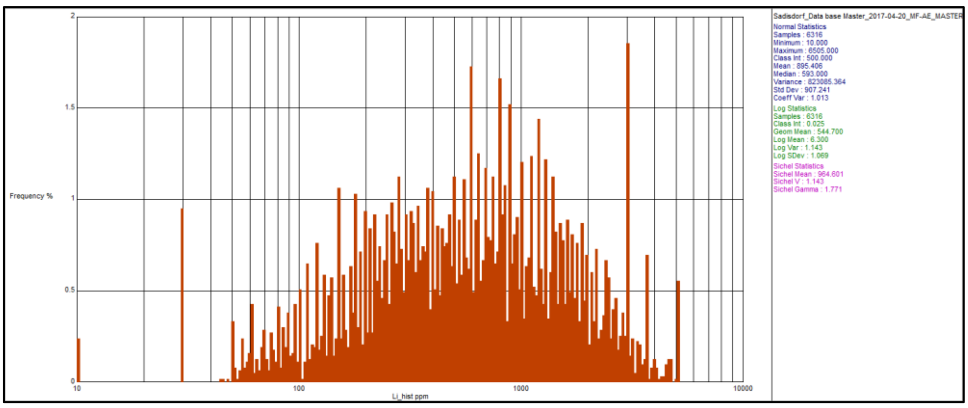


Figure 11: Log histogram of historical lithium values, showing a proportionally high number of values at 3000, 3700 and 5000 ppm

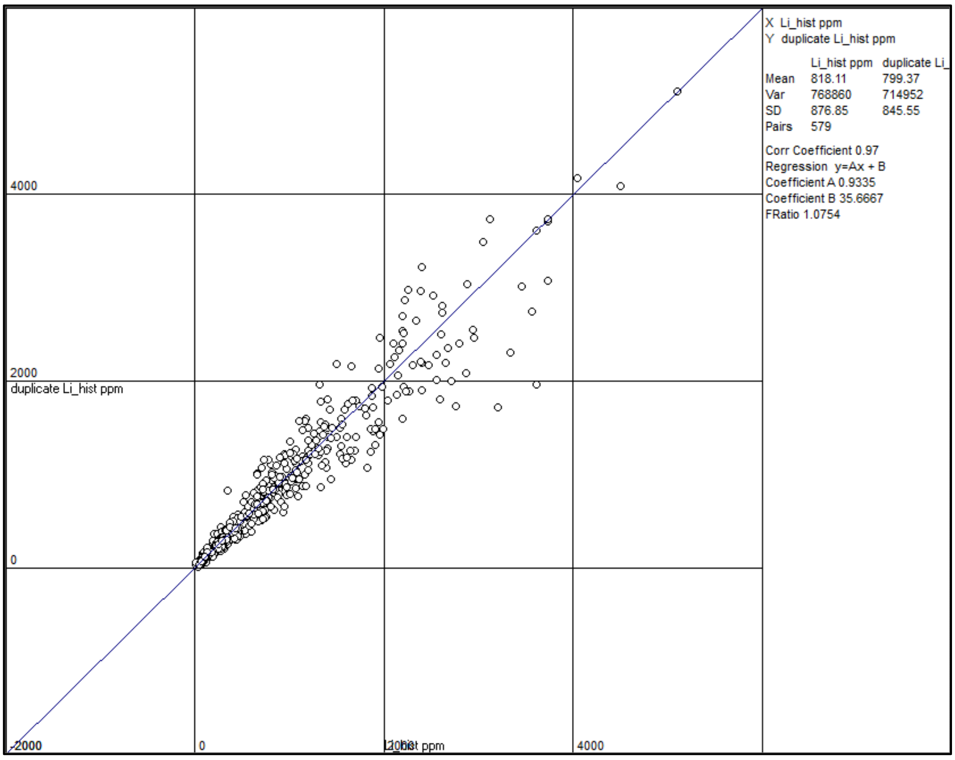


Figure 12: Historical duplicate (y) versus original (x) lithium values. Duplicate Mean=799 ppm Li, Original Mean=818 ppm Li

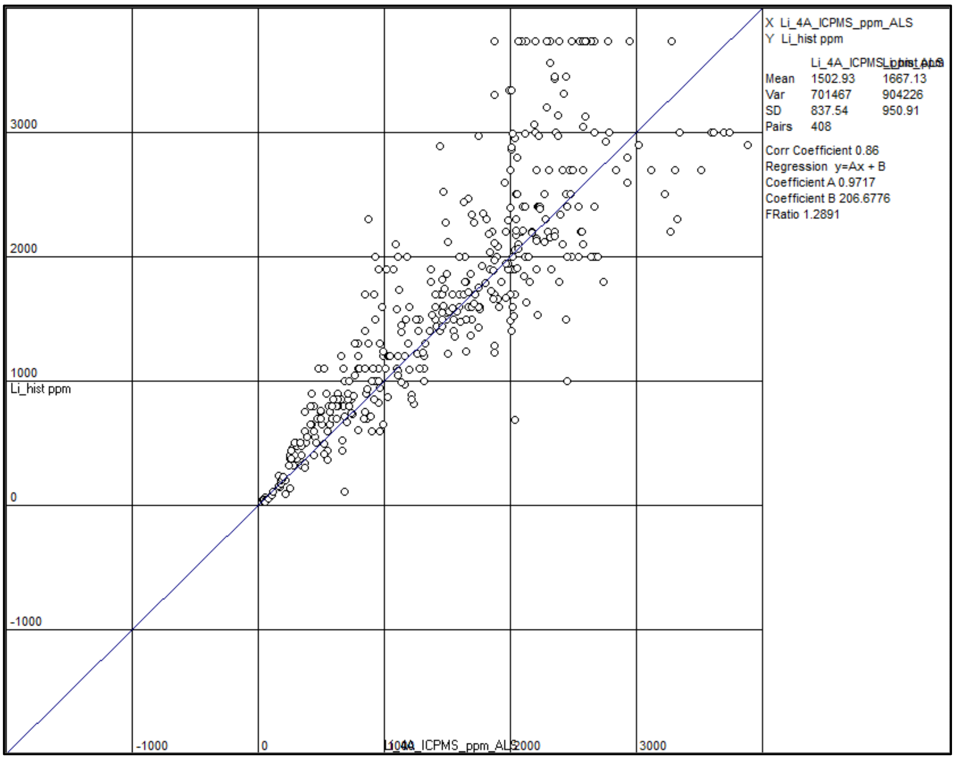


Figure 13: Historical (y) versus accredited 2017 laboratory re-analysis (x). Mean re-analysis=1502 ppm Li versus Mean historical values=1667 ppm Li

MINERAL RESOURCE ESTIMATE

Data

Lithium assay values held in the database and recorded in parts per million (ppm) represent a combination of historical values, which were captured from historical hard copy documents, and recent re-analysis of historical pulps. These datasets were merged in to a master database by CSA Global which incorporated a priority code to re-analysed pulps. The master Li field was subsequently converted to lithium %wt by dividing the ppm values by 10,000 to be used for subsequent Mineral Resource estimation.

Data was loaded into Datamine™ software, using macros which have constraints and triggers, ensuring that only validated data was used in the estimation of resources.

Geological Model

Modelling was informed by the generation of CompSE composites (a process in Datamine™ software that facilitates review of a variety of grade cut-offs, internal dilution criteria and minimum thickness criteria to assist in methodology employed to generate 3D wireframes) within the framework of the geological model, and a visual inspection of continuity. This identified 0.15%wt Li as a natural cutoff around which to model. In some instances, however, it was necessary to use 0.1%wt to maintain local continuity.

Modelling was completed in Micromine™ software using a traditional wireframing approach of working with vertical and horizontal sections to create mineralised strings around which digital solids were created.

Two mineralised solids were created:

- A number of north-east striking, steeply-dipping zones encapsulated the mineralisation of the Outer Greisen
- A single, cupola-shaped disk below the 400m level represented the Inner Greisen

A narrow quartz-porphyry dyke cutting through the Inner Greisen was also modelled which represented a waste domain.

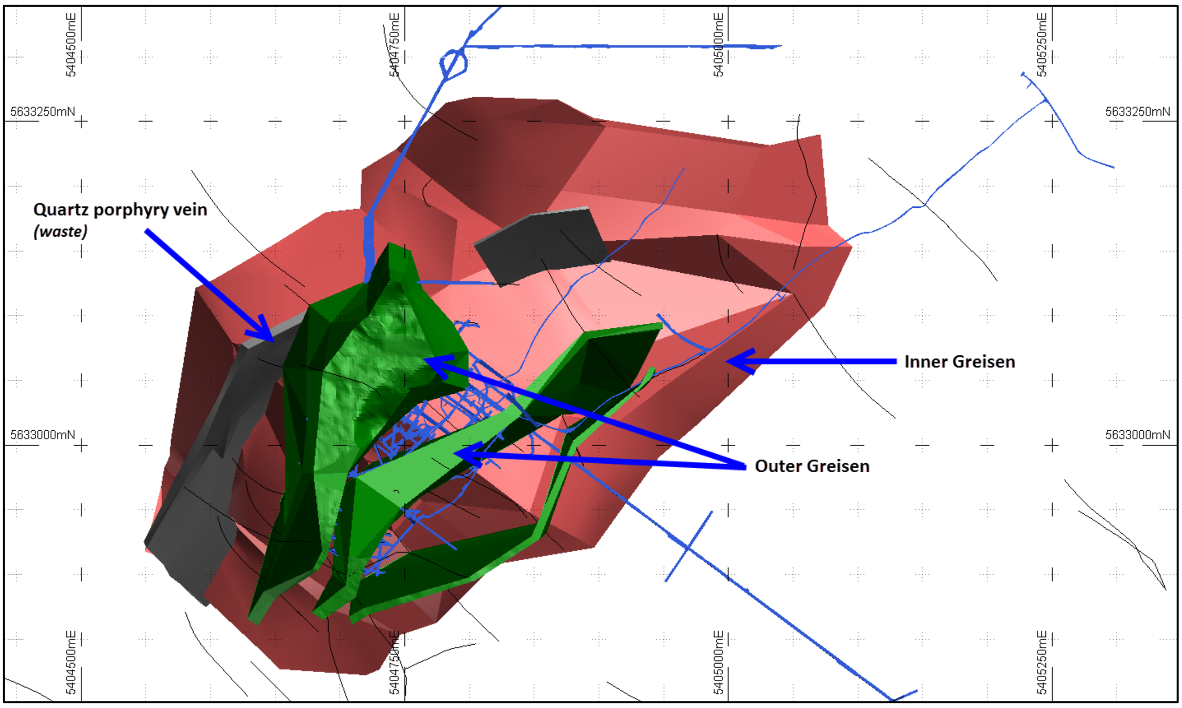


Figure 14: Mineralisation model (plan view) showing Outer Greisen (green) and Inner Greisen (red)

