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Competent Person's Report

on

the Zinnwald Lithium Ore Deposit

Project-No. 30130130

For: Bacanora Minerals Ltd.
Cairn Financial Advisers LLP

Halsbrücke, 2014-09-30, update 2018-01-15

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Executive Summary

Bacanora Minerals Ltd. („Bacanora" or „the Company") by its affiliate Deutsche Lithium GmbH („DL") owns the mining rights for the Zinnwald lithium ore deposit located in the Free State of Saxony in East Germany along the German/Czech border. Recent exploration work of the Company has secured a substantial lithium resource of the measured, indicated and inferred categories justifiying a further development of the asset.

The Zinnwald deposit is a typical example of a granite-hosted greisen deposit, which is here geologically linked to the cupola of a geochemically highly specialised granite in contact to rhyolitic volcanic rocks. It was in the past in its apical parts underground mined basically for veins of tin (cassiterite) and tungsten (wolframite, minor scheelite) until the end of the second world war. Lithium carrier is the mica zinnwaldite, which contains up to 1.9 wt% lithium and is enriched in several parallel to subparallel stretching horizons below the already mined tin mineralisation. Individual lithium-bearing greisen beds show vertical thicknesses of more than 40 m.

In 2011 and 2012 an exploration permit was granted by the Saxon Mining Authority to SolarWorld Solicium GmbH („SWS") based in Freiberg/Germany under the concessions „Zinnwald" (7,794,278 m²) and „Zinnwald-North" (5,121,664 m²), respectively. In 2012 the first drilling works commenced in Zinnwald and continued to 2014. Drilling, sampling, geological description and assaying including quality assurance and control followed best practice guidelines. Together with the data of previous exploration campaigns the results were compiled in a comprehensive database. The data was integrated into a geological model of the ore deposit with respect to lithium mineralisation and a computerised block modelling approach was applied for resource estimation with the help of SURPAC™ (version 6.3) software. The lithium resource is evaluated below the elevation of 740 m a.s.l. for ore horizons > 2m thickness and a cut-off lithium grade of 2,500 g/t. Measured, indicated and inferred resources were only disclosed for lithium. The combined measured and indicated resource amounts to 26.57 Mt of ore at a lithium grade of 0.362 %. Additional infill-drilling was carried out in 2017 to secure the model and the resource estimate. Results of this campaign are pending.

Following the establishment of the joint venture "Deutsche Lithium GmbH" by SWS and the Company in 2017, a mining permit was applied for, which was approved for the field „Zinnwald" as of the 12th of October 2017. The permit covers 2,564,800 sqm and is valid to the 31st of December 2047.

1 Introduction

Because the Company will change its domicile from Canada to the United Kingdom it needs to reapply for listing on the AIM market of the London Stock exchange. The readmission process requires a Competent Person's Report (CPR) on the Zinnwald asset of the Company according to the AIM requirements. The present report refers to the PERC report „Zinnwald Lithium Project“ of the year 2014 by G.E.O.S. Ingenieur Gesellschaft („GEOS“) based in Halsbrücke in Germany and the Technical University Bergakademie Freiberg. The writer visited several times the concession and discussed the project with GEOS‘ staff in charge.

2 Overview of the Region, Location and Asset

The Company holds one mineral asset in Germany. The property called "Zinnwald" is located in the Eastern Erzgebirge mountains in East Germany approximately 35 km south of the capital of the Free State of Saxony, Dresden, and about 220 km south of Berlin. The area belongs to the sub-district Zinnwald of the town of Altenberg. The explored ore deposit stretches along the border between Germany and the Czech Republic and continues on the Czech territory. In Zinnwald crossing the German/Czech border is possible by car.

The motorway A 17 (E 55), which connects Dresden with Ústí nad Labem (Aussig) in Czechia bypasses east of the property in a distance of 17 km. The airports of Dresden, Berlin and Prague are 70, 230 and 100 km away, respectively.

The topography is typical for a low mountain range with steep valleys and smooth summits. The licence essentially covers parts of the residential area of Zinnwald village.

Figure 1: Position of the Zinnwald asset in the East Erzgebirge in Germany

3 Geological and Mineralogical Overview

The Zinnwald ore deposit belongs to the group of greisen deposits. A greisen by definition is a granoblastic aggregate of quartz and mica with accessory amounts of topaz, tourmaline and fluorite. Greisens are formed by post-magmatic metasomatic alteration of late stage, geochemically specialised granites and are developed at the upper contacts of granite intrusions with the country rock. The mineralisations form irregular to sheet-like bodies and may be accompanied by stockworks and veins. Greisens are important for their production of tin, tungsten and lithium.

The Zinnwald greisen is bound to a Variscan (Hercynian) intrusive complex, which intruded rhyolitic lavas of Upper Carboniferous age along a major fault structure. The ore mineralisation is of late Variscan age (about 280 million years old) and is geologically restricted to the cupola of the geochemically highly specialised Zinnwald granite.

It was in its apical parts underground mined basically for veins with tin (cassiterite) and tungsten (wolframite, minor scheelite) until the end of the second world war. Lithium is incorporated by a lithium-bearing mica, which is called "zinnwaldite", a member of the siderophyllite-polylithionite series. The chemical formula of zinnwaldite as a phyllosilicate is about as follows:

$KLiFe^{2+}_{0.75}Al[(F, OH)_2/(Al_{0.5}Si_{3.5})O_{10}]$

Zinnwaldite contains between 0.8 und 1.9 wt% lithium (mean: 1.6 wt%). The evaluation of the zinnwaldite enrichment and distribution with respect to a possible economic extraction was the main task of the exploration work.

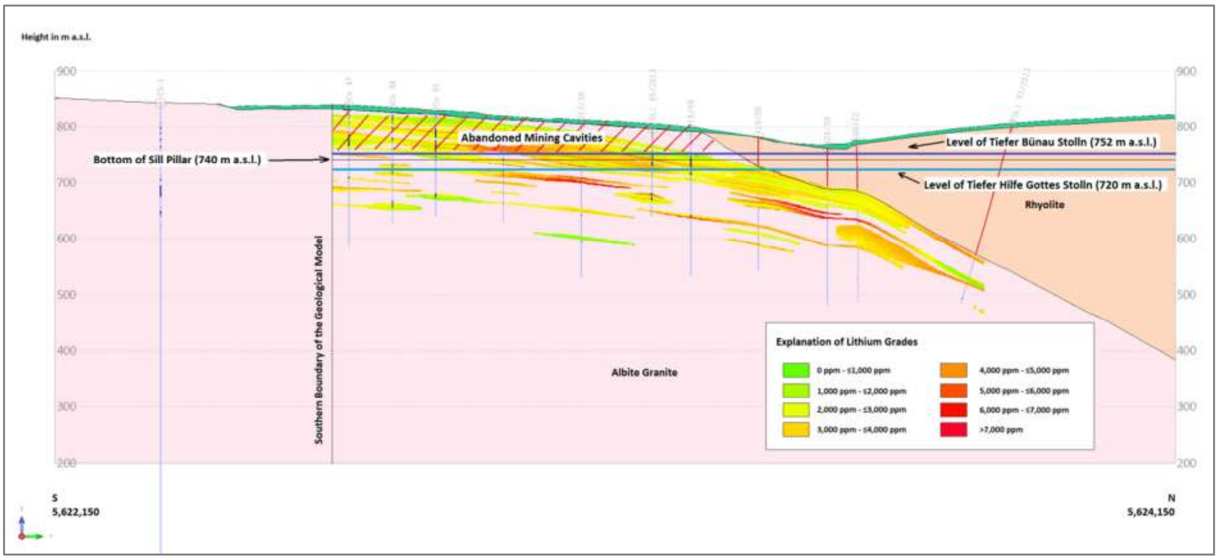

Figure 2: Schematic section through the Zinnwald lithium deposit with the old mine workings

4 Exploration and Mining Licences

First underground mining for tin in the Zinnwald deposit on both sides of today's border between Germany and the Czech Republic is recorded from the second half of the 15th century. The "Tiefe Bünau-Stollen", which was driven from the year 1686 on, became the most important gallery of the whole Zinnwald ore field. This adit is actually part of the visitors' mine "Vereinigt Zwitterfeld zu Zinnwald" and is located in the concessions mentioned below. Tin and minor tungsten mining on the German side ceased with the end of the Second World War, on the Czech part in the year 1990. Between 1890 until the end of the Second World War lithium-mica was produced as a by-product. Lithium exploration on the German side started again in the 1950ies.

In 2011 and 2012 an exploration permit was granted by the Saxon Mining Authority to SolarWorld Solicium GmbH („SWS") based in Freiberg/Germany under the concessions „Zinnwald" (7,794,278 m²) and „Zinnwald-North" (5,121,664 m²), respectively, for the commodities lithium, rubidium, caesium, tin, tungsten, molybdenum, scandium, yttrium, lanthanium and lanthanides, bismuth, indium, germanium, gallium, zinc, silver and gold. The permits were valid up to the 31st of December 2015 and were extented upon request in November 2015. New expiry date was 31st of December 2017.

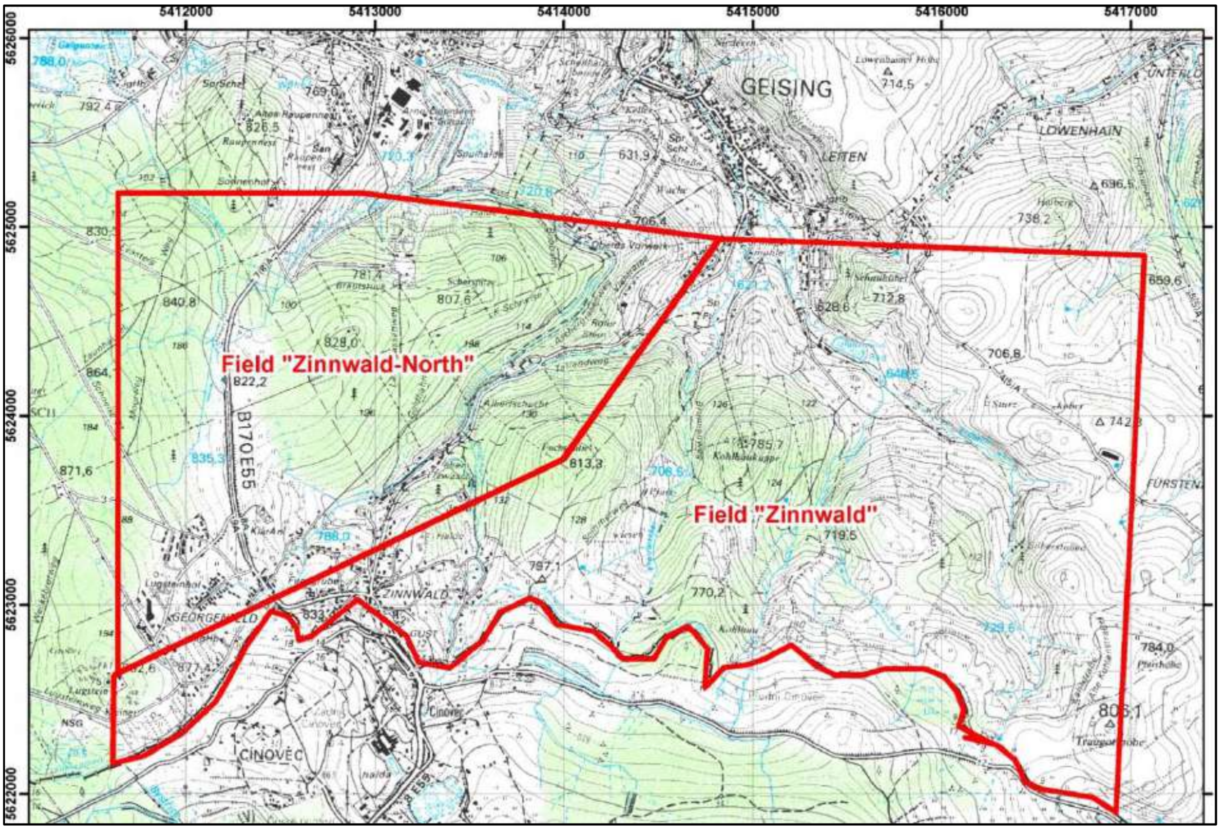

Figure 3: Licence map with the concessions "Zinnwald-North" and "Zinnwald"

Exploration work consisted of underground sampling in the visitors' mine and of a surface diamond drilling programme. The results were integrated in a geological model of the ore deposit with respect to lithium mineralisation and a mineral resource was estimated.