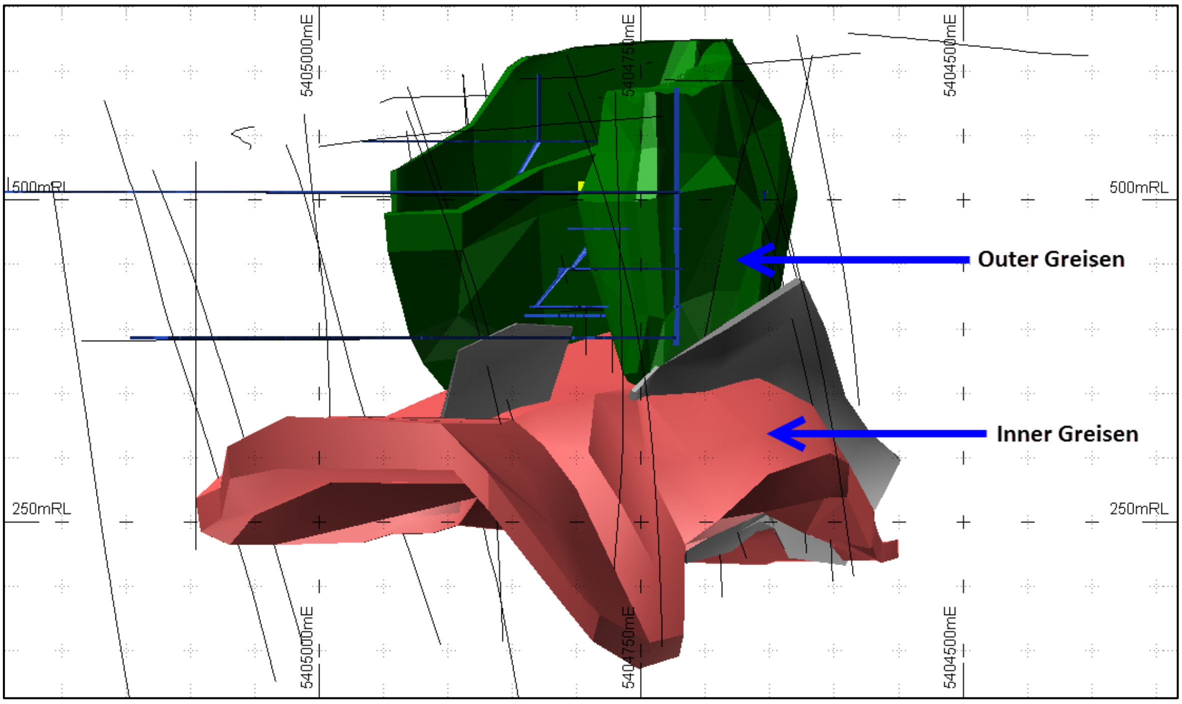


Figure 15: Mineralisation model (looking south) showing Outer Greisen (green) and Inner Greisen (red)

Statistical Analysis

Samples were flagged by the mineralisation models and hard boundaries used between Inner and Outer Greisen samples during the estimation.

Figure 16 shows normal distributions for lithium (left) but irregular distributions in the tin (right). Similar lithium grade distributions are evident for both Inner (blue) and Outer greisens (orange), however the Inner Greisen is clearly very low in tin grades (see Figure 16, right image).

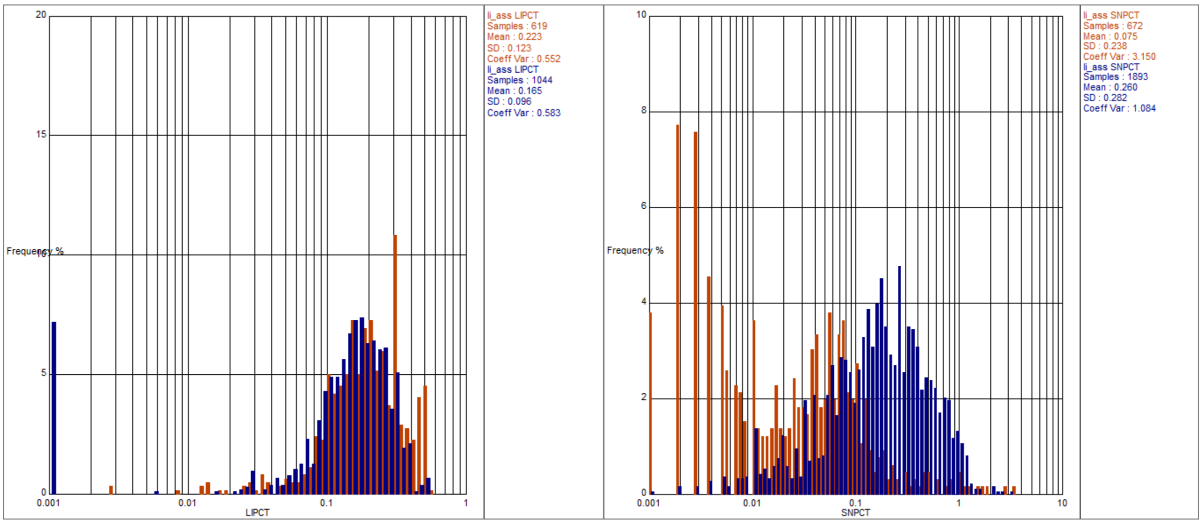


Figure 16: Log histograms for lithium (left) and tin (right), with Inner Greisen shown in orange and Outer Greisen in blue.

At present the relationship between tin and lithium remains unclear and further work is recommended in this regard. The Inner Greisen is significantly lower grade in tin, while spatially both the lithium and tin mineral resources are centrally located within the Outer Greisen with the tin resource representing more discrete, thinner units within the broader (more diffuse) lithium resource Figure 17.

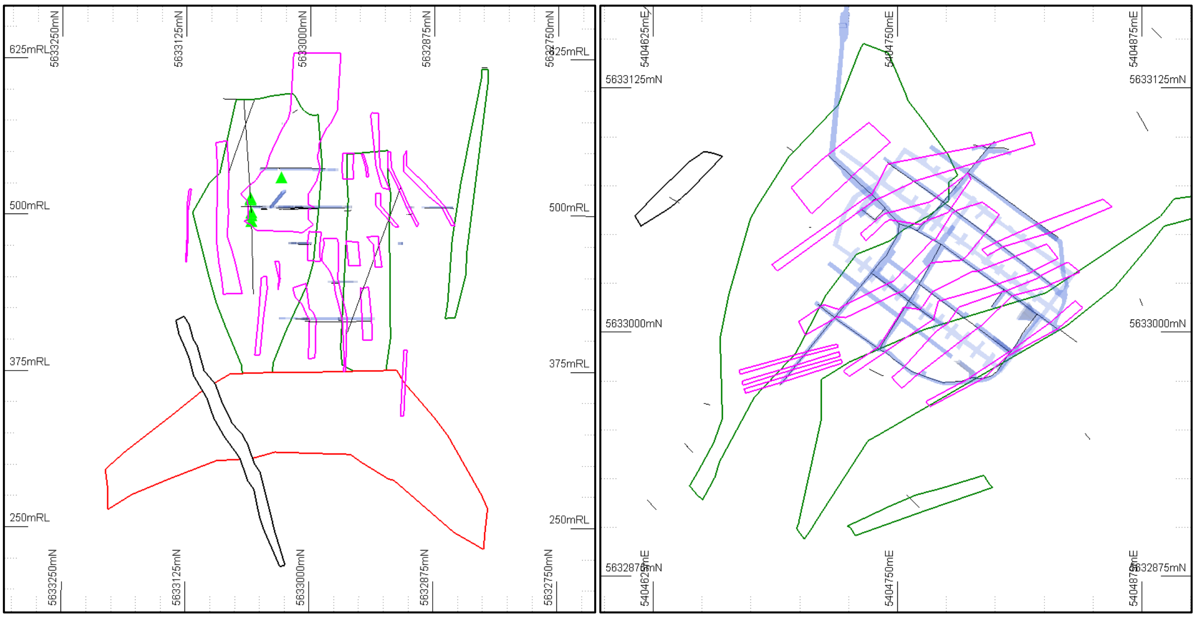


Figure 17: Spatial relationship between 2017 lithium model, Outer (green) and Inner (red) greisens, and 2014 tin model (pink)

In Situ Dry Bulk Density Determinations

LIT collected nearly 300 dry bulk density values from competent pieces of core using the Archimedes method. These values were flagged using the lithium and tin models and results statistically evaluated.

In summary:

- Results were heavily clustered to a single borehole with 107 samples from BHID 21_986.
- The arithmetic mean for the Inner Greisen is 2.70 and Outer Greisen is 2.80 g/cm^3
- Declustering resulted in a declustered mean of 2.70 for the Inner Greisen and 2.76 g/cm^3 for the Outer Greisen.
- All samples falling outside both the tin and lithium models averaged 2.65 g/cm^3.
- The declustered results were used to assign bulk density in the block model (Table 12).

Table 12: Bulk densities used in the MRE

Domain	In Situ Dry Bulk Density (g/cm^3)
Outer Greisen (LOG)	2.76
Inner Greisen (LIG)	2.70

Block Model and Grade Estimation

Data Preparation

Compositing was run on both 2 m and 4 m lengths, and both sets of data assessed for any potential bias. As can be seen from table 3 below, if a 2-m composite had been chosen then a large portion of the data would still have been split (see percentiles in relation to yellow highlighted boxes, Figure 18), and may have resulted in under representation of the nugget during variography as continuity at short spacings would have been artificially extended. The decision was therefore made to run with 4 m as the chosen composite length. Distribution of grades were compared for 2 m and 4 m composites with no difference between the two datasets.

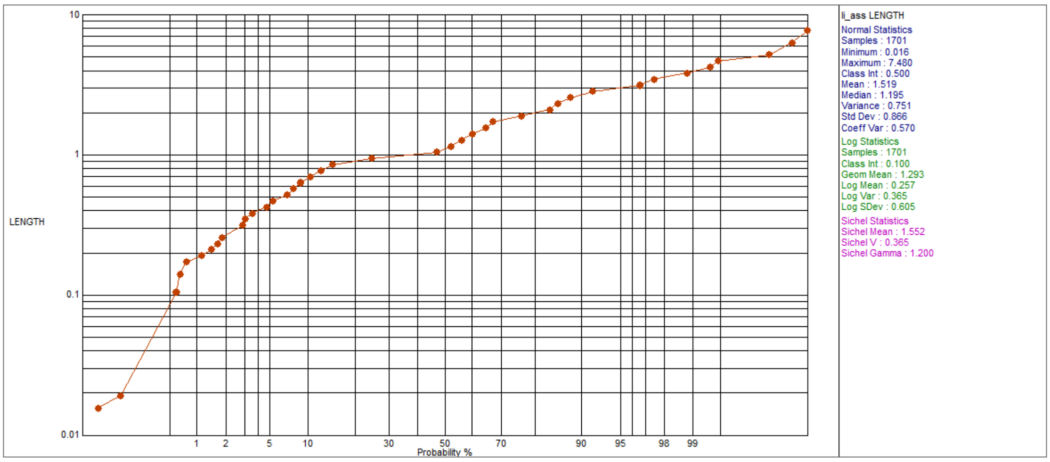


Figure 18: Sample lengths for samples used in the estimation of resources (located within the mineralisation model).

Top cuts were assessed on flagged and composited data within the mineralised domains. None of the distributions warranted grade-capping for the purposes of resource estimation. This decision was based on the review of both probability plots and histograms for each population, which showed no significant outliers were present.

Variography: Normal score variograms were calculated and modelled for the Li (%wt) data in Supervisor™ for MINZONES 1 and 2. The sills were back transformed and the models exported for use in Datamine™ estimation macros. Variogram parameters, ultimately based on more dense data near-surface and limited data below the current workings, honour two of the main mineralisation orientations. Whilst improvements can and should be made to variographic analysis through improved domaining of different mineralisation styles at Sadisdorf as additional resource develop work is completed, and more data added to the dataset, the current parameters are considered acceptable for Kriging. Transformed variogram parameters are presented in Table 13.

The variograms for the 2nd and 3rd directions in MINZON 1 were the most challenging to model due to the spatial orientation of the limbs. It was decided to honour an overall shape that best fitted the orientation of the mineralisation wireframe with a slight North-Easterly plunge. Dynamic Anisotropy would then be used during the estimation to orientate the search ellipsoid according to the localised orientation of the wireframe surfaces for the optimal selection of samples to inform the block estimates in each area of the model (see section on Dynamic anisotropy for details). CSA Global considers this a reasonable approach to take.

Table 13: Variogram Parameters for Li (transformed)

MINZON	Datamine Rotation	Datamine Axis	Nugget	Structure 1		Structure 2	
				Partial Sill	Range	Partial Sill	Range
1	-50	Z	0.17	0.49	93	0.33	170
	0	X			93		160
	-20	Y			63		82
2	-60	Z	0.04	0.09	64	0.87	298
	0	X			9		79
	-80	Y			36		143

Kriging Neighbourhood Analysis (KNA) was undertaken in Supervisor™ to measure and subsequently minimise the conditional bias that occurs as part of the grade estimation process, was undertaken. CSA investigated the following inputs during KNA:

- Block size.
- Search ellipse size (orientation informed by model and data spacing).
- Minimum and maximum number of total samples used to estimate a block.
- Maximum number of samples per sector and per hole.

For each of these considerations the Kriging Efficiency and Slope of regression were reviewed in Supervisor™ software and the following search parameters in Table 14 chosen for optimal estimation without over smoothing of the block model.

Numerous block model size parameters were tested during the KNA process, and the values from the previous Sn estimate were chosen to be optimal for the purposes of the Li estimate. These values were 15m (X) by 15m (Y) by 30m (Z).

A sub blocking strategy of 3 (X), 3 (Y) and 10 (Z) was decided for the purposes of flagging the model to the mineralised wireframes, to honour interpreted volumes.

Table 14: Table for estimation search parameters

MINZON	Search Ranges (SVOL1)			Composites (SVOL1)		Search Ranges (SVOL2)			Composites (SVOL2)		Search Ranges (SVOL3)			Composites (SVOL3)		MAXKEY
	1	2	3	Min	Max	1	2	3	Min	Max	1	2	3	Min	Max	
1	112	105	54	6	18	168	158	81	6	18	336	315	162	3	8	3
2	196	52	94	6	18	294	78	141	6	18	588	156	282	3	8	3

Block model coordinates were based on the existing Sn block model resource estimate carried out in Micromine™ software. The existing model extents were expanded to cover the areas were the lithium wireframes projected beyond the previous Sn wireframe limits.

Block model dimensions are presented in Table 15.

Table 15: Block model dimensions

Parameter	X	Y	Z
Minimum	5404492.5	5632717.5	135
Maximum	5405167.5	5633377.5	675
Parent Cell size	15	15	30
Resource Sub-cell size	1	1	1

Model Depletion: The model was depleted by approximately 56,000 tonnes of material when considered at a 0.15%wt cut-off. This was from underground development and stoping. The depletion represents approximately 0.2% of the total defined estimate tonnage.

Model Validation

Model validation was carried out graphically and statistically to ensure that block model grades honour the tenor of grade from input composite data.

Graphical validation

Multiple orientated views of the mineralisation wireframes, drill holes and channel samples were visually interrogated against the model by means of sectioning the block model into 2D slices both in plan and vertical X and Y planes, and interactively panning through the composites and original assay values in 3D. This process confirmed that locally the input composite grades were honoured in the output block model. Screen grabs of the process undertaken to graphically validate the model are shown in Figure 19 and Figure 20.

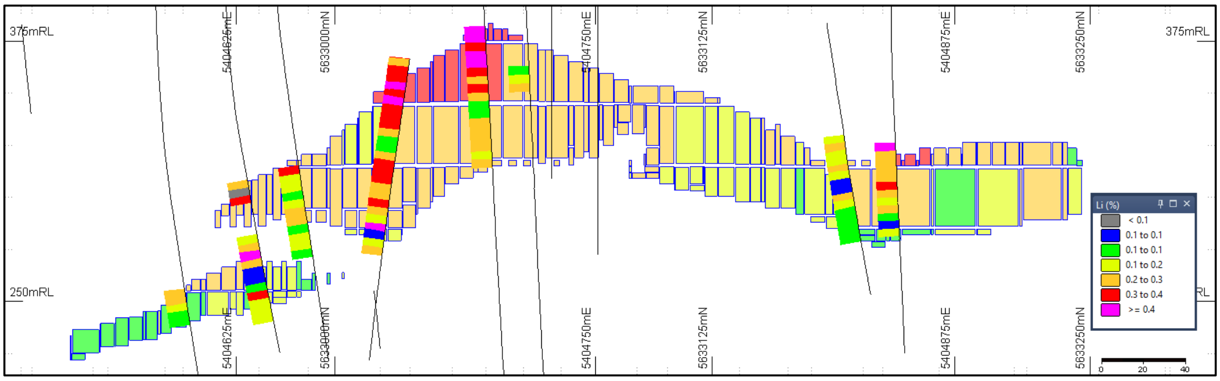


Figure 19: Vertical 'long' section, looking north-west through Inner Greisen.

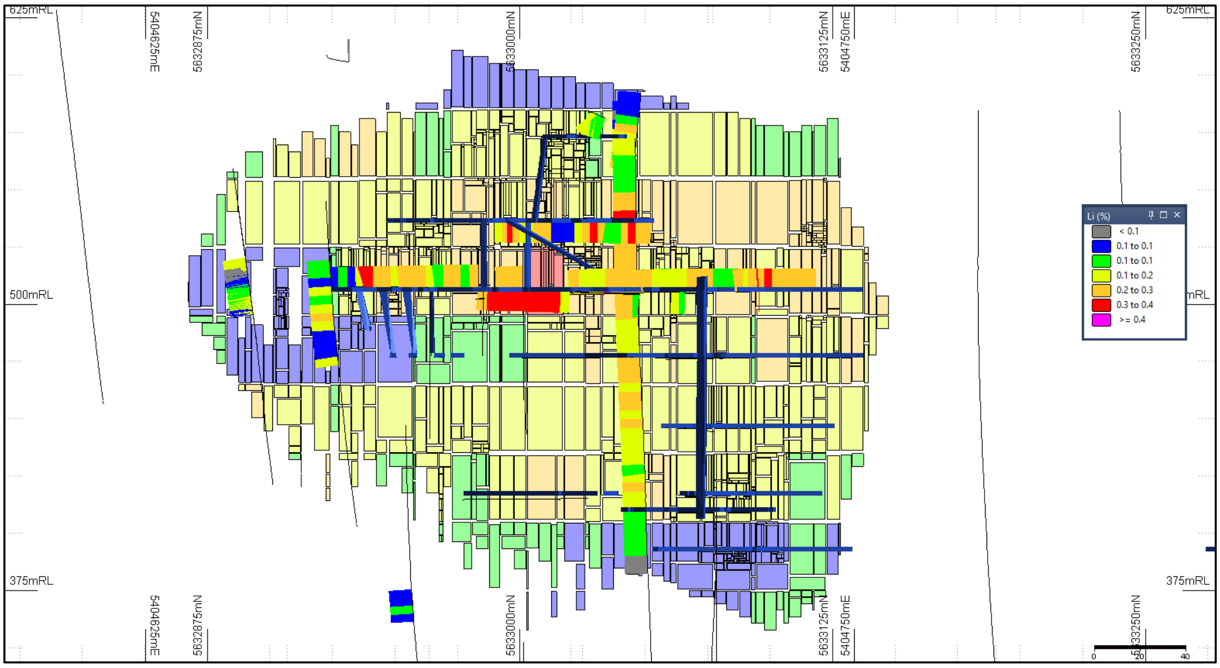


Figure 20: Vertical 'long' section, looking north-west through Outer Greisen.

Statistical validation

A number of statistical methods were employed to validate the block model, including:

- A comparison of global mean and declustered grades of the composite populations versus the grades of the Kriged blocks (Table 16)
- Trend analysis in X, Y and Z directions, to review sample support and compare mean grades locally (Figure 21).

In summary global means were well validated, a fact supported by both visual validation and swath plots in X,Y and Z directions.