Following the establishment of the joint venture "Deutsche Lithium GmbH" by SWS and the Company in 2017, a mining permit was applied for, which was approved for the field „Zinnwald" as of the 12th of October 2017. The permit covers 2,564,800 sqm and is valid to the 31st of December 2047. Currently, the assay results of the infill-drilling campaign of the year 2017 are pending. 15 holes with a total length of 4462 m were completed and sampled. Along with the verification of the geological model the results will serve for an upgrade of the resource estimate.

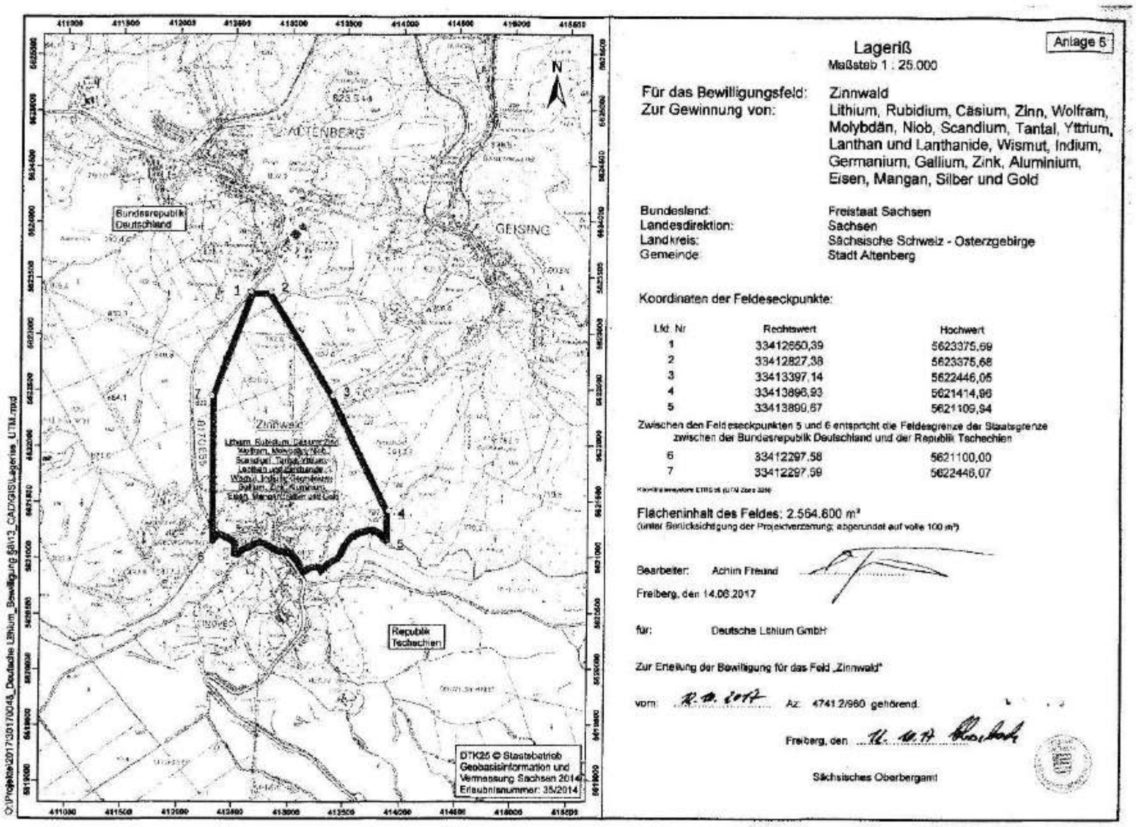

Figure 4: Licence map of the „Zinnwald" mining concession

Asset	Holder	Interest	(%) Status	Licence expiry date	Licence area m²	Comments
Zinnwald Germany	SolarWorld Solicium GmbH	100 %	Exploration	31.12.2017	7,794,278	Sampling and drilling completed
Zinnwald N Germany	SolarWorld Solicium GmbH	100 %	Exploration	31.12.2017	5,121,664	Sampling and drilling completed
Zinnwald Germany	Deutsche Lithium GmbH	100 %	Development	31.12.2047	2,564,800	Sample analysis underway

Table 1: Summary table of licences in Germany

5 Resources

In 2014 G.E.O.S. Ingenieur Gesellschaft based in Halsbrücke in Germany and the Technical University Bergakademie Freiberg in Germany have issued a „Report according to PERC standard Zinnwald Lithium Project". This report followed the compliance and guidance standards proposed by the Pan-European Reserves and Resources Reporting Committee of March 15th, 2013. The purpose of this expertise was to estimate the lithium and potassium resources of the Zinnwald deposit and to develop mining and processing methods for it.

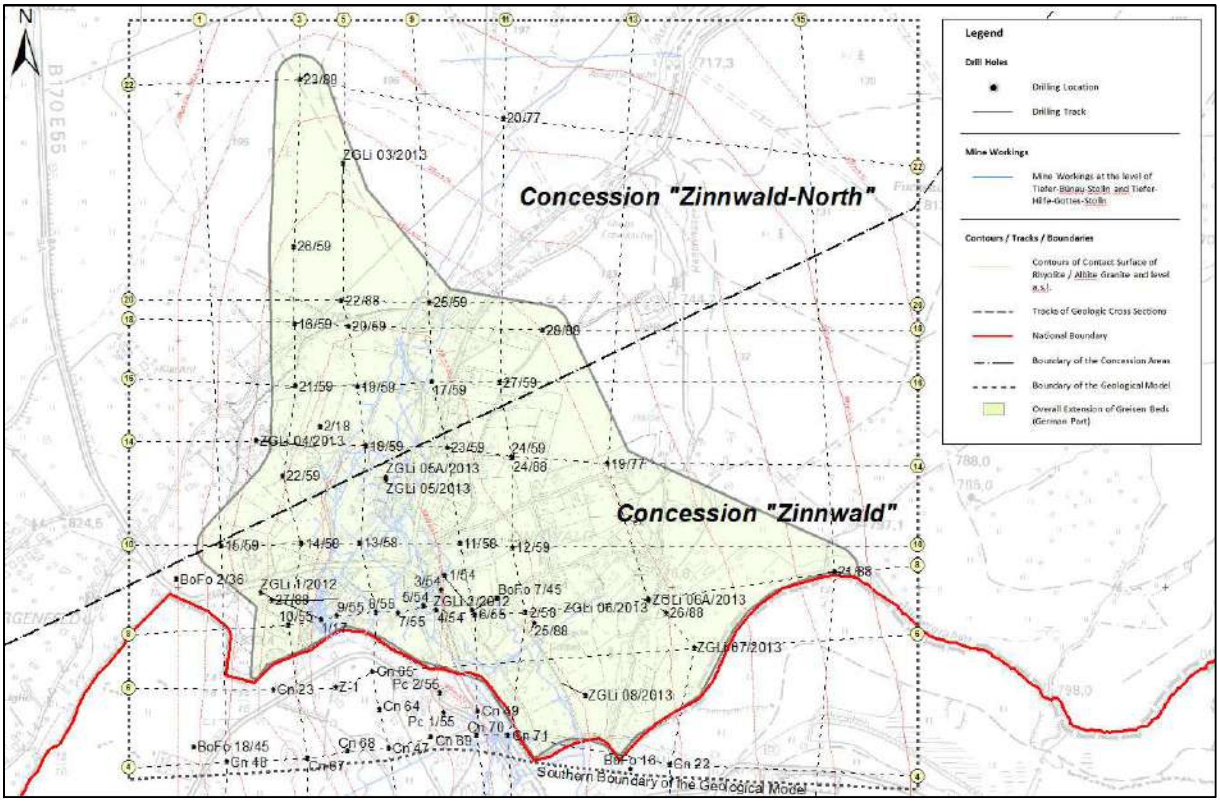

Figure 5: Plan of exploration drill holes used in the resource estimate

A geological and structural model was constructed and a computerised block modelling approach was applied for resource estimation by using the software SURPAC™ (version 6.3). The block model covers the whole German part of the deposit and fringe parts of the Czech deposit south of the border. The resource estimate was based on the evaluation of a data base containing 57 surface holes and 12 underground drill holes. 10 of the surface holes were drilled on behalf of SWS in the years 2012 to 2014. Chemical analysis was carried out by the ALS laboratory at Rosia Montana in Romania. QA/QC procedures were carefully fulfilled. A total of 4,246 lithium core assays were produced covering 7,255 m of core. Additionally, 83 assays were available from underground channel samples and underground grab samples collected in the abandoned Zinnwald mine.

The lithium resource is estimated below the elevation of 740 m a.s.l. for ore horizons > 2m thickness and a cut-off lithium grade of 2,500 g/t. Measured, indicated and inferred resources were only disclosed for lithium. The combined measured and indicated resource amounts to 26.57 Mt of ore at a lithium grade of 0.362 %. The commodities tin, tungsten and potassium oxide were reported as upside potentials due to an incomplete data basis for these elements. The person in charge for the estimates is GEOS staff member Matthias Helbig.

Currently, the assay results of the infill-drilling campaign of the year 2017 are pending. 15 holes with a total length of 4462 m were completed and sampled. Executing laboratory is again ALS. Along with the verification of the geological model the results will serve for an upgrade of the resource estimate.

Category	**Gross**			**Net attributable**			**Operator**
	Tonnes	Li Grade (g/t)	Contained metal (t)	Tonnes	Li Grade (g/t)	Contained metal (t)	
Mineral resources per asset							
Measured	10,283,000	3,661	37,646	10,283,000	3,661	37,646	
Indicated	16,287,000	3,594	58,535	16,287,000	3,594	58,535	
Inferred	9,867,000	3,705	36,557	9,867,000	3,705	36,557	
Total	36,437,000	3,643	132,740	36,437,000	3,643	132,740	

Table 2: Summary of lithium resources by status for the Zinnwald mining asset

6 Conclusions

Deutsche Lithium GmbH owns the mining rights according to the German mining law for the Zinnwald lithium prospect located in the Free State of Saxony in Germany. The lithium mineralisation is part of a typical granite-hosted greisen deposit, the apical parts of which were already mined for tin and tungsten for centuries. Lithium carrier is the mica zinnwaldite, which contains up to 1.9 wt% lithium. It is enriched in several inclined parallel to subparallel horizons below the old mine workings. Individual lithium-greisen beds show vertical thicknesses of more than 40 m. The upper part of the deposit is nowadays from underground accessible by a visitors' mine located in the asset.

The permit granted by the Saxon Mining Authority is valid until the 31st of December 2047. The extent of the applied licence area covering 2,564,800 sqm is based on the results of data compilation of previous and recent exploration campaigns, the latter carried out on behalf of the actual joint venture partner of the Company from 2012 to 2014. The exploration results were integrated into a geological and structural model and a stable lithium resource consisting of the measured, indicated and inferred categories was estimated with the help of SURPAC™ (version 6.3) software. All recent exploration, compilation and evaluation work was carried out with due diligence and followed best industrial practice standards. The combined measured and indicated resource amounts to 26.57 Mt of ore at a lithium grade of 0.362 %. This lithium resource is estimated below an elevation of 740 m a.s.l. for ore horizons > 2m thickness and a cut-off lithium grade of 2,500 g/t. Preliminary studies on ore distribution, mining methodology and ore beneficiation suggest a further development of the prospect. Additional exploration work consisting of 15 infill holes with a total length of 4,462 m was conducted in 2017. Results are awaited.

7 Qualifications and Basis of Oppinion

Wolf-Dietrich Bock has prepared the Competent Person's Report on the Zinnwald lithium ore property of Bacanora Minerals Ltd. on behalf of G.E.O.S. Ingenieurgesellschaft mbH. The basis for the CPR is the PERC report on the Zinnwald Lithium Project of the year 2014 by GEOS and the Technical University Bergakademie Freiberg. GEOS has a number of professionally qualified personnel and consultants, who are members in good standing of a recognized self-regulatory organization of engineers and/or geoscientists. They have at least five years relevant experience in the estimation, assessment and evaluation of lithium assets.

Wolf-Dietrich Bock as a member of the European Federation of Geologists is accredited as Competent/Qualified Person with the ability for expertises according to international standards like PERC, NI 43-101 and JORC. He worked more than twenty-five years for the exploration and mining industry with the focus on metallic ore deposits and industrial minerals.

Wolf-Dietrich Bock has visited the property several times on surface and underground and met the GEOS personnel in charge to discuss the project.

8 Statement of Competent Person's Independence

Wolf-Dietrich Bock and GEOS are independent of the Company, its directors, senior management and advisers.

Wolf-Dietrich Bock and GEOS will not be remunerated by way of a fee that is linked to the re-domicile or the value of the Company.

Wolf-Dietrich Bock and GEOS are not sole practitioners.

Halsbrücke, 15.01.2018

Wolf-D. Bock

Wolf-Dietrich Bock

i.A.
Matthias Helbig

Respectfully submitted,

G.E.O.S. Freiberg Ingenieurgesellschaft mbH

Client:	Deutsche Lithium GmbH Am St. Niclas Schacht 13 09599 Freiberg
Project-No. G.E.O.S.:	30130130
Reporting period:	09/2012 - 09/2014; 01/2016 - 12/2017
Reporting persons:	Dr. René Kahnt, graduated physicist Dipl.-Geoök. Matthias Helbig, geoecologist Dr. Bernd Zernke, graduated geochemist Dipl.-Geol. Kersten Kühn, geologist Dr. Jürgen Hartsch, graduated geophysicist
In cooperation with TU Bergakademie Freiberg:	Dipl.-Geol. Jörg Neßler, geologist
Country/State/County/City:	Germany / Freistaat Sachsen / Sächsische Schweiz - Osterzgebirge / Altenberg - Zinnwald
Map-No.:	5248
Pages:	129
Appendices:	10

Halsbrücke, 30.09.2014 / 15.01.2018

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Project engineer

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LIST OF ABBREVIATIONS

General Abbreviations

2D	2-dimensional
3D	3-dimensional
a.s.l.	above sea level
A/B	resource class according to classification system used in the GDR (comparable approximately with category "measured" reserve)
C_1	resource class according to classification system used in the GDR (comparable approximately with category "indicated" reserve)
C_2	resource class according to classification system used in the GDR (comparable approximately with category "indicated" reserve)
c/o	cut-off
DDH	diamond drillhole
DIN	Deutsches Institut für Normung
DL	Deutsche Lithium GmbH
Δ	resource class according to classification system used in the GDR (comparable approximately with category "inferred" reserve)
GDR	German Democratic Republik
RC	reverse circulation
SWS	SolarWorld Solicium GmbH
ZGD	Central Geological Service of the German Democratic Republic

Abbreviation of Units

kt	kilotonnes (thousand tonnes, 10^3)
Mt	megatonnes (million tonnes, 10^6)
ppm	parts per million
Tt	thousand tonnes
wt%	weight percentage

Geological Abbreviations

TGGM	mica-greisen
TGQ+GM	quartz-mica-greisen
TGQ	quartz-greisen
PG_GGM_3	albite granite (strongly altered to mica-greisen)
UG_GGM_3	microgranite porphyritic granite (strongly altered to mica-greisen)

PG_PR_GGM_3	porphyritic granite (strongly altered to mica-greisen)
PG_GGM_2	albite granite (medium-altered to mica-greisen)
UG_GGM_2	microgranite (medium-altered to mica-greisen)
PG_PR_GGM_2	porphyritic granite (medium-altered to mica-greisen)
PG_GGM_1	albite granite (weak-altered to mica-greisen)
UG_GGM_1	microgranite (weak-altered to mica-greisen)
PG_PR_GGM_1	porphyritic granite (weak-altered to mica-greisen)
PG	albite granite
UG	microgranite
Y	rhyolite

Geochemical Abbreviations

K	potassium
Li	lithium
Na	sodium
Sn	tin
W	tungsten

1 SUMMARY

1.1 Introduction and Overview

This report was prepared to provide a Technical Report compliant with the provisions of PERC reporting standard 2013, by way of reviewing and summarising updated resource estimates for the "Zinnwald Lithium Ore Deposit".

This current estimate was completed during July and August, 2014.

The German part of the deposit covers an area of 1.6 km x 1.5 km (corner points: 5,412,400; 5,622,650 – 5,414,000; 5,624,150), and is located in the eastern part of the Erzgebirge Mountains in Saxony / Germany near the Altenberg and Zinnwald settlements.

The principle commodity of economic interest is lithium. By ore processing tin, tungsten and potassium oxide may be obtained as minor products.

G.E.O.S. Ingenieurgesellschaft mbH was contracted by SolarWorld Solicium GmbH (SWS), an affiliated firm of SolarWorld AG, to elaborate a lithium resource estimate for the Zinnwald deposit (German part of the Zinnwald / Cínovec deposit). The respective investigations and works have been carried out during the period 09/2012 to 08/2014. The results and conclusions had been reported in 09/2014 (see Resource Estimation Report [46]).

In 2016 adding surface and underground exploration activities with mapping and sampling had been carried out on behalf of SWS, which are reported in [63]. Chapter 3.10 was added, furthermore chapter 8.1 and the literature numbers were updated.

In February 2017 SWS was transferred into Deutsche Lithium GmbH (DL) and all SWS properties were taken over and are ongoing as DL properties. Chapter 1.2 has been added accordingly.

Because an infill drilling program was carried out by DL in 2017, chapter 3.11 was added. The reporting about this infill drilling program will follow in 2018.

1.2 Exploration Concession

The Deutsche Lithium GmbH (DL) controls the Zinnwald property which is located in the South of Saxony approximately 35 km south of the city of Dresden, Capital of Saxony.

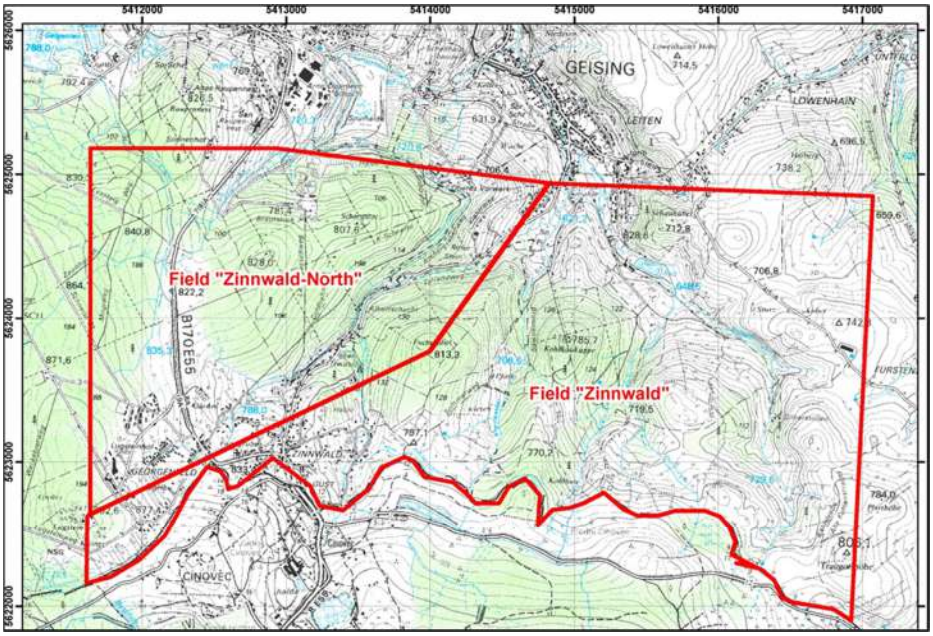


Figure 1: Map of the exploration concessions

It is situated directly at the border to the Czech Republic. The Zinnwald property encompasses approximately 12,924,800 m² on 2 contiguous mineral claims. SWS acquired the 2 exploration licenses in the Zinnwald area in 2011 and 2012.

1.3 Geology and Mineralisation

The deposit is bound to a Variscan intrusive complex being younger than the granite porphyries in the region. Within this younger intrusive complex an older suite of biotite granites and a younger suite of lithium-topaz-granites occur. The older suite belongs geochemically to the group of monzogranites and the younger suite affiliates to albite granites.

The ore mineralisation is of late Variscan age (280 Ma) and is geologically restricted to the cupola of the geochemically highly specialised Zinnwald granite. This granite forms a N-S elongated intrusive body.

The single types of mineralisation occurring within the albite granite of Zinnwald and in the adjacent rhyolite. According to their phenomenology the following mineralisation types can be distinguished:

- flat-dipping veins ("Flöze"),
- steep-dipping veins ("Morgengänge") and
- extensive greisen beds.

Mainly the last mentioned type hosts the lithium ore. The ore minerals are represented by zinnwaldite, cassiterite and wolframite. Certain quantities of tungsten may occur as fine-grained scheelite.

1.4 Database and Resource Estimation

The current database contains data from 57 surface holes and 12 underground drillholes. 10 of the surface holes have been drilled during the past two years as part of the exploration campaign done by SWS. The samples from the last drilling campaign (2012-2014) have been assayed by ALS in Roşia Montană / Romania. All in all 4,246 lithium core sample assays are available, covering 7,255 m of core.

Further 83 assays were taken from underground channel sampling, performed by SWS in the year 2012 and another 1,350 assays from underground pick samples, reported by GRUNEWALD (1978b) [98].