Table 16: Statistical validation of Li %wt Block model estimate versus 4m composite and de-clustered grades for Inner Greisen and Outer Greisen domains

Domain	Drill hole Li (%)		Block Model Li (%)
	Naive Mean	De-clustered Mean	Tonnage weighted mean
Inner Greisen	0.21	0.21	0.21
Outer Greisen	0.19	0.17	0.17

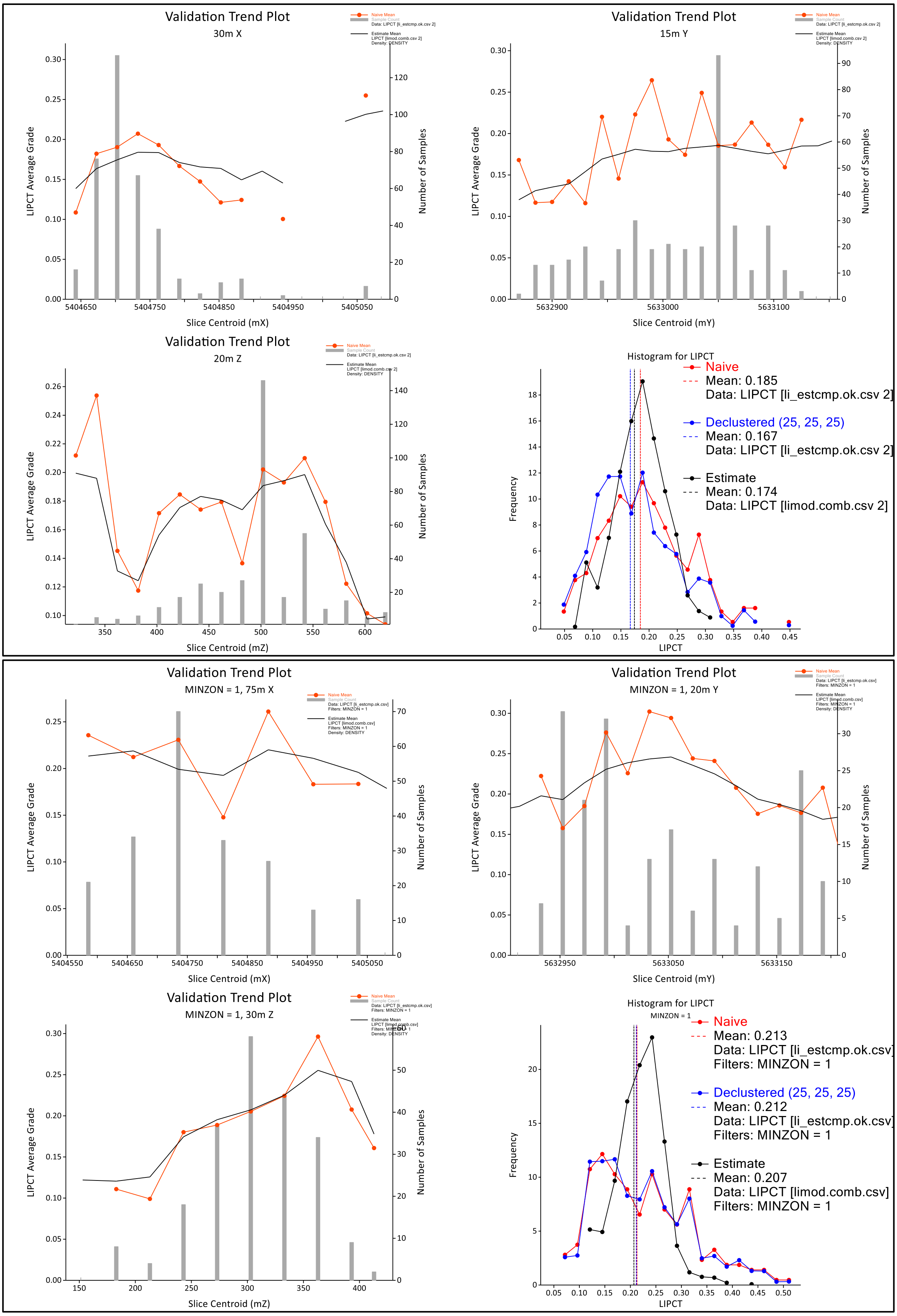


Figure 21: TOP: MINZON 2 (Outer Greisen), BOTTOM: MINZON 1 (Inner Greisen): Trend analysis for X (top left), Y (top right) and Z (bottom left), and Histogram (bottom right) of block model (black), 4m composite (red) and de-clustered (blue) mean grade populations

RESOURCE TABULATION

Based on data reviews completed and confidences considered with respect to 3D modelling and methodology, geological context, grade interpolation parameters, Mineral Resource validations, and supporting mineralogical and metallurgical data, the Mineral Resource has been classified as Inferred Mineral Resources under JORC 2012.

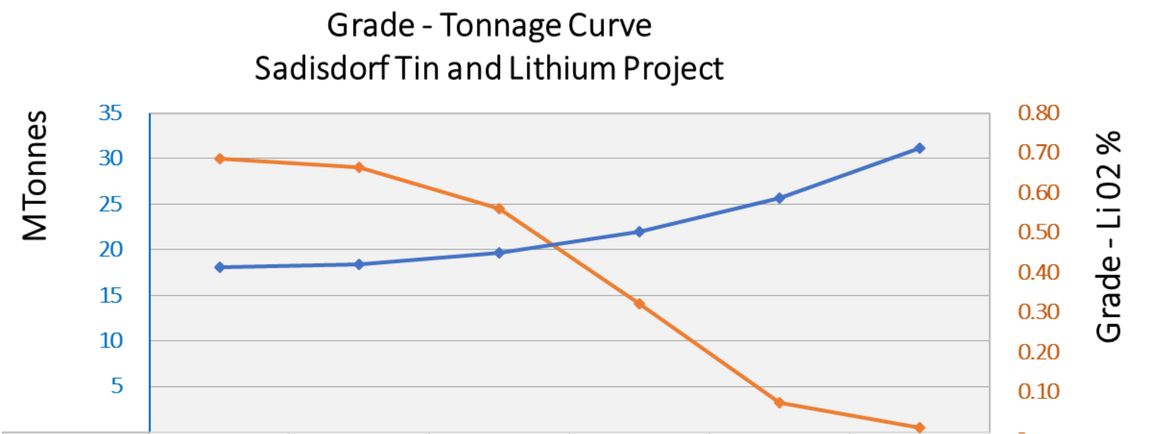
The grade-tonnage estimate for Sadisdorf is contained in the following Table 17, reported at a 0.15%wt Li cut-off (0.32%Li_2O).

Table 17: Mineral Resource Table for the Sadisdorf tin and lithium project, as at the 23rd November 2017

Sadisdorf Tin and Lithium Project Mineral Resource Estimate, as at 23rd November 2017 Classified in accordance with the JORC Code (2012 Edition)				
Classification	**Domain**	**MTonnes**	**Li_2O %**	**Density t/m^3**
Inferred Mineral Resource	Inner Greisen	17	0.47	2.70
	Outer Greisen	8	0.43	2.76
	Total	25	0.45	2.72
MRE defined by 3D wireframe interpretation with sub-cell block modelling. *Grades estimated using Ordinary Kriging.* *The MRE is reported at a cut-off of 0.15% Li (0.32%Li_2O).* *The block model has been depleted to reflect historical mining.*				

In addition to the table above, the block model grade tonnage table and curve is displayed in Table 18, and is provided for indicative purposes. The consideration of the grade tonnage relationship should be treated with caution at the current level of advancement of the project, and given the Mineral Resource is classified as Inferred Mineral Resources.

Table 18: Lithium grade-tonnage curve and table for Sadisdorf



Cut-off LiO2%	0.11	0.21	0.32	0.43	0.53	0.64
Mtonnes	30	29	25	14	3	0
Grade (Li02 %)	0.41	0.42	0.45	0.50	0.59	0.71

REPORTING OF LITHIUM MINERAL RESOURCES

Introduction

Mineral Resource tonnes and lithium content are key metrics for hard rock lithium projects; however, the following points should be considered in order to demonstrate the potential for economic extraction from hard rock deposits at the Mineral Resource estimation stage:

- What lithium and gangue minerals are present in the pegmatite or greisen?
- What liberation methods are required to extract lithium that could be used to make compounds such as LiOH?

CSA Global has therefore addressed the question of identifying Li mineralogy using petrography (optical microscopy) and X Ray Diffraction (refer to the Mineralogy section above), as well as reviewing metallurgical test results.

Lithium deposit types

Lithium is produced from two main deposit types, namely brines (~60% of global production, mainly from South America) and pegmatites, or 'hard rock' (~40% of global production, dominated by Western Australia). Other mineralisation styles are also currently of interest, notably a lithium-borate-carbonate deposit at Jadar in Serbia, and lithium-bearing clays mainly in Mexico and the USA.

The main minerals of current economic interest in lithium-bearing pegmatites are spodumene and, to a lesser extent, petalite. Lithium in pegmatites or greisens may also be present in micas such as lepidolite, zinnwaldite or polylithionite (refer to Table 19 and Table 20 for some lithium mineral examples and for Li conversion ratios).

Lithium frequently also occurs with other metals that potentially contribute value to projects. These should be appropriately considered during resource evaluation, most notably tantalum in the case of pegmatite deposits and tin in the case of greisen deposits.

Table 19: Examples of some lithium-bearing minerals found in pegmatites and / or greisens

Principal lithium minerals in pegmatites	Formula	Density (average; g/cm³)	Lithium % (calculated)	Li_2O% (calculated)
Spodumene	$LiAl(Si_2O_6)$	3.2	3.7	8.0
Petalite	$Li(AlSi_4O_{10})$	2.4	2.3	4.9
Eucryptite	$LiAl(SiO_4)$	2.7	5.5	11.8
Amblygonite	$LiAl(PO_4)(OH)$	3.0	4.8	10.2
Lepidolite	$K(Li,Al)_3(SiAl)_4O_{10}(OH,F)_2$	2.8	3.5	7.6
Lithiophilite	$Li(Mn_2)PO_4$	3.5	3.3	7.1
Zinnwaldite	$K(Al,Fe,Li)_3(Si,Al)_4O_{10}(OH)F$	3	2.9	6.2
Polylithionite	$KLi_2Al(Si_4O_{10})(F,OH)_2$	2.7	2.1	4.5

Note: actual lithium content of Li in natural minerals may be lower than theoretical values. Density and Li contents rounded to first decimal place

Table 20: Ratios for converting lithium (Li) values to various lithium compounds

	Li	Li_2O	Li_2CO_3	LiOH
Ratio	1	2.15	5.32	6.06
% Li	100	46.4	18.8	16.5

Source: Scogings et al., 2016

Markets

Various lithium minerals and compounds are used across a range of markets dominated by batteries (approximately 35% and growing) and glass and ceramics (approximately 30%). Smaller markets include applications in lubricating greases and air conditioning dehumidifiers.