A computerised block modelling approach was applied for resource estimation by using the software SURPAC™ (version 6.3). The prepared block model covers the whole German part of the deposit and fringe parts of the Czech deposit behind the border. The model elevation high reaches from 200 m a.s.l. to 850 m a.s.l.

1.5 Abandoned Mine Workings

The top of the Zinnwald granite dome and surrounding rhyolite have been subjected to extensive mining activities during the past 500 years. Especially above the "Tiefer Bünau Stolln" level at 752 m a.s.l. many cavities with and without backfill do exist. In some parts they even reach below 720 m a.s.l. ("Tiefer Hilfe Gottes Stolln" level).

Parts of the "Tiefer Bünau Stolln" are prepared as a visitor mine and are open to the public. In its galleries major parts of the greisen beds "B" can be investigated underground. Mine workings between levels of "Tiefer Bünau Stolln" and "Tiefer Hilfe Gottes Stolln" are by far not that extensive like above "Tiefer Bünau Stolln". Thus extraction of the greisen ore will be feasible case-by-case in these parts of the deposit.

As a consequence of the boundary conditions the resource estimation is limited to those parts of the deposit that are situated below 740 m a.s.l, considering a sill pillar of 12 m thickness below "Tiefer Bünau Stolln" level.

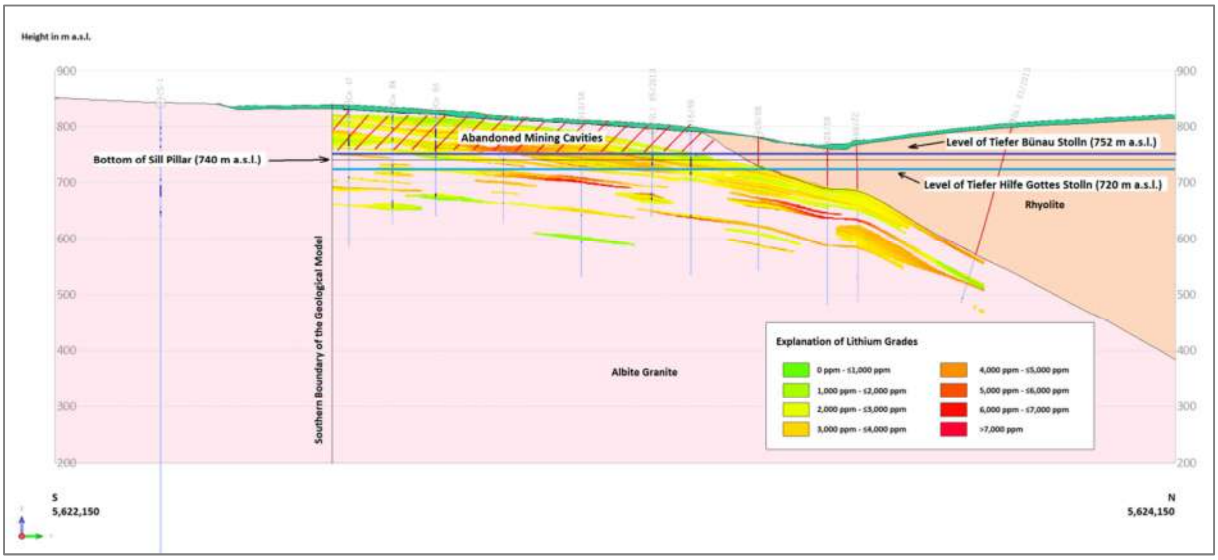


Figure 2: Scheme of the abandoned mine workings

1.6 Summary of the Mineral Resource and Potential Estimates

The lithium mineral inventory accounts for 49,895 kt greisen tonnage ("Ore Type 1") with a rounded mean grade of 3,200 ppm.

Table 1: Mineral inventory of Li deposit Zinnwald, German part below 740 m a.s.l.

Mineral inventory "Ore Type 1"	Volume [10^3 m³]	Tonnage [10^3 tonnes]	Mean Li grade [ppm]
Total	***18,480***	***49,895***	***3,200***

Applying prospects for eventual economic extraction (vertical thickness ≥ 2 m, cut-off = 2,500 ppm) to the mineral inventory gives a demonstrated lithium resource of 26,570 kt greisen ore, showing a mean lithium grade of 3,620 ppm (see *Table 2*). The total resource as sum of the "measured", "indicated" and "inferred" classified resources consequently accounts for 36,437 kt greisen ore with a mean lithium grade of 3,643 ppm.

Table 2: Li resource of Zinnwald, German part below 740 m a.s.l. – base case summary

Resource classification "Ore Type 1" - greisen beds, vertical thickness ≥ 2 m, cut-off Li = 2,500 ppm	Ore volume [10^3 m³]	Ore tonnage [10^3 tonnes]	Mean Li grade [ppm]
Demonstrated *(Measured+Indicated)*	*9,840*	*26,570*	*3,620*
Total *(Measured+Indicated+Inferred)*	***13,495***	***36,437***	***3,643***

Lithium, tin, tungsten and potassium oxide upside potentials could be shown as mineral inventories for both, greisen bed and greisenised granite.

The upside lithium potential of "Ore Type 1" (lithium inventory that could not be classified) accounts for a volume of approximately 0.9 million cubic metres respectively 2.4 million tonnes ore having a mean grade of 3,200 ppm.

Total greisen bed tonnage accounts for roundly 18 million cubic metres / 50 million tonnes showing mean grades of tin of approximately 400 ppm, tungsten of approximately 80 ppm and of potassium oxide of approximately 2.5 wt%.

Greisenised granite tonnage accounts for roundly 44 million cubic metres / 117 million tonnes with approximated mean grades of lithium of 1,800 ppm, tin of 240 ppm, tungsten of 40 ppm and potassium oxide of 3.4 wt%.

1.7 Conclusions and Recommendations

The report demonstrates that the estimated Zinnwald Lithium Resources has been established on a solid data basement and with the use of modern estimation methodology.

Because of information uncertainties (predominately in sampling) related to the older exploration activities performed prior to the 1980ies the calculated tonnages and grades of ore could be reported in compliance with the PERC standards for lithium only.

Minor elements tin, tungsten and potassium oxide have been reported as upside potential. Unclassified lithium mineralisation has been reported as a potential also. Consequently, further investigations (drilling and sampling) in case of need should be done in order to classify further resources for the minor elements at level of international reporting standards.

Considering the established Li grade and tonnage the Zinnwald Lithium deposit would be technical feasible for further development of the Zinnwald Lithium project as a whole.

A detailed geostatistical review of the data is missing and need to be done before establishing a Mineral Reserve on the base of the existing resource.

The authors of this report consider the Zinnwald Lithium Project to be sufficiently robust to warrant moving it into the Pre-Feasibility Study, which would allow qualifying the established Mineral Resources of this report into economically mineable Mineral Reserves.

Detailed mine & processing planning, scheduling and mine & processing design shold follow the Pre-feasibility stage.

2 INTRODUCTION

2.1 Work stages

The objective of the study was to reevaluate the lithium resources of the Zinnwald deposit implementing all currently available geological and sample information.

The executed works included:

1. Review and correction of all available geological data (Technische Universität Bergakademie Freiberg)
2. Integration of the data into an MS-Access database and verification (Technische Universität Bergakademie Freiberg)
3. Geological interpretation of the main orebodies (G.E.O.S.)
4. Preparation of vertical geological sections of the ore deposit (G.E.O.S.)
5. Construction of a SURPAC^{TM} 3D model of the orebodies (task of G.E.O.S.)
6. Construction of SURPAC^{TM} 3D models of the main geological structures such as granite surface and fault planes (G.E.O.S.)
7. Statistical and geostatistical calculations (G.E.O.S.)
8. Block modelling of the orebodies (G.E.O.S.)
9. Estimation of lithium resources of the ore deposit and the upside lithium, tin, tungsten, potassium potentials (G.E.O.S.)

The software SURPAC™ (version 6.3) has been used as the main tool for 3D CAD construction and estimation of resources.

2.2 Units and Frames of Reference

All measurement units used in this report are metric.

The coordinate system is chosen as Germany Gauss-Krüger, segment No. 5. Elevation is referenced to sea level.

2.3 Sources of Information

The following sample data has been integrated into the MS-ACCESS database "Erz-Zinnwald.mdb":

- Data of the early exploration campaign during World War I (1917 - 1918)
- Data of the so called "Bodenforschung" campaign (1930s to 1945)
- Data of a Czech exploration campaign (1955)
- Data of the exploration campaign of LÄCHELT (1951 - 1960)
- Data of a Czech exploration campaign (1961 - 1962)
- Data of the exploration campaign of GRUNEWALD (1977 - 1978)
- Data of the exploration campaign of KÜHNE and BESSER (1988 - 1989)
- Data of the exploration campaign performed by SOLARWORLD SOLICIUM GMBH (2012-2014)

The results of the exploration activities in 2016 [63] were not included. A detailed list of the used data sets is given in *Appendix I*. All in all 4,246 lithium core assays are available, representing 7,255 m core meters.

The description of the database structure is presented in *Appendix II*. Further description of the data fields of the several data tables is contained within the database itself.

The datasets of the diamond drillholes (DDH) are contained in interval tables (files "geology" and "sample"). The data of 1,350 underground pick samples taken by GRUNEWALD (1978) and of 83 underground sidewall channel samples (sample length = 1.5 m, interval length = 2 m) from the exploration campaign of SOLARWORLD SOLICIUM GMBH (2012) are assigned to discrete points (file "sample_disc").More detailed information about all used historical data source is presented in the report of KÜHN, K. et al. [36]: "Kenntnisstandsermittlung" Lithiumgewinnung in der Lagerstätte Zinnwald, Arbeitsbericht.

The geological sections and plans of the "Tiefer Bünau Stolln" level of LÄCHELT (1960) [83] were used as a first idea for analysing the core region of the ore deposit on the German territory. The sections and plans were digitised and geo-referenced. After this procedure the already interpreted greisen beds were used for digital construction of CAD sections with SURPAC™. During the next step top and bottom of the sections were tied up to the suitable intervals of the DDH. Based on this stage, the greisen beds were extended to the drillholes of the exploration campaigns performed in the 1970s and 1980s and to the drillholes located on the Czech side, as far as possible.

2.4 Geology and Mineralogy of the Deposit

The stage of knowledge about the Zinnwald / Cínovec deposit can be summarised as follows:

- The deposit is bound to a Variscan intrusive complex being younger than the granite porphyries in the region. Within this younger intrusive complex an older suite of biotite granites and a younger suite of lithium-topaz-granites occur. The older suite belongs geochemically to the group of monzogranites and the younger suite affiliates to albite granites.
- In several phases syeno-, monzo- and albite granites intruded into the solidified lava flows of the rhyolite along the Seegrund-Pöbelbach structure (other name "Seegrund Fault Zone"). This fault zone, striking immediately southwest of the Zinnwald albite granite, is the most important regional tectonic element and represents a section of the overall Niederbobritzsch-Schellerhau-Krupka Fault Zone (see *Figure 3*). It controls emplacement and development of the deposit.

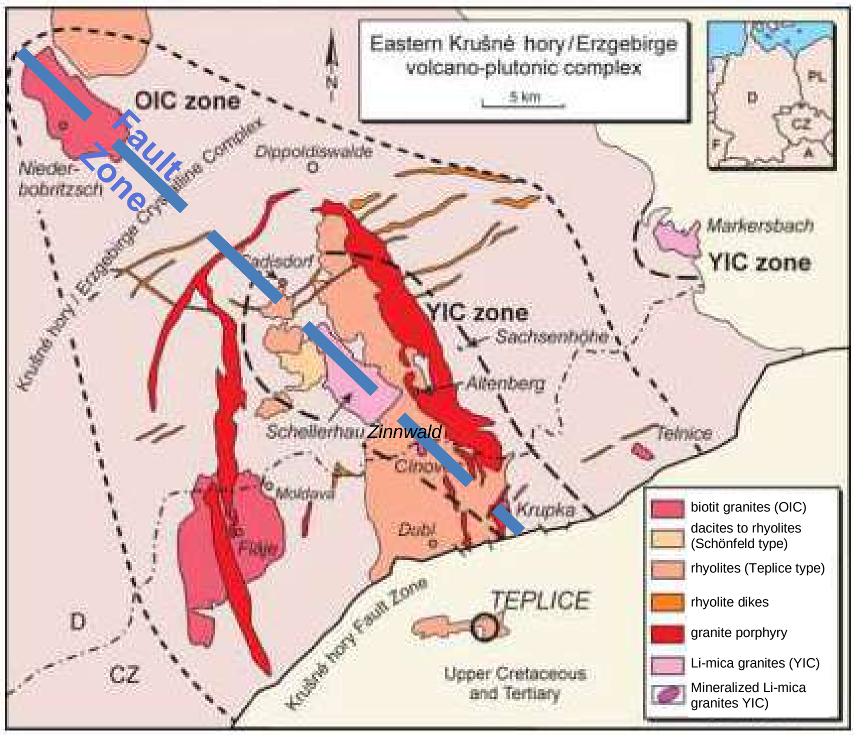


Figure 3: Regional geological map for the East Erzgebirge Mountains and location of the Niederbobritzsch-Schellerhau-Krupka Fault Zone

(Map from ŠTEMPROK M., HOLUB, F.V. & J.K. NOVÁK [195]: Multiple magmatic pulses of the Eastern Volcano-Plutonic Complex, Krušné hory / Erzgebirge batholith, and their phosphorus contents. In: Bulletin of Geosciences, volume 78(2003)3, 277-296)

- The albite granite of Zinnwald intruded in the crossing range of pre-existing NW-SE and NNW-SSE striking fault zones, which reach deep into the crystalline underground to subvolcanic level.
- 5 main tectonic directions exist in the area of the deposit: NE-SW (30° - 40°), ENE-WSW (70°), NW-SE (130° - 140°), E-W (90°), N-S (180°). The most important areas with highest ore productivity in the Zinnwald / Cínovec deposit can be assigned to the NE-SW direction.
- The ore mineralisation is of late Variscan age (280 Ma) and is restricted geologically to the cupola of the geochemically highly specialised Zinnwald granite. This granite forms a N-S elongated intrusive body. The central part of the granite cupola has been partly eroded (elliptic area of 1,300 m x 300 m). The northern, eastern and southern flanks of the granite dip under shallow angles of 30-35°, whereas the western is steeper.
- The genesis of the Zinnwald / Cínovec deposit is related to postmagmatic processes after the emplacement of the albite granite intrusion. An orthogonal fracture system developed in the solidified albite granite, used by the metal bearing brines. The vertical (steep) fractures (S planes) served as migration pathways. Precipitation of the fluid contents took place preferentially along the more or less horizontal fractures of the orthogonal system (L planes) in the apex parts of the albite granite. These shallow fractures, which developed parallel to the cooling plane of the albite granite represented large areas of equal pressure and temperature conditions enabling a regular development of coarse-grained greisen zones (greisen beds). These ore beds intercalate with feldspatisated albite granite and medium-grained greisen zones. With increasing depth the ore beds diminish in thickness and disappear finally completely. Parts of the exocontact of the albite granite have been affected by the postmagmatic fluids. However, the ore beds in the rhyolite do not have a wide extension. At the contact between albite granite and Teplice rhyolite a 2 m thick feldspar stockscheider (pegmatitic seam) developed.
- The hydrothermal fluids have predominantly accumulated in the uppermost cleavage structures (thermic lifting and pressurisation) of the cooling granite dome and led to the present ore structures with a decreasing intensity of lithium mineralisation from the top to the bottom.

- The mineralisations occurring within both, in the albite granite of Zinnwald and in the adjacent rhyolite are very different in their formation. According to their phenomenology the following mineralisation types can be distinguished:
  - flat-dipping veins ("Flöze") within the rhyolite and albite granite
  - steep-dipping veins ("Morgengänge") within the rhyolite and albite granite
  - separate greisen stockworks within the albite granite
  - thin greisen beds accompanying the "Flöze" (≤ 2 m thickness) within the rhyolite and albite granite
  - extensive greisen beds (2 – 33 m thickness) within the albite granite
- Within the deposit 6 different meta-albite granitic greisen varieties can be distinguished:
  - quartz greisen (quartz 95%, mica 3%, topaz 2%)
  - quartz-mica greisen (quartz 75%, mica 23%, topaz 2%)
  - mica greisen (quartz 54%, mica 44%, topaz 2%)
  - quartz-poor mica greisen (quartz 20%, mica 78%, topaz 2%)
  - quartz-topaz greisen (quartz 85%, mica 5%, topaz 10%)
  - topaz-mica greisen (quartz 70%, mica 20%, topaz 10%)
- Zinnwaldite, cassiterite and wolframite are the main ore minerals. Subordinate quantities of tungsten occur as fine-grained scheelite.
- The greisen consists of quartz and zinnwaldite. Sometimes topaz, sericite and fluorite occur additionally. The mica greisen is fine to medium-grained. The mean grain size of fine disperse occurring cassiterite is > 100 µm and may reach in single crystals up to 2.5 mm.

Zinnwaldite is the only lithium bearing mineral of the deposit. The chemical formula of zinnwaldite is as follows:

$KLiFe^{2+}_{0.75}Al[(F, OH)_2/(Al_{0.5}Si_{3.5})O_{10}]$

Zinnwaldite contains between 0.8 und 1.9 wt% lithium (mean: 1.6 wt%). References: UHLIG (1992) [197], GOVINDARAJU et al. (1994) [172].

Further information on geology and mineralogy is given in the PERC report (2014) [54].

3 EXPLORATION CAMPAIGNS AND DATA VERIFICATION

3.1 Preface

The objective of all 8 so far performed exploration campaigns was to investigate the Zinnwald deposit. Work was focussed mainly on tin and tungsten mineralisation. Since the first investigations date back to the year 1917, consequently different methods of sampling and geological interpretation were used. For this reason the resulting data collective is very heterogeneous.

A tabular overview of the exploration campaigns is given in *Appendix I*.

All data integration into the data base was proven by a revision of 10% of the data. Thereby assessed error rate was below 2% of the controlled data (see PERC report (2014) [54]).

3.2 Exploration Campaign No. (1) 1917-1918, Germany

The data collective of exploration campaign No. (1) comprises 2 drillholes - one drilled from the surface and the other one from underground at the "Tiefer-Bünau-Stolln" level (752 m a.s.l.). Tin and tungsten mineralisation were investigated.

27 geological records were integrated into the "geology" table of the database. All together the total length of the drilled holes accounts for 345 m. Neither sample assays nor core recovery reports nor survey data are available. The drillhole paths were assumed to be vertical. No information on data quality and quality control procedure is available.

3.3 Exploration Campaign No. (2) 1930-1945, Germany

From the exploration campaign No. (2) 3 drillholes that reached the endocontact were integrated in the database. 2 holes were drilled from surface and 1 from the underground. 39 geological records cover the total drilled length of 515 m. Neither sample assays nor core recovery reports nor survey data was available. The drillhole paths were assumed to be vertical. For the drillhole "BoFo 7" a dip angle of 45° and an azimuth of 244° had been reported.

No information on data quality and quality control procedure is available. The exploration campaign focussed on investigation of the geologic ore bearing structures.

3.4 Exploration Campaign No. (3) 1955, Czech Republic

Data from 3 ground surface drillholes of the Czech campaign of 1955 was integrated in the database. The data comprises of 74 geological records with a total drilling length of 601 m. Neither sample assays nor core recovery reports nor survey data was available. The drill-holes Pc 1/55 and Pc 2/55 were not used for the design of the geological model, because of missing reliable designation and distinction of greisen intervals.

No information on data quality and quality control procedure was available. The exploration campaign focussed on investigation of greisen structures containing lithium, tin and tungsten.

3.5 Exploration Campaign No. (4) 1951-1960, Germany

Exploration campaign No. (4) has been the first comprehensive investigation programme mainly oriented on the search for the principle component lithium. Tin and tungsten grades were reported also.

This phase comprised 17 drillholes from surface and 10 underground drillholes including 806 geological records and a total record length of 5,973 m. Geochemical records are as follows:

Table 3: Summary of geochemical data of exploration campaign No. (4)

Component	Number of records	Total sample length [m]	Sampling method	Method of geochemical analysis
Lithium	581	502	core sample	flame photometry
Tin	514	495	core sample	spectral analysis
Tungsten	519	496	core sample	spectral analysis

Assays of tin samples must be corrected by a correction factor of 0.7 according to BESSER and KÜHNE [103], because grades systematically tended to higher values if the collective is compared to those of campaigns (7) or (8). Tungsten assays are mostly above a level of 250 ppm and appear questionable when compared to results of other exploration campaigns, especially the campaign No. (8) of SWS (2012-2014). Consequently this data cannot be used for resource estimation.

No survey data is available. That is why the drillholes were assumed to be vertical. Core re-coveries were reported only fragmentary. It is assumed that the sample intervals assayed show recoveries of more than 80%.

3.6 Exploration Campaign No. (5) 1961- 1962, Czech Republic

Exploration campaign No. (5) comprises 14 surface drillholes mostly situated close to the German-Czech borderline. 929 geological records with a total sample length of 3,961 m were integrated in the database. The campaign focussed on investigation of tin, tungsten and lithium mineralisation.

Geochemical records are as listed below in *Table 4*:

Table 4: Summary of geochemical data of exploration campaign No. (5)

Component	Number of records	Total sample length [m]	Sampling method	Method of geochemical analysis
Lithium	945	1,289	core sample	not specified (flame photometry?)
Tin	447	447	core sample	not specified (spectral analysis?)
Tungsten	331	328	core sample	not specified (spectral analysis?)

No survey data was available. Therefore the drillholes were assumed to be vertical. Major core losses were reported as separate intervals in the drill log. Beyond that no further data was available.

No information on data quality and quality control procedure was available.

3.7 Exploration Campaign No. (6) 1977-1978, Germany

The data set of exploration campaign No. (6) contains information about 2 drillholes (from surface) with 230 geological recordings of 1,216 m. Additionally 1,350 pick samples were taken underground at the "Tiefer-Bünau-Stolln" level (752 m a.s.l.).

The exploration campaign of Grunewald [97] was undertaken under scientific aspects. In a first phase rock chip samples were taken from the cores at interval lengths of 20 cm. Composite samples of core intervals reaching from 2 to 6 m length were prepared and assayed by spectral analysis method. The focus was set mainly on detection of tin and tungsten but also on lithium mineralisation. Accordingly, intervals that showed elevated tin and tungsten grades during this first screening have been reanalysed with interval lengths of approximately 1 m by X-Ray fluorescence method.