Lithium Production

Extraction of lithium from lithium mineral concentrates may follow several routes, with the dominant method for spodumene using roasting to about 1,000°C. This makes spodumene amenable to leaching with sulphuric acid, which forms soluble lithium sulphate, from which Li_2CO_3 may be precipitated using soda ash.

Several other lithium extraction technologies have recently been proposed for hard rock deposits, and the concept of leaching with sulphuric acid has gained some traction for the processing of micaceous minerals such as lepidolite or zinnwaldite. Importantly, this method does not use roasting, thereby reportedly reducing cost.

LIT's Proposed Extractive Method: SiLeach®

Summary

Nagrom Laboratory compiled a technical brief to provide details on the metallurgical test work on three samples (Greisen "Oretype" 1, 2 and 3) received from Lithium Australia and tested using the SiLeach® process (SiLeach, 2017).

All samples were collected from underground exposure, within the Outer Greisen from 0 m Level. These samples represented composite 'bulk' samples, where representative samples were targeted through selective grab sampling.

The program was developed by Lithium Australia and comprised of the following activities:

- Stage grind to P100 = 250 µm;
- Size by size analysis on 212, 180, 150, 106, 75 and 38 µm sieves;
- Wilfley wet table on each ground sample;
- Analysis and microscopy on the concentrate from each Wilfley test;
- Multi-stage sighter flotation test on Greisen 1 Wilfley table tail;
- Analysis and microscopy on the concentrate from each flotation sighter test; and
- A SiLeach® test on each Wilfley table tail.

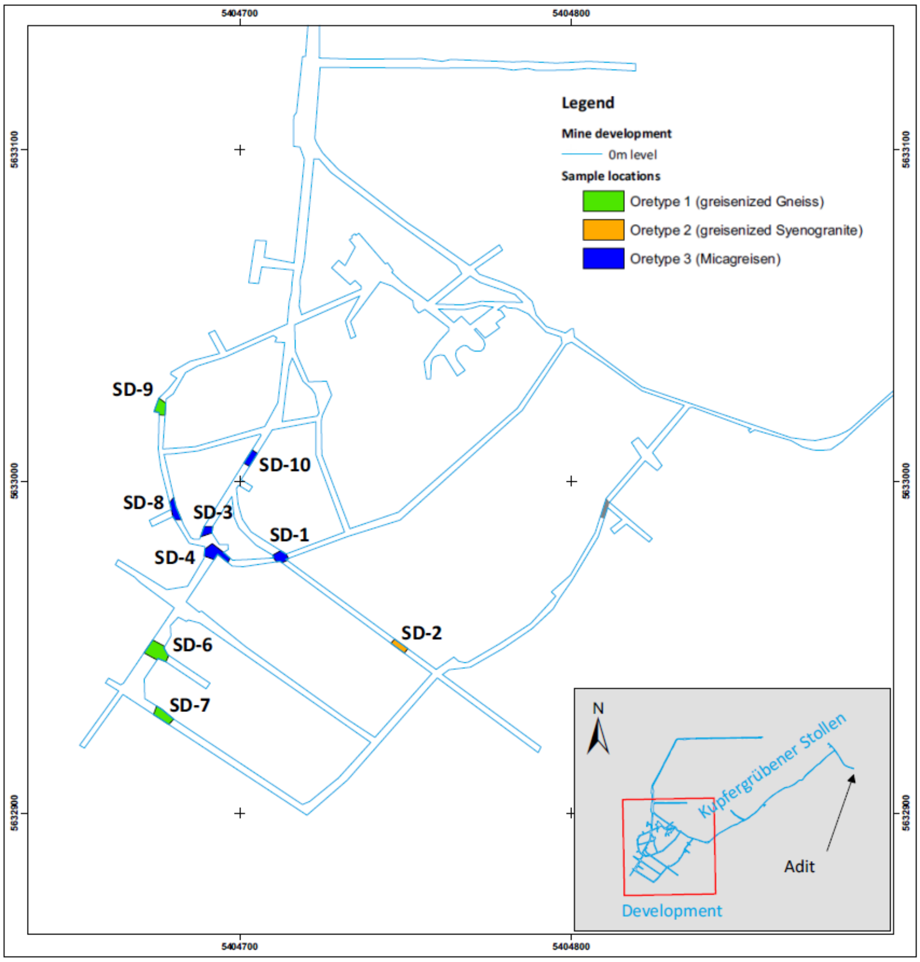


Figure 22: Composite 'bulk' sample locations for Greisen 'Oretype' Samples 1,2 and 3. All samples were taken from 0 m Level, within the tin-rich, Outer Greisen (source: Lithium Australia 2017)

Results

- It was noted that Greisen 1 and 2 are similar with respect to lithium, iron and potassium. Greisen 3 recorded a lower lithium and iron but higher potassium values compare to Greisen 1 and 2 samples.
- All three samples were subjected to wet table gravity separation in order to reject and concentrate the heavier tin component. Tests were performed at P100 = 250 µm.
- Flotation test work was performed on the wet table tails of Greisen 1 sample. In this initial test 75% of the lithium was recovered into 40% of the mass. It was suggested that improved recovery is likely with a finer grind, in combination with de-sliming;
- SiLeach® test work was completed on the wet table tails of Greisen 1, 2 and 3, recording lithium leach extractions of 96.8%, 97.4% and 91% respectively (the average being 95.0%).

CONCLUSIONS

CSA provides the following conclusions:

- Lithium data has largely been compiled from historical sources, with these values supported by re-analysis of over 400 historical pulps. Reanalysed values broadly support the use of the historical data in the estimation of mineral resources however minor bias does exist, particularly at higher grades though no clear trend/relationship was observed.
- The resource data was compiled manually and provided in Excel format with a number of conflicts identified during the validation of the data prior to Mineral Resource estimation. Whilst recent confirmatory work completed by TIN and LIT has, to a degree, provided confidence in this data as being reliable for use in Mineral Resource Estimation work, significant additional data collection is required to improve confidence in the underlying dataset.
- Lithium mineralisation occurs within two bodies described as the Inner Greisen and the Outer Greisen with the following differences:
  - The previous tin mineral resource (CSA, 2014) was solely focused on the *Outer Greisen* where the relationship between tin and lithium mineralisation remains unclear. At a broad scale, the tin resource in the Outer Greisen is represented by vertical, NE-SW striking units which are more discrete and thinner than the broader (more diffuse) lithium Outer Greisen model which follows a similar strike as the tin lodes and broadly encompasses them.
  - The deeper Inner Greisen is a distinct, disk-shaped unit that follows the cupola contact of the G4 granite. Tin grades are uneconomic, and sample support (i.e. drill spacing) is lower (i.e. wider drill/channel spacing). However, the Inner Greisen is clearly a consistent geological unit that extends wider than currently modelled. As a result, CSA believes that there is exploration upside around the currently defined Inner Greisen mineralisation model as supported by elevated lithium grades and logging in wider spaced drill holes.
- Lithium Australia has undertaken petrographic and XRD studies from the Inner and Outer Greisen and completed SiLeach® test work on three bulk samples from the Outer Greisen. In summary:
  - Results overwhelming support the fact that lithium at Sadisdorf is hosted by micas of the polylithionite - siderophyllite series, probably similar to zinnwaldite in composition.
  - SiLeach® test work achieved lithium extractions of 91 – 97.4 % and so supports the likelihood of eventual economic extraction.

RECOMMENDATIONS

CSA make the following recommendations:

- Since data has been compiled from a suite of sources (historical and more recent assay datasets); CSA recommends re-compiling the resource data into an SQL-based database, such as Datashed. This would provide a single ‘point of truth’ from which the project could progress.
- LIT and TIN should re-sample underground channel samples from Level 0m and +30m to validate the historical samples in this region and complete additional underground channel sampling in areas where lithium data is absent to establish potential northerly extensions at Level 0m.
- Future underground sampling should be undertaken via continuous channel sampling methods, preferably with a handheld mechanical circular saw.
- LIT is planning to conduct confirmatory, spatially representative twin-drilling and it is recommended that drilling should ideally comprise orientated core to facilitate the collection of valuable structural data.

- All future drilling and sampling should include routine analysis for elements that constitute potentially valuable by-products.
- Additional mapping and characterization sampling should be completed underground to assess the controls that impact the lithium and tin mineralisation.
- The collapsed structure under the historical pit should be defined in 3D and an estimate of material type and density, as a minimum, should be generated so subsequent MRE's can be improved.
- Variability testwork should be undertaken on samples from the Inner and Outer Greisens to verify lithium recoveries using the SiLeach® process.
- Microprobe analysis should be completed to quantify the lithium content of the micas.
- TIN and LIT should begin to assess and test the assumptions made regarding tin metallurgical processes which are based largely on historical information and have not been verified.

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APPENDIX 1: DRILL HOLE AND CHANNEL COLLAR TABLE

BHID	HTYPE	DEPTH	XCOLLAR	YCOLLAR	ZCOLLAR
B_10_986	B	424.41	5404707	5632899	624.6
B_11_987	B	422.26	5404808	5632944	613.2
B_12A_987	B	450.39	5404888	5632984	598
B_12_987	B	98.32	5404888	5632984	597.9
B_13_986	B	385.69	5404931	5633037	587.9
B_14_988	B	419.99	5404770	5633184	584.4
B_15_988	B	430.12	5404823	5632848	614
B_18_989	B	300.03	5404629	5632806	628.6
B_1_940	B	302	5405096	5633290	530
B_1_988	B	385.49	5404873	5632919	605.9
B_2047_984	B	586.53	5405338	5632888	583.6
B_2048_989	B	631.75	5405208	5633127	513.6
B_2053_989	B	495.9	5405338	5632888	583.7
B_2066_989	B	500.97	5404932	5632605	554.1
B_20_986	B	415.18	5405026	5632741	543.3
B_21_986	B	400.43	5404692	5633054	592.6
B_22_986	B	400.24	5404673	5633122	586
B_23_989	B	400.18	5404617	5632990	612.9
B_24_989	B	400.56	5404657	5633124	586.7
B_28_989	B	296.18	5405012	5633117	566.9
B_2_986	B	417.14	5405129	5633021	523.5
B_30_989	B	450.16	5404806	5633236	584.5
B_33_987	B	370.28	5404932	5633116	569.2
B_5_986	B	334.36	5404703	5633052	592.4
B_6_985	B	493.17	5405167	5632641	577.7
B_7A_988	B	452.25	5404730	5632737	612.6
B_7_988	B	347.41	5404730	5632736	612.6
B_9H_987	B	447.74	5404684	5632856	625.6
B_9_987	B	154.85	5404684	5632856	625.6
D_SC1	S	8.869	5404719	5633021	583.96
D_SC2	S	9.6723	5404749	5633038	582.618
D_SC3	S	12.79	5404772	5633052	576.273
D_SC4	S	3.264	5404783	5633032	579.655
D_SC5	S	6.019	5404741	5632964	607.225
D_1A_985	D	59.11	5404750	5632827	619.6
D_1B_985	D	111.83	5404703	5632897	624.5
D_15_987	D	212.12	5404589	5632739	629.6
D_1_985	D	256.99	5404579	5632968	614.5
D_2_985	D	67.88	5404732	5633037	593.6
D_3_985	D	88.49	5404771	5632990	601.8
D_4_985	D	184.64	5404794	5632062	584.1
D_5_985	D	127.12	5405050	5633136	557.2
D_6_985	D	278.83	5404733	5633406	565.3
G_1_2013	S	10	5405241	5633264	517.29
G_1_941	G	30.3	5404684	5632961	507.4
G_2_2013	S	5.8	5405269	5633231	513.37
H_1_941	H	29.93	5404694	5632981	507.3
H_2_941	H	65.09	5404684	5633007	506.6
S_1_939	S	96.5	5404744	5633063	505.2
U_10_940	U	59.9	5404716	5632903	508
U_11_940	U	52.2	5404701	5632949	507.5
U_12_940	U	68.8	5404741	5632921	507.4
U_13_940	U	78.6	5404719	5632972	506.5
U_14_940	U	74.8	5404691	5632920	507.9
U_15_940	U	59.5	5404737	5632959	506.6

BHID	HTYPE	DEPTH	XCOLLAR	YCOLLAR	ZCOLLAR
Y_126	Y	426.61	5404844	5633014	392.5
Y_127	Y	32.02	5404969	5632920	393
Y_128	Y	31.53	5404969	5632920	393
Y_129	Y	10	5405127	5632802	394.3
Y_13	Y	37.02	5404712	5633034	537.6
Y_130	Y	7.03	5405127	5632802	394.3
Y_14	Y	9.13	5404728	5633045	537.7
Y_18	Y	114.61	5404836	5633023	504
Y_19	Y	5.53	5404823	5633008	504.6
Y_1_CH	Y	10.63	5404696	5632986	537
Y_2	Y	9.03	5404739	5632957	537.2
Y_20	Y	5.76	5404823	5633008	504.6
Y_21	Y	17.82	5404811	5632993	505.2
Y_22	Y	5.37	5404817	5632988	505.2
Y_23	Y	97.58	5404713	5632977	506.4
Y_24	Y	56.8	5404760	5632942	506.7
Y_25	Y	72.45	5404741	5632921	507.3
Y_26	Y	66.77	5404665	5632937	507.8
Y_27	Y	72.06	5404693	5632979	507.3
Y_27_CH	Y	72.01	5404693	5632979	507.3
Y_28	Y	20.46	5404674	5632950	507.6
Y_29	Y	5.69	5404665	5632937	507.7
Y_3	Y	5.25	5404731	5632963	537.2
Y_30	Y	23	5404682	5632962	507.6
Y_31	Y	132.63	5404799	5633043	504.8
Y_32	Y	124.99	5404736	5633056	505.1
Y_32_CH	Y	61.74	5404736	5633056	505.1
Y_33	Y	22.85	5404769	5633063	505
Y_34	Y	182.38	5404722	5633128	505.6
Y_35	Y	40.41	5404688	5632981	507.3
Y_35_CH	Y	40.4	5404688	5632981	507.3
Y_36	Y	27.33	5404698	5632998	506.8
Y_37	Y	4.91	5404699	5633000	506.8
Y_38	Y	48.86	5404677	5633008	506.6
Y_38_CH	Y	48.86	5404677	5633008	506.6
Y_39	Y	66.81	5404733	5632984	505.7
Y_39_CH	Y	65.53	5404733	5632984	505.7
Y_4	Y	39.07	5404696	5632986	537
Y_40	Y	32.15	5404716	5633047	505.7
Y_40_CH	Y	32.15	5404716	5633047	505.7
Y_41	Y	13.91	5404718	5633065	505.6
Y_42	Y	6.8	5404706	5633066	505.6
Y_43	Y	6.29	5404706	5633066	505.6
Y_44	Y	15.65	5404757	5633052	505.2
Y_45	Y	9.13	5404757	5633052	505.2
Y_46	Y	27.23	5404757	5633052	505.2
Y_47	Y	255.96	5404757	5633052	505.2
Y_47_CH	Y	115.4	5404757	5633052	505.2
Y_48	Y	61.51	5404721	5633101	505.6
Y_49	Y	116.95	5404722	5633126	505.6
Y_5	Y	10.18	5404683	5632962	537
Y_50	Y	80.2	5404722	5633128	505.6
Y_51	Y	262.24	5404787	5633294	505.8
Y_52	Y	159.91	5404748	5633045	477.1
Y_53	Y	12.87	5404704	5632918	477

BHID	HTYPE	DEPTH	XCOLLAR	YCOLLAR	ZCOLLAR
U_16_940	U	52.8	5404791	5633031	504.9
U_17_940	U	72.64	5404822	5633009	504.6
U_19_941	U	10.44	5404834	5633001	416.9
U_1_953	U	57.25	5404767	5633033	506.2
U_20_941	U	120	5404765	5633031	416.7
U_21_941	U	126	5404792	5633031	416.7
U_22_941	U	107.5	5404730	5633077	416.3
U_23_941	U	144	5404772	5633065	416.5
U_2_953	U	24.67	5404732	5633064	506.2
U_4_953	U	26.53	5404718	5633048	506.4
U_5_953	U	17.43	5404695	5633038	506.9
U_6_953	U	20.55	5404681	5632991	508.3
U_9_940	U	66.5	5404688	5632958	507.4
Y_1	Y	70.92	5404696	5632986	537
Y_10	Y	21.81	5404696	5633022	537.3
Y_100	Y	7.8	5404804	5633021	445.9
Y_102	Y	104.08	5404751	5633055	416.2
Y_103	Y	62.36	5404772	5633045	416.5
Y_104	Y	148.28	5404715	5633090	416.4
Y_105	Y	130.34	5404822	5633009	416.9
Y_106	Y	11.19	5404718	5633008	416.9
Y_107	Y	23.82	5404756	5633016	417
Y_108	Y	16.51	5404756	5633016	417
Y_11	Y	22.53	5404696	5633022	537.4
Y_113	Y	58.48	5404761	5633025	416.6
Y_114	Y	11.33	5404805	5633022	416.9
Y_116	Y	57.22	5404786	5633082	416.5
Y_117	Y	70.03	5404773	5633067	416.5
Y_118	Y	60.87	5404760	5633052	416.3
Y_119	Y	11.18	5404796	5633094	416.4
Y_12	Y	15.42	5404712	5633034	537.6
Y_120	Y	7.93	5404796	5633094	416.4
Y_122	Y	35.23	5404773	5633067	416.5
Y_123	Y	8.94	5404739	5633069	416.3
Y_125	Y	16.16	5404732	5633063	416.3

BHID	HTYPE	DEPTH	XCOLLAR	YCOLLAR	ZCOLLAR
Y_54	Y	12.2	5404704	5632918	477
Y_55	Y	13.16	5404705	5632928	477
Y_56	Y	29.75	5404705	5632928	477
Y_57	Y	27.8	5404706	5632938	477
Y_58	Y	34.57	5404706	5632938	477
Y_59	Y	17.85	5404708	5632948	477
Y_6	Y	9.05	5404683	5632962	537
Y_60	Y	25.84	5404708	5632948	477
Y_61	Y	27.59	5404709	5632958	477
Y_62	Y	38.66	5404709	5632958	477
Y_66	Y	17.45	5404745	5633062	476.1
Y_67	Y	21.29	5404747	5633059	476.2
Y_68	Y	50.48	5404734	5633033	477
Y_7	Y	22.11	5404688	5632995	537
Y_70	Y	13.8	5404738	5633057	476.4
Y_71	Y	5.68	5404736	5633061	476.2
Y_72	Y	3.87	5404743	5633068	476.2
Y_73	Y	7.78	5404746	5633068	476.2
Y_74	Y	43.01	5404748	5633048	476.9
Y_75	Y	11.83	5404768	5633060	477
Y_76	Y	36.3	5404772	5633057	477
Y_77	Y	29.64	5404734	5633033	477
Y_8	Y	41.59	5404696	5632986	537
Y_83	Y	9.23	5404747	5633044	477
Y_84	Y	79.97	5404725	5633127	477.7
Y_85	Y	63.26	5404738	5633059	446
Y_8_CH	Y	41.51	5404696	5632986	537
Y_9	Y	58.48	5404682	5633012	537.2
Y_92	Y	35.78	5404744	5633021	446
Y_93	Y	28.84	5404757	5633016	446.1
Y_94	Y	26.33	5404751	5633055	445.9
Y_95	Y	92.61	5404804	5633021	445.9
Y_96	Y	46.71	5404770	5633042	445.9
Y_9_CH	Y	50.62	5404682	5633012	537.2

APPENDIX 2: JORC TABLE 1

Section 1: Sampling Techniques and Data

Criteria	Explanation	Comments - drill hole data	Comments - UG data	CSA Comments
Sampling techniques.	§ *Nature and quality of sampling (e.g.. cut channels, random chips, or specific specialised industry 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.*	1980s sampling - 2 stage sampling: 1. composite chip sampling, every 15cm over a 2-3m interval. 2 - if a grade of >500ppm Sn (or other minerals of importance) was observed the core was sampled either as half or full core. 1940-50s sampling - drill core was split longitudinally, with a maximum of 5m being combined in waste areas, smaller intervals were used in areas of mineralisation.	1980s sampling- 1. Reconnaissance sampling: Rock chip sampling in 1-2m intervals within underground drives 2. Repeat sampling (if indicated through recon sampling) called Raster sampling: 3. Underground: rock chip sampling within a 0.5x0.5m grid point within average 3m long sampling intervals. Interval length was guided by ore controlling geological features (e.g. veins) 1940-50s sampling 1. Bulk sampling - a number of shovels were taken from each mine car and collected into 1 bulk sample for 3-5m length of drive.	There are adequate sampling procedures for historic sampling, as derived from historical reports. Limited drill core is available for review however confirms observations from underground. Some verification possible via re-sampling of core and underground adits and of historical pulps has provided good support for lithium data.
	§ *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.*	1940-50s - care was taken to ensure that the sample material looks macroscopically equal and homogenised. 1980s - evenly spaced composite chip samples followed by half or full core sampling. No information on calibration of tools.	1940-50s - coarse and fine pieces of the material were taken in the same ratio. 1980s - samples were regularly spaced across the sample area. 1940's bulk samples were superceded in the estimate where possible.	Concerns remain about the representivity of the Bulk and rock chip sampling. However, the majority of the lithium resource is reliant on drill core in which there is a higher level of confidence. There is also some imprecision at higher values in the historical data, likely a result of over-limits, identified by an anomalous number of values at 3000ppm and 5000ppm.