The pick samples were taken randomly at 2 to 5 m interval distances from the sidewalls of the drives at the "Tiefer-Bünau-Stolln" level.

Table 5: Summary of geochemical data of exploration campaign No. (6)

Component	Number of records	Total sample length [m]	Sampling method	Method of geochemical analysis
Lithium	373	1,216	rock chip sample	spectral analysis
Tin	373	1,216	rock chip sample	spectral analysis
Tungsten	373	1,216	rock chip sample	spectral analysis
Tin	106	104	core sample	X-Ray fluorescence analysis
Tungsten	106	104	core sample	X-Ray fluorescence analysis
Lithium	1,341	-	pick sample	spectral analysis
Tin	1,341	-	pick sample	spectral analysis
Tungsten	1,326	-	pick sample	spectral analysis

Survey data of the drillholes is available and has been integrated in the database. The core recoveries were reported as follows:

Drillhole 19/77: 97.8%

Drillhole 20/77: 92.7%

3.8 Exploration Campaign No. (7) 1988-1989, Germany

During exploration campaign No. (7) from surface 8 holes were drilled, providing 684 geological records with a total length of 3,148 m. The sampling and geochemical analysis programme was comparable to those of exploration campaign No. (6) and focussed mainly on tin and tungsten mineralisation. Lithium was investigated by rock chip sampling only.

Table 6: Summary of geochemical data of exploration campaign No. (7)

Component	Number of records	Total sample length [m]	Sampling method	Method of geochemical analysis
Lithium	1,188	3,149	rock chip sample	spectral analysis
Tin	1,188	3,149	rock chip sample	spectral analysis
Tungsten	1,188	3,149	rock chip sample	spectral analysis
Tin	397	403	core sample	X-Ray fluorescence analysis
Tungsten	397	403	core sample	X-Ray fluorescence analysis

Survey data of the drillholes was available and has been integrated in the database. The core recoveries were reported as follows:

Drillhole 21/88:	86.8%,	Drillhole 22/88:	95.9%
Drillhole 23/88:	95.6%,	Drillhole 24/88:	95.4%
Drillhole 25/88:	96.5%,	Drillhole 26/88:	91.7%
Drillhole 27/88:	89.3%,	Drillhole 28/88:	96.7%

3.9 Exploration Campaign (8) 2012-2013, Germany

The exploration campaign of the customer SWS consisted of 10 surface drillholes. 9 of them were drilled as diamond drillholes (DDH) with different diameter (at least type NQ 75.7/47.6). In addition one reverse circulation drillhole (RC DH) was sunken. The drillholes were located as infill holes and twin holes (ZGLi 05/2013 and 05A/2013, ZGLi 06/2013 and 06A/2013). During a separate working programme 83 channel samples of 1.5 m length and 2 m interval distance were taken from the sidewalls of "Tiefer-Bünau-Stolln" gallery (752 m a.s.l.) and "Tiefer-Hilfe-Gottes-Stolln" gallery 722 m a.s.l.).

419 geological records with a total length of 2,563 m have been documented. Multi-element assays have been performed by using one half of the DDH core and the channel samples. X-Ray fluorescence assays of tin and tungsten grades have been carried out for the drillholes ZGLi 01/2012 and ZGLi 02/2012. They are fully comparable to ICP-MS assays and were used for the resource estimation.

Table 7: Summary of geochemical data of exploration campaign No. (8)

Component	Number of records	Total sample length [m]	Sampling method	Method of geochemical analysis
Lithium	1,247	1,237	core sample	acid fusion + ICP-MS
Tin	1,244	1,235	core sample	Li metaborate fusion + ICP-MS
Tungsten	1,247	1,237	core sample	Li metaborate fusion + ICP-MS
Tin	407	393	core sample	X-Ray fluorescence analysis
Tungsten	406	392	core sample	X-Ray fluorescence analysis
K_2O	1,247	1,237	core sample	Li metaborate fusion + ICP-AES
Na_2O	1,247	1,237	core sample	Li metaborate fusion + ICP-AES

Survey data of the drillholes are available and have been integrated in the database.

Unfortunately survey of the drillholes has not been executed precisely except for drillhole ZGLi 05A/2013. Errors of measurement caused by application of a magnetic compass within drillhole intervals with steel casing could not be corrected afterwards. Coordinates of the end point of the measurements were compared to the coordinates of the corresponding drillhole path interval in SURPAC™, whereby SURPAC™ calculates the drillhole pathway by using measured dip and azimuth data. Obviously calculated deviations of the control points in x and y direction did not fully correspond with measured deviations (see *Table 8*).

Table 8: Review of drillhole surveys

	Coordinate of drillhole location						Coordinate deviation of the end point of survey measurement (control point) from the drillhole location		
Drillhole	**x**	**y**	**z [m a.s.l.]**	**Drillhole length [m]**	**Mean Dip [°]**	**Mean Azimuth [°]**	**Deviation in x direc-tion [m]**	**Deviation in y direc-tion [m]**	**Drillhole length at the control point Azi-muth [m]**
ZGLi 01/2012	5,412,667.3	5,622,989.1	823.50	280.00	58.6	113.4	132.02	-57.68	276.30
ZGLi 02/2012	5,413,096.5	5,622,954.4	807.40	262.50	67.9	320.1	-60.47	77.72	262.50
ZGLi 03/2013	5,412,835.0	5,623,859.1	801.80	330.25	73.9	183.0	0.12	-91.28	330.50
ZGLi 04/2013	5,412,658.9	5,623,296.7	798.00	260.25	61.3	95.6	73.78	-3.34	154.35
ZGLi 05/2013	5,412,922.0	5,623,217.0	796.00	156.40	88.7	124.6	2.83	-1.93	156.00
ZGLi 05A/2013	5,412,922.0	5,623,222.5	796.00	79.00	89.1	53.9	0.43	0.43	41.49
ZGLi 06/2013	5,413,454.1	5,622,974.7	781.00	221.20	89.5	53.1	0.36	0.57	100.25
ZGLi 06A/2013	5,413,455.1	5,622,975.9	781.00	336.40	86.7	260.1	-17.76	-2.55	334.73
ZGLi 07/2013	5,413,546.3	5,622,878.4	791.00	376.20	89.1	55.7	3.75	3.70	375.55
ZGLi 08/2013	5,413,326.0	5,622,782.0	802.00	260.80	77.4	297.7	-51.38	23.67	259.95

				Coordinate deviation of the control point calculated with SURPAC™ to the measured location of the control point		
Drillhole	**Deviation in x direction [m]**	**Deviation in x direction [m]**	**Deviation in z direction [m]**	**Deviation in x direction [%]**	**Deviation in y direction [%]**	**Deviation in z direc-tion [%]**
ZGLi 01/2012	0.35	0.18	-0.34	0.3%	-0.3%	-0.1%
ZGLi 02/2012	-2.87	-2.07	0.01	4.7%	-2.7%	0.0%
ZGLi 03/2013	-4.77	-0.13	0.24	-4116.9%	0.1%	0.1%
ZGLi 04/2013	0.07	-3.87	-0.40	0.1%	115.8%	-0.3%
ZGLi 05/2013	0.15	-1.17	-0.13	5.4%	60.6%	-0.1%
ZGLi 05A/2013	0.06	-0.04	-0.08	14.4%	-9.8%	-0.2%
ZGLi 06/2013	-0.02	0.24	-0.37	-6.5%	42.9%	-0.4%
ZGLi 06A/2013	-0.06	1.73	0.06	0.4%	-67.8%	0.0%
ZGLi 07/2013	0.14	-0.25	-0.70	3.8%	-6.6%	-0.2%
ZGLi 08/2013	1.13	2.76	-0.83	-2.2%	11.7%	-0.3%

The interval specific core recoveries and RQD values were assigned to the data table "tblB06_rqd_index" of the geological database. Except for a fault zone intersected by drillhole ZGLi 06/2013 core recoveries accounted for >95% within the greisen intervals.

Core recoveries at fault zone of drillhole ZGLi 06/2013:

Interval 170.55 – 177.00 m: 30.5%

Interval 177.00 – 177.90 m: 33.3%

Interval 177.90 – 182.45 m: 58.2%

Details on sampling and assays as well as quality assessment are given in the PERC report (2014) [54].

3.10 Exploration activities 2016, Germany

In 2016 exploration activities of the customer SWS included adding archive research for some geological records in the archives of Mining Archive of Saxony, in the Geological Archive of Saxony and in the archive of the former uranium mining company WISMUT.

Furthermore geological surface mapping, sampling and geochemical analytics of 9 samples from microgranite veins in the area around the deposit had been carried out. In the Bünau Stollen level 4 microgranite veins had been sampled and analyzed. The results are reported in an interim report [63]. They were not significant for the explored mineralization and located outside of the figure of the classified ore bodies, so they were not included in the data base of resource estimation.

3.11 Exploration campaign (9) 2017, Germany

The exploration campaign of the customer DL in 2017 includes an infill drilling program, consisting of 15 surface diamond drillholes with NQ 75.7/47.6 diameter. The technical drilling program ended in December 2017. The details of the program, the different investigations and the results lined out from this infill drilling program 2017 will be reported in 2018.

3.12 Data Verification

Quality control procedures

During exploration campaign No. (4) sample duplicates have been analysed by ZGD (Central Geological Service of the German Democratic Republic) in Berlin and Dresden, whereby assays of the labor of Dresden seemed to be correct as confirmed by an arbitrary analysis of the laboratory of the Department of Non-Ferrous Metals of the University of Freiberg. Systematic differences resulted from usage of different chemical pulping methods. 10% of the samples have been internally controlled in Dresden. Further 10% were analysed as an external control in Berlin and Freiberg by using the same chemical pulping procedure.

For exploration campaigns No.s (5), (6) and (7) no information on quality control of geochemical analysis was available so far.

Core quarter duplicates, pulp (lab) duplicates, and internal standard material as well as certified standard material were used during exploration campaign No. (8) for determination of adequacy of chemical analysis. Furthermore internal QA/QC measurements were conducted by the involved labs themselves.

Analysis was done by the geochemical laboratory of ALS in Romania. External control basing on pulp duplicates was carried out by the chemical laboratory of SolarWorld AG in Freiberg and Actlabs Ancaster Ltd., which are all certified through the International Organization for Standardization to ISO 9001:2008 and /or are accredited after ISO 17025. For the drillholes ZGLi 01/2012 and ZGLi 02/2012 10% of the samples has been checked by external laboratory. For the second part of campaign No. (8) ratio was reduced to 5%.

Drillhole database

All data integrated into the database was checked by a testing 10% of the entries of the collar, survey, geology and samples tables. Less than 1% of the checked data had to be corrected. A second check for data plausibility has been executed also. All data manipulation of the testing cycles is documented in the database.

Drilling location and survey control

Drilling locations were controlled by checking the coordinates against the digital elevation model or by localizing the drillholes underground at the "Tiefer Bünau Stolln" level. For most of the drillholes no survey data was available and so they are assumed to be vertical. For drillholes with survey data, the paths have been controlled visually and by checking the protocoled coordinate deviation of the drilling location to the endpoint of the survey measurement against the deviation in the SURPAC™ model.