Criteria	Explanation	Comments - drill hole data	Comments - UG data	CSA Comments
	§ *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 (e.g. '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 (e.g. submarine nodules) may warrant disclosure of detailed information.*	Historic drilling - BQ-PQ core (60% BQ/NQ). Limited information available. Assaying reported as being via a wet chemical method in local laboratories.	Mineralisation determined from underground sampling. 1-2kgs of sample crushed to 10mm and secondary crushing to 3mm. Analysis via 50g samples analysed via Emmision Spectroscopy (AES), multielement.	There is sufficient, though limited information available to adequately described aspects of the determination mineralisation for sampling campaigns. These include: Historical QAQC data: which indicated good reproducibility. Re-analysed historical pulps: which indicated a slight positive bias in the historical data, relative to re-analysis. Data is sufficiently reliable for the Mineral Resource Classification of Inferred.
Drilling techniques.	§ *Drill type (e.g.. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g.. 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.).*	Information derived from historic documents. Core size - 1940-50s - unknown. 1980s - min3.5cm (BQ) maximum (8.4cm (PQ. More than 60% of the available core are between BQ and NQ.	No underground drilling information is available. Underground production drilling is known to have taken place historically. Data is limited.	There is sufficient information available regarding drill type for 1980's drilling. Limited information, derived from 1940-50's drilling is available. Historic drilling was a combination of BQ-PQ core (60% BQ/NQ).

Criteria	Explanation	Comments - drill hole data	Comments - UG data	CSA Comments
Drill sample recovery.	§ *Method of recording and assessing core and chip sample recoveries and results assessed.*	1940-50s - Historic reports state that drill core recovery was 90%. 1980 - reports state an recovery of 95%. Not possible to verify this as the majortiy of core has been lost.	Underground channel sampling 100% recovery	Recovery is assumed adequate to ensure representivity, though cannot be demonstrated with high confidence due to the lack of data recording recoveries. Overall, host lithologies are predominantly fresh and competent and recoveries are not considered material to the resource.
	§ *Measures taken to maximise sample recovery and ensure representative nature of the samples.*	Unknown	Underground channel sampling 100% recovery	Unknown for historical data. Historic reports suggest high recoveries. Overall, host lithologies are predominantly fresh and competent and recoveries are not considered material to the resource.
	§ *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.*	Unknown	unknown, however historic documents outline a procedure of sampling coarse and fines, which suggests procedure in place.	No recovery dataset available with which to assess whether a relationship exists. However review preceding comments.
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.*	highly detailed geological logging of core - original logs available for review	Highly detailed geological logging and UG mapping, data available. Geotechnical data unknown, however overall very stable host rock reported for Sadisdorf	Re-logging of core not practical, since very limited core available. Summary review by TIN of what core remains. Available logging information is detailed and suggests a good understanding of project geology but no data from which to define geotechnical parameters. However: host lithologies are predominantly fresh and competent. Also underground infrastructure/developments have remained largely in useable condition.
	§ *Whether logging is qualitative or quantitative in nature. Core (or costean, channel etc.) photography.*	Qualitative and quantitative (%, proportions). Core-logging sheets available and of good quality and detail.	UG drive maps and logs available.	Logging appears to be mostly qualitative, although some quantitative data (%, proportion) is available on historic logs. Logging was generally to a good standard with a good understanding of geology.

Criteria	Explanation	Comments - drill hole data	Comments - UG data	CSA Comments
	§ *The total length and percentage of the relevant intersections logged.*	11,605.2m of logged intervals (from global file) 100% logged	7677.3m of UG sampling 100% logged	The majority of drilling has geological logging.
Sub-sampling techniques and sample preparation.	§ *If core, whether cut or sawn and whether quarter, half or all core taken.*	Generally half core, in cases full core samples reported, unconfirmed how many meters are full core (reference - Tinco report)	No applicable to channel sampling	Data has been compiled from historical datasets, from half core sampling.
	§ *If non-core, whether riffled, tube sampled, rotary split etc. and whether sampled wet or dry.*	Not applicable. Material is core.	Sub-sampling information not available	n/a
	§ *For all sample types, the nature, quality and appropriateness of the sample preparation technique.*	Core sampling is appropriate and good quality sample medium.	Channel sampling appropriate and of good quality under documented procedure.	Sampling is considered appropriate; some concerns remain about appropriateness of the bulk samples. These however form a relatively inconsequential proportion of the resource dataset.
	§ *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.*	Tinco report states that internal and external checks were available (no sources given). Data provided to CSA by LIT does not contain any information on quality control procedures	Tinco report states that internal and external checks were available (no sources given). Data provided to CSA by LIT does not contain any information on quality control procedures. However external and Internal QAQC available, including CRM's blanks, standards and duplicates (internal). Limited dataset.	Historic duplicate data indicates good reproducibility. This cannot be verified. Recent re-sampling suggests adequate reliability for historical information.
	§ *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.*	unknown from historical information	unknown from historical information	Core drilling is the dominant (by tonnes impacted) dataset, which was half cored. UG sampling by rock chip sampling attempts to take an unbiased sample over a pre-determined interval underground.
	§ *Whether sample sizes are appropriate to the grain size of the material being sampled.*	The lithium mineralisation is not believed to be nuggety and sample sizes are appropriate.	The lithium mineralisation is not believed to be nuggety and sample sizes are appropriate.	The lithium mineralisation is not believed to be nuggety and sample sizes are appropriate.

Criteria	Explanation	Comments - drill hole data	Comments - UG data	CSA Comments
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.*	All samples were analysed spectrographically. Those samples exceeding a base value were than reassayed by XRF for Sn, W, As, Cu, Mo and Bi. (tinco report)	All samples were analysed spectrographically. Those samples exceeding a base value were than reassayed by XRF for Sn, W, As, Cu, Mo and Bi. (tinco report)	Re-analysis of historic pulps and core undertaken using: XRF (ME-XRF10, ME-MS61, ME-OG62) and ICP AES). These methods are considered appropriate.
	§ *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.*	There is no geophysically derived data or XRF	There is no geophysically derived data or XRF	There is no geophysically derived data or XRF
	§ *Nature of quality control procedures adopted (e.g.. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e.. lack of bias) and precision have been established*	internal and external check assays are available. Samples and pulps were stored. (Tinco report)	internal and external check assays are available. Samples and pulps were stored. (Tinco report)	Historic document provides information on QA/QC in place during historical sampling. This cannot be verified. Recent re-sampling completed under good QA/QC procedure, albeit with limited amount of data due to relatively small sampling programs. QA/QC for re-sampling suggest adequate reliability, accuracy and precision
Verification of sampling and assaying.	§ *The verification of significant intersections by either independent or alternative company personnel.*	Verification re-assaying undertaken by TIN, reviewed by CSA	Verification re-assaying undertaken by TIN, reviewed by CSA	Limited, though informative verification sampling has been completed, the results of which provide some confidence in historical data.
	§ *The use of twinned holes.*	No twin drilling completed.	No twinned channel sampling available	Verification via twin drilling/channel sampling not completed but is planned by LIT.

Criteria	Explanation	Comments - drill hole data	Comments - UG data	CSA Comments
	§ *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.*	All data compiled in exhaustive and highly detailed technical reports, available as hard copy and scanned (sometimes photographs only). All reports underwent a detailed quality control through higher ranked officials (at least two) before publication. Validation completed by TIL under CSAs supervision - limited errors were identified and fixed.	All data compiled in exhaustive and highly detailed technical reports, available as hard copy and scanned (sometimes photographs only). All reports underwent a detailed quality control through higher ranked officials (at least two) before publication. Validation completed by TIL under CSAs supervision - limited errors were identified and fixed.	Detailed information from hardcopy historical reports exist as regard data capture. Information on quality of pulps (bags etc) were recorded in Excel
	§ *Discuss any adjustment to assay data.*	no information on adjustments in contained in historical reports.	no information on adjustments in contained in historical reports.	There is no information available that would suggest adjustments to assay data.
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.*	thought to be within a few meters for the majority of holes, following review work by A.Allenburg TIL	Excellent UG manual survey techniques used by highly experienced and trained personnel, accuracy considered to be within a few decimeter	Accuracy of historical drilling data cannot be verified, though information is documented. Good survey control on recent sampling activities. Confidence - Moderate.
	§ *Specification of the grid system used.*	East German Gauss Krueger Grid regionally (on Krassovsky Ellipsoid). Mine Grid UG	UG Mine grid	CSA has converted the Deutsches Hauptdreicksnetz datum (Gauss grid) to WGS84 utm ZONE 33N.
	§ *Quality and adequacy of topographic control.*	Topographic control based on topographic maps of good quality. Data points every 2m	not applicable to channel data	The topographic DTM is based on base maps of 2m data points and is considered reliable. Confidence - Moderate to High
Data spacing and distribution.	§ *Data spacing for reporting of Exploration Results.*	irregular pattern 30-100m spacing	sampling on 5 levels - 30m spaced in RL. 0.2m - 34m mean 2.5m long	Exploration results are not being reported.
	§ *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.*	Drill hole spatially coverage of 30-100m, augmented by UG is sufficient for reporting Mineral Resources	sampling on 5 levels - 30m spaced in RL. 0.2m - 34m mean 2.5m long	Data spacing of drilling and underground/surface channels sufficient to establish continuity of geology and grade to the level required to report JORC Mineral Resources.