4 GEOLOGICAL AND STRUCTURAL 3D MODEL

4.1 Determination of Ore Types and Host Rock

As the geological cut-off, exclusively petrographic attributes were used for defining the ore-bodies. The differentiation of potentially economically interesting ore types was based on mean lithium grades and aspects of ore processing. According to these criteria two ore types can be distinguished:

"Ore Type 1": greisen of extensive greisen beds

"Ore Type 2": greisenised albite granite und greisenised microgranite

Thereby the "Ore Type 1" - greisen consist of the petrographic sub-types quartz-greisen (TGQ), quartz-mica-greisen (TGQ+GM) and mica-greisen (TGGM).

Despite the opportunity to distinguish up to three levels of pneumatolytic alteration intensities, all greisenised intervals of albite granite and microgranite were merged to one "Ore Type 2". Detailed information on mineralogy of the ore types is given in the PERC report (2014), *Chapter 9.1* [54].

Because of the generally low lithium grades in greisenised rhyolite the corresponding intervals were not included into "Ore Type 2". *Table 9* on the following page gives an overview of petrographic sub-types bound to the two ore types and the barren host rock. The weighted mean lithium grades and other statistical parameters for the core samples of exploration campaigns No.s (4), (5) and (8) are shown as well.

For representation of dilution by not sampled interburden intercalated in "Ore Type 1" fill-in lithium grades were assigned basing on a petrographic unit depended weighted mean lithium grade. The method was applied also for singular intersected greisen intervals being separated by not sampled barren measures from the sampled greisen intervals of the same greisen bed. With the approach overestimation of lithium grades of the interburden and underestimation of lithium grades of the greisen intervals shall be prevented. Fill-in values are marked by an "FI" sign in the data table "tblB03_sample_01", field "Li_resorce_sample_type". All in all 23.4 m core length (20.1 m interburden + 3.3 m greisen) have been assigned with fill-in grades.

The weighted lithium grades for "Ore Type 1" vary from about 1,000 ppm to 8,100 ppm (0.10% – 0.81%). The quartz-mica-greisen with a mean of about 3,400 ppm Li (0.34%) represents the most prevalent petrographic sub-type within this group. It is assumed that this sub-type mainly determines the overall mean Li grade of the ore deposit. The predominant part of the greisen structures is characterised by extensive beds that can be found in the endocontact of the albite granite dome of Zinnwald / Cínovec. The inclination of the beds follows mostly the granite surface.

Table 9: Classification of ore types by analysis of Li core sample assays of campaigns No.s (4), (5) and (8)

Ore Type	Petrographic key sign	Petrographic description	Fill-in Li grade [ppm]	Apparent thickness weighted mean Li grade [ppm]	Arithmetic mean Li grade [ppm]	Median Li grade [ppm]	Min Li grade [ppm]	Max Li grade [ppm]	Number of core samples
1	TGGM	mica-greisen	8,100	8,133	8,121	7,785	4,160	13,500	8
	TGQ+GM	quartz-mica-greisen	3,400	3,438	3,494	3,370	100	14,817	853
	TGQ	quartz-greisen	1,000	1,064	1,187	750	10	4,100	56
2	PG_GGM_3 UG_GGM_3 PG_PR_GGM_3	strongly altered to mica-greisen: albite granite, microgranite and porphyritic granite	1,900	1,980	2,019	1,858	300	4,830	141
	PG_GGM_2 UG_GGM_2 PG_PR_GGM_2	medium-altered to mica-greisen: albite granite, microgranite and porphyritic granite	1,800	1,837	1,859	1,875	140	11,194	398
	PG_GGM_1 UG_GGM_1 PG_PR_GGM_1	weakly-altered to mica-greisen: albite granite, microgranite and porphyritic granite	1,500	1,538	1,561	1,620	180	6,642	403
3	PG UG	albite granite and microgranite	1,300	1,378	1,413	1,400	50	7,339	543
	YI	rhyolite	600	656	581	420	50	1,900	47

Quartz-greisen contains less mica and therefore less lithium (1,000 ppm, 0.10%). Often, thin layers of quartz-greisen can be found as intercalation in massive structures of quartz-mica-greisens.

The lithium grade of greisenised albite granite ("Ore Type 2") reached from 1,500 ppm to 2,000 ppm (0.15% – 0.20%). This clearly reflects the lower degree of pneumatolytic alteration. The "Greisenised Zone" surrounds the greisen beds and reaches from 810 m a.s.l. in the southern part to 350 m a.s.l. in the northern part of the modelled deposit.

The surrounding albite granite and microgranite show considerable high Li grades with 1,400 ppm (0.14%) on average. This might be referred to the situation that the core samples were predominantly taken from the endocontact of the Zinnwald Li deposit and from neighbouring rocks of the mineralised greisen beds. Obviously, even the mother rock was partly subjected to the mineralisation process, but with less intensity. Similar observations can be reported for the overlying rhyolite as far as located near the endocontact. Here the core sample showed mean lithium grades of about 600 ppm (0.06%).

It must be mentioned that during the explorations campaigns No.s (1) to (7) the greisenised structures were not always identified and distinguished completely and correctly. During that period it could happen that a rock with lithium grades of 2,000 ppm was determined as an albite granite rather it was a *greisenised* albite granite. The results of campaign No. (8) for example substantiated extensive greisenised zones throughout the whole deposit.

Furthermore, the review of the data sets showed that sampling during the campaign No. (4) of BOLDUAN and LÄCHELT (1960) [88] in many cases was done under ignoring the petrographic boundaries. Therefore it is possible that granite samples partly include greisen or altered intervals and the other way around.

To handle the discrepancy between the interval distinction of the "geology" and "sample" data table a merged table "sample_01" was created in the data base. It comprises the interval boundaries of both the "sample" and the "geology" table and the adjacent information of data fields like petrographic unit as well as lithium, tin and tungsten grades.

<u>Table "sample_01" is the main table that has been used for the whole data processing and modelling process.</u>

For the geological interpretation and for preparation of the 3D model all available petrographic sample descriptions of the exploration campaigns were merged and applied.

As a first step of interpretation the following criteria were used to distinguish the intervals of the petrographic sub-types of "Ore Type 1", being identical with the greisen, in the "sample_01" database table:

1. interval belongs to petrographic units TGGM, TGQ+GM or TGQ
2. maximum apparent thickness of internal dilution does not exceed 2 m

Thus all greisen intervals were used for the geological interpretation by definition of East to West and North to South striking drillhole sections. The following criteria were used for determining the intervals of "Ore Type 2":

1. interval belongs to petrographic units PG_GGM_3, UG_GGM_3, PG_PR_GGM_3, PG_GGM_2, UG_GGM_2, PG_PR_GGM_2, PG_GGM_1, UG_GGM_1, or PG_PR_GGM_1
2. interval belongs to petrographic units PG or UG and shows a Li grade ≥ 2,000 ppm

Because of the feldspar component processing of the "Ore Type 2" might be problematic for the time being. Accordingly this ore type was discussed separately concerning calculation of lithium potential.

To avoid splitting-up the geological model of the greisen beds a number of exceptions had to be made concerning the diluting effects of intersecting barren measures, normally up to 2 m apparent thickness. Barren host rock intervals exceeding the 2 m criterion are presented in the following *Table 10*:

Table 10: Intersecting interburden intervals exceeding the 2 m apparent thickness criterion

Drillhole	Greisen layer	Apparent thickness of diluting barren measure [m]	Drillhole	Greisen layer	Apparent thickness of diluting barren measure [m]
25/59	E 01	2.30	CS-1	A 01	2.20 / 3.30
26/59	D 01	2.20	CS-1	B 01	3.00
26/88	E 01	2.50	Z-1	A 01	2.15
Cn 46	A 01	2.10	Z-1	B 03	2.15
Cn 47	A 01	3.40	ZGLi 04/2013	C 01	2.09
Cn 67	B 01	2.40	ZGLi 05/2013	B 01	2.30
Cn 69	B 02	3.60 (3.20 m core loss)	ZGLi 08/2013	B 02	2.45

All petrographic units of the covering rhyolite were summarised to one common unit prior to constructing the ore controlling granite surface (red intervals, see *Figure 2*).

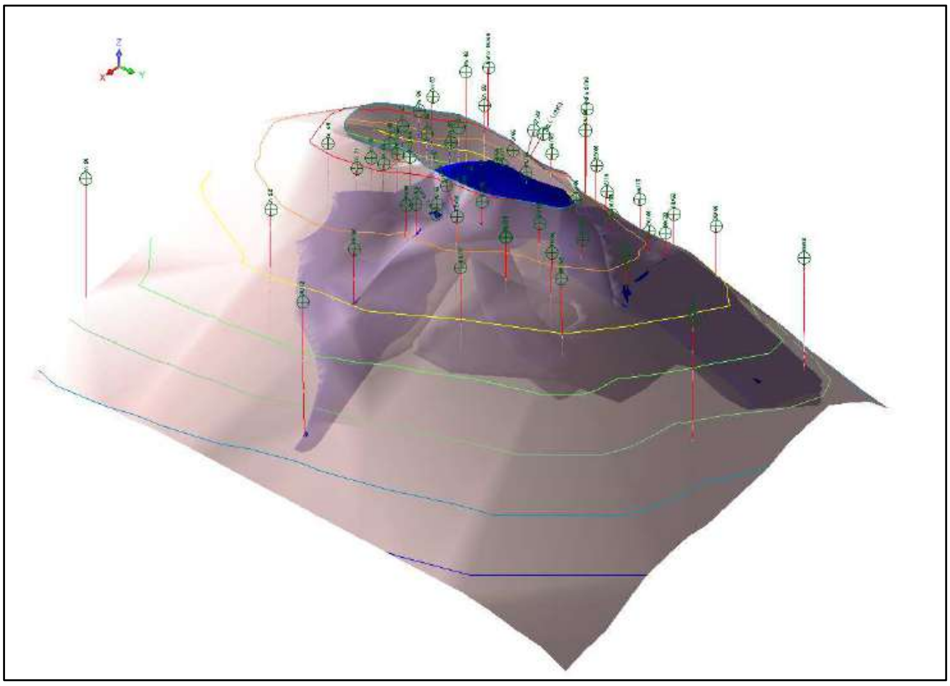


Figure 4: Albite granite dome of Zinnwald hosting the greisen beds, view to south-westward direction

4.2 Approach of the 3D-Model of Greisen Beds (Ore Type 1)

After the greisen intervals were summarized in the "sample_01" data table, they could be visualised on the basis of the drillholes in 3D with SURPAC^{TM}. A conceptual geological model of the greisen beds, consisting of drillhole sections and including the major faults, was designed (see *Figure 3*).