Criteria	Explanation	Comments - drill hole data	Comments - UG data	CSA Comments
	§ *Whether sample compositing has been applied.*	not applied	not applied	Raw sample intervals used as input in to subsequent downstream MRE work. (Compositing was used in MRE work).
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.*	Structures are both flat lying and steeply dipping. Drilling achieves adequate orientation for representivity, especially sub-horizontal mineralisation.	ug workings achieved unbiased sampling of vertical mineralisation.	Sampling is horizontal UG and near vertical down drill holes. There is no concern regarding potential for bias.
	§ *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.*	unknown - not expected.	Sampling bias not believed to have occurred, though cannot be fully verified.	It is not believed that drill orientation has introduced any bias.
Sample security.	§ *The measures taken to ensure sample security.*	Unknown.	Unknown	Data is historical and no documentation exists that defines the chain of custody. Re-analysis and re-sampling has overwhelmingly supported the general mineralisation model.
Audits or reviews.	§ *The results of any audits or reviews of sampling techniques and data.*	Data was generally reviewed, commented, corrected and amended by at least two higher ranked officials during GDR times. Only reviewed and high-quality results have been reported. M. Felix re-assessed methods and techniques used and found good to very good resemblance.		Audit information, as historically documented appears reasonable and valid. CSA involvement in recent sampling includes that procedure and protocol and underground visits.

Section 2: Reporting of Exploration Results

Criteria	Explanation	CSA CP Comments
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.*	licensed to Sachsenzinn GmbH (SZ) 100% owned subsidiary of Tin International.#12-4741.1/668, granted 6th Feb 2013 until 31st December 2020, area 2,250,300m2.
	§ *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.*	Forested area - access and mining possible but needs to be investigated. FFH - area (Flora Fauna Habitat), a weaker protection status not impeding any mining activity but requiring permits and assessments. Documents are provided
Exploration done by other parties.	§ *Acknowledgment and appraisal of exploration by other parties.*	n/a
Geology.	§ *Deposit type, geological setting and style of mineralisation.*	Polyphase Sn/Li/W +- Cu Greisen. Min. 4 granites intruded into Gneissic basement. with a major central fault +explosion breccia. Greisen minz = HG, stock work Minz = LG. The deposit is related to a structurally-complicated cataclasite and sub-volcanic complex, located within Proterozoic gneisses. The deposit occurs at the intersection between a NNW-trending cataclasis zone and a NE-trending brittle fracture zone, that had been reactivated many times. The centre of the deposit is formed by a multiple intrusion of tin granite (G1±G4) into a large fluid explosive breccia. At the surface, rocks of G1±G3 granites (outer granite) outcrop with a large inner greisen (+Li) forming a radial cupola around G4
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:*	Included in the JORC Technical Summary Memo.
	○ *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*	
	§ *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.*	Not applicable. Exploration Results are not being reported.

Criteria	Explanation	CSA CP Comments
Data aggregation methods.	§ *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g.. cutting of high grades) and cut-off grades are usually material and should be stated.*	Not applicable. Exploration Results are not being reported.
	§ *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.*	Not applicable. Exploration Results are not being reported.
	§ *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	Not applicable. Exploration Results are not being reported.
Relationship between mineralisation widths and intercept lengths.	§ *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.*	Combination of polyphase vein/ seam like mineralisation with vertically extensive pipe and a radial, cupola with the G4 contact.
	§ *If it is not known and only the down-hole lengths are reported, there should be a clear statement to this effect (e.g.. 'down hole length, true width not known').*	Not applicable. Exploration Results are not being reported.
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.*	Included in the JORC Technical Summary Memo.
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.*	n/a
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.*	Surface geochemical survey (Ag, Ba, Be, Bi, Co, Cu, Li, Mn, Mo, Pb, Sn) and geophysical survey data (geoelectric survey) available (all hard copy)
Further work.	§ *The nature and scale of planned further work (e.g.. tests for lateral extensions or depth extensions or large-scale step-out drilling).*	Possible extension of mineralisation along ENE/ NE trend, where mineralisation is indicated by old workings but no deep drilling exists to date (e.g. Ziegenbock area). LIT are planning a twin drill program, and UG channel verification sampling.
	§ *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	Included in the JORC Technical Summary Memo.

Section 3: Estimation and Reporting of Mineral Resources

Criteria	Explanation	CSA CP Comments
Database integrity.	§ *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.*	Historical data validation identified minimal errors however the physical database has undergone numerous physical modifications and CSA recommends a database re-build into a SQL compliant format.
	§ *Data validation procedures used*	Data validation identified minimal errors, which were fed back to LIT and corrected where required.
Site visits.	§ *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	In 2014: Simon Dorling visited site as Exploration QP, work included a full data presentation by TIN, site inspection, assessment of spatial data, investigate potential resource volumes, comment on suggested resource development works. In 2017: Thomas Branch (Senior Geologist) visited site between the 11th July and 14th July.
	§ *If no site visits have been undertaken indicate why this is the case.*	Site visit undertaken but not by CP.
Geological interpretation.	§ *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	Good understanding of project geology, through investigation over significant time, including mining activity, as documented in historical reports. TIN and LIT staff in-country have a working knowledge of the region. Confidence - High.
	§ *Nature of the data used and of any assumptions made.*	Data largely includes historical data, augmented by recent verification works (geology/sampling). Assumptions of quality and reliability from historically documented information, augmented by investigations by TIN and LIT staff, and input from CSA (site visit inspections).
	§ *The effect, if any, of alternative interpretations on Mineral Resource estimation.*	Good general understanding of geological model however local interpretations on mineralisation controls are expected to be refined with additional data. The relationship between Li and Sn remains unresolved.
	The use of geology in guiding and controlling Mineral Resource estimation.	Geology was important in improving the geological/resource model. Further separation of mineralisation style should be undertaken: e.g. The relationship between Li and Sn remains unresolved.
	The factors affecting continuity both of grade and geology.	Drill spacing of the Inner Greisen is relatively wide. However, CSA has been reasonable in the extension from known intercepts (approx. 50m). Additional tonnage is likely for the Inner Greisen, as mineralisation away from the model is supported by the wider drill data.

Dimensions.	§ *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource*	350m along strike, up to 220m width and 370m in depth.
Estimation and modelling techniques.	§ *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters, maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of the computer software and parameters used.*	Ordinary Kriging Estimation performed in Datamine software. Variography performed in Supervisor software KNA performed in Supervisor to optimise block size, search ellipse and min/max number of samples used in the estimate.
	§ *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.*	No check estimates were completed
	§ *The assumptions made regarding recovery of by-products.*	LIT propose their proprietary SiLeach® hydrometallurgical leaching and refining process route. Initial sighter testing produced leach extractions of >90%, averaging 95%. All XRD and petrography data overwhelmingly support zinnwaldite as the dominant lithium bearing mineral.
	§ *Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterization)*	NA
	§ *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.*	block size 15 x 15 x 30 (XxYxZ)
	§ *Any assumptions behind modelling of selective mining units.*	KNA analysis and SMU dimensions based on historic mining parameters.
	§ *Any assumptions about correlation between variables.*	No correlation made between Sn and Li. It remains to be defined and understood.
	§ *Description of how the geological interpretation was used to control the resource estimates.*	d2 direction was used to form the basis of along strike continuity for the Outer Greisen, and the contact with G4 used to define the orientation of the Inner Greisen.
	§ *Discussion of basis for using or not using grade cutting or capping.*	No significant outliers were present and no top-cutting was applied.
	§ *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	3 point validation undertaken; swath plots (with clustered and unclustered data), global mean grade comparison, 3D visual comparison and volume comparisons
Moisture.	§ *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	Dry tonnage estimated (SG was collected dry) based on a good dataset of Archimedes data collected from historical drill core in 2017. Additional data required for Outer Greisen.

Cut-off parameters.	§ *The basis of the adopted cut-off grade(s) or quality parameters applied.*	0.15% Li cut-off (0.32%Li_2O) used for reporting of the Mineral Resource Estimate is based on a simple conceptual economic model and an assessment of visual continuity of grade above the cut-off.
Mining factors or assumptions.	§ *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	Overall the Inner and Outer Greisen models, represent cohesive units, of reasonable thicknesses and at reasonable depths which support eventual chances of economic extraction.
Metallurgical factors or assumptions.	§ *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions made regarding metallurgical treatment processes and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	Petrographic and XRD studies indicate that the lithium at Sadisdorf is hosted by micas of the polylithionite - siderophyllite series, probably similar to zinnwaldite in composition. SiLeach® test work on bulk samples of Inner Greisen achieved lithium extractions of 91 – 97.4 %.
Environmental factors or assumptions.	§ *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	Environmental factors for Sadisdorf have yet to be determined. The area is forested; therefore, environmental permitting may be a significant hurdle to overcome as the project is developed.
Bulk density.	§ *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.*	Dry tonnage estimated (SG was collected dry) based on a good dataset of Archimedes data collected from historical drill core in 2017. Additional data required for Outer Greisen.
	§ *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc.), moisture and differences between rock and alteration zones within the deposit.*	Paraffin wax coated method used for initially SG to allow for any void space. However, 2017 data was collected from competent core, with no paraffin coating. CSA considers this acceptable.

	§ *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	Limited samples available, further SG testwork should be undertaken as part of any future test work.
Classification.	§ *The basis for the classification of the Mineral Resources into varying confidence categories.*	Dominance of historical data, with some though not exhaustive verification, and low confidence in some areas (historical data QA/QC, sample spacing, density, question marks over historical survey control in some areas) all contribute to limited confidence, which supports the classification of Inferred Resources.
	§ *Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).*	Factors including quality and reliability of input data, geological understanding and continuity, kriging parameters, density assignation, data distribution, 4 point validation checks have all been used to inform the classification of the Mineral Resource.
	§ *Whether the result appropriately reflects the Competent Person's view of the deposit.*	It is the CP'S professional opinion that the classification of Inferred Resources reflects the current confidence that can be attributed to the MRE for Sadisdorf.
Audits or reviews.	§ *The results of any audits or reviews of Mineral Resource estimates.*	No audits have been performed
Discussion of relative accuracy/confidence	§ *Where appropriate a statement of the relative accuracy and/or confidence in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.*	4 Point validation checks including quantification of input versus output average grade, comparison of input and output data populations spatially, data population histogram comparison and check estimate via UC all provide results that show the grade estimate to be accurate, to the level of accuracy required to report a Mineral Resource, to the level of Inferred Resources.
	§ *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.*	Global estimates, with comment on reliability a local scale (low).
	§ *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	Production between 1947 and 1953 returned an average grade of 0.62% Sn (47,000t) The current resource reported at a 0.15 % Li cut-off totals 25Mt.