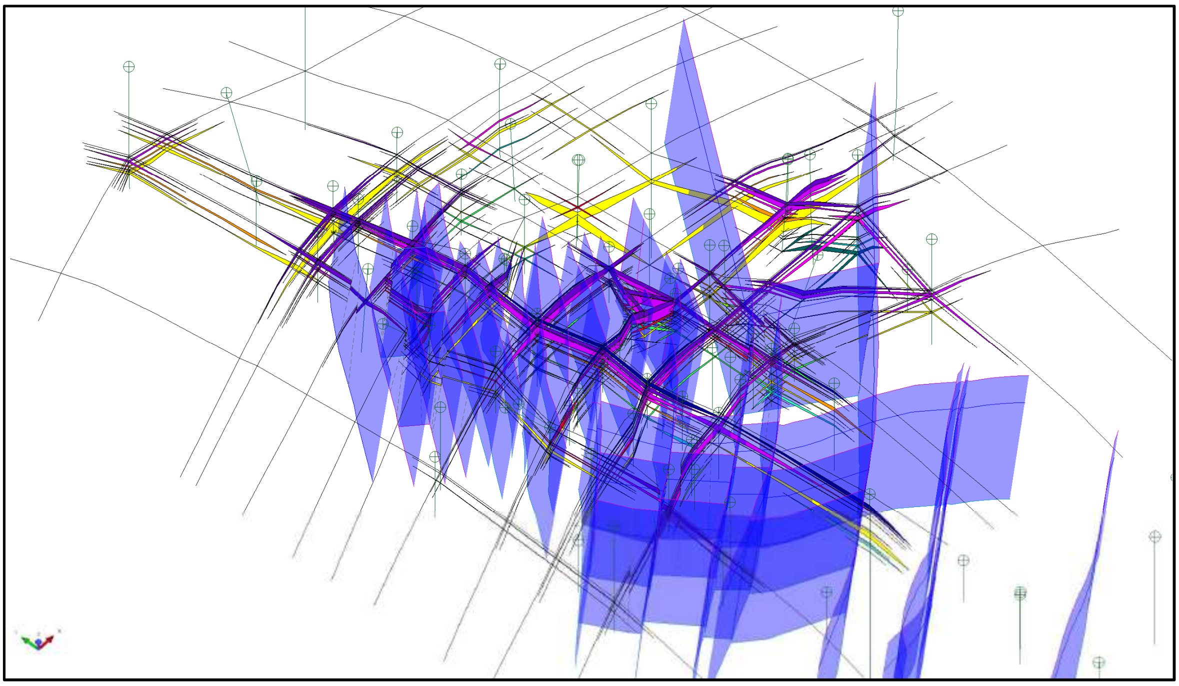


Figure 5: Conceptual geological model of the greisen beds, view to north-eastward direction

At least since the exploration campaign No. (4), it has been clear that the major greisen beds divide into many subordinated layers. They are hereinafter called "greisen layers". They have very different horizontal extensions. Thus every remarkable layer, being detected by at least one drillhole and showing one greisen interval having more than 2 m apparent thickness was identified and assigned to the database table "sample_01". The identification code of the beds is expressed by the letters "A" to "K" naming the different greisen beds from top to bottom and, including a number and if necessary a small letter for the subordinated greisen layers and intervals (see *Table 11*).

Only 62 single greisen intervals with a cumulative apparent thickness of 48.4 m out of a total of 404 reported greisen intervals with a total apparent thickness of 2,041 m could not be assigned to a definite greisen layer. In the most cases these 62 intervals had an apparent thickness less than 1 m. Some of these greisen intervals exceeded 2 m apparent thickness but, they were located close to the earth surface and above the uppermost relevant greisen bed "A" or near veins occurring in the rhyolite (exocontact zone). These greisen layers were coded with the letter "X" in the data base.

Based on the sampling points of the conceptual geological model of greisen beds "A" to "K" a 25-m-interval equidistant grid was interpolated for the bottom and the top boundary planes of the greisen beds. It was assured that the boundaries of neighbouring beds/layers did not intersect each other.

The intersection lines of the fault planes with the bottom and top boundary surfaces of the greisen layers acted as break lines. Thereby displacement of the greisen layers could be modelled.

Outer and inner borders of the horizontal extensions of the greisen layers were defined. For the case that no marginal drillholes existed, the greisen layers were extended further 50 m into the space (half the theoretical drillhole spacing, half the semi-major range). Greisen layers were interrupted half the way between drillholes, if an adjacent drillhole did not show an assignable greisen interval.

According to *Table 11* the following greisen beds with their subordinated layers have been modelled:

Table 11: Greisen beds and their modelled subordinated layers

Greisen bed	Subordinated layers
A	A_01, no further subordinated layers modelled
B	B_01a, B01b, B_01c, B_02a, B_02b, B_03a, B_03b
C	C_01, C_02
D	D_01, no further subordinated layers modelled
E	E_01, E_02, E_03, E_04, E_05
F	F_01, no further subordinated layers modelled
G	G_01, no further subordinated layers modelled
H	H_01, no further subordinated layers modelled
I	I_01, no further subordinated layers modelled
J	J_01, no further subordinated layers modelled
K	K_01, no further subordinated layers modelled

For the central part of the deposit the spacing between the drillholes ranges approximately from 100 m in east-west direction to 150 m in north-south direction. The spacing between the marginal drillholes 26/59, 19/77, 20/77, 21/88, 23/88, 26/88, 28/88, Cn 22, Cn 26 and Cn 46 reached up to 300 - 350 m. Positioning of the last 8 drillholes completed in the period 2013 - 2014 did not change this pattern in general.

Finally, merging together the upper, the lower and the horizontal boundaries of the greisen layers, self-contained solids have been created. The constructed solids, especially in case of the greisen beds B and E, represent a complex of several stacked greisen layers.

4.3 Description of the Modelled Greisen Beds (Ore Type 1)

All together 22 single greisen layers belonging to 11 main greisen beds have been distinguished and separately constructed. The uppermost single greisen bed is "A" followed by "B". *Figure 6* shows the constructed 3D model of greisen bed "A" respectively named layer "A_01" with its two isolated bodies.

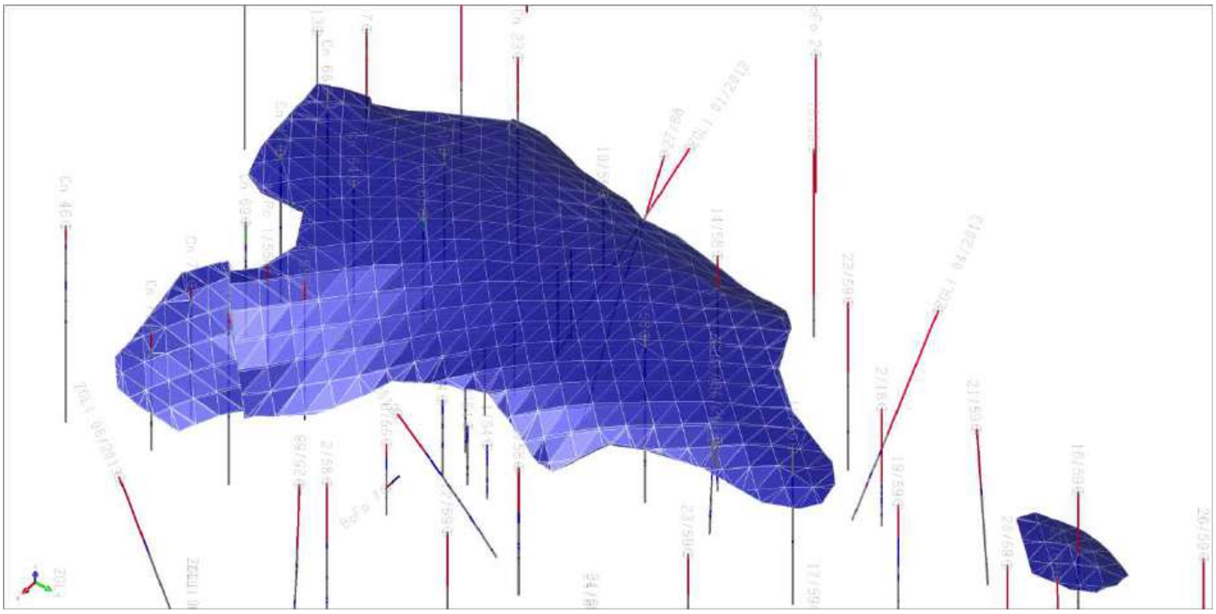


Figure 6: 3D model of greisen bed "A", view in south-westward direction

Layers of greisen bed "B" show a very complex and alternating structure and therefore correlation of the greisen intervals between the drillholes was complicated (see *Figure 7*).

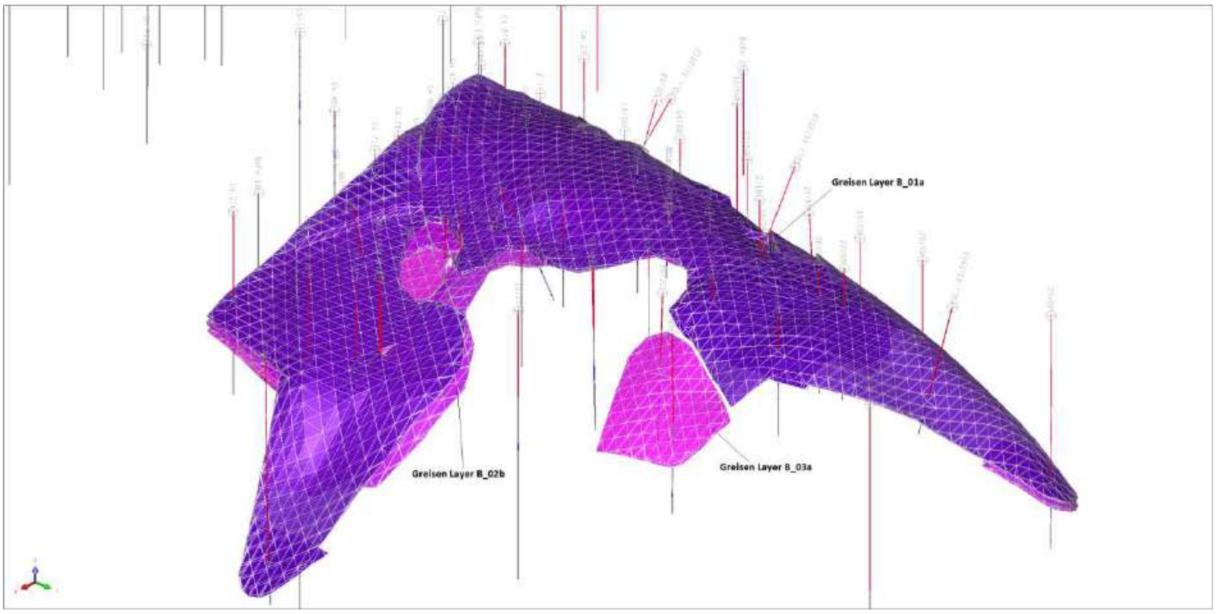


Figure 7: 3D model of greisen bed "B" with its subordinated layers, view in south-westward direction

The spatial extension of the greisen layers is presented in the following *Table 12*. The southern borders are limited by the boundary of the license area, ending at y = 5,622,650. For example the models of the greisen beds "A", "B" and "E" had to be cut at the Czech border.

Table 12: Spatial extension of the greisen layers of "Ore Type 1"

Greisen bed	**Greisen layer**	**Extension from North to South**	**Extension from East to West**	**Altitude intervals**	**Maximum vertical thickness**
A	A_01	5,622,680 – 5,623,580 (900 m)	5,412,660 – 5,413,220 (560 m)	620 m a.s.l. – 820 m a.s.l.	18.5 m
B	B_01a B_01b B_01c	5,622,650 – 5,624,070 (1,450 m)	5,412,540 – 5,413,880 (1,340 m)	305 m a.s.l. – 815 m a.s.l.	29.5 m
	B_02a B_02b	5,622,650 – 5,624,080 (1,430 m)	5,412,540 – 5,413,650 (1,090 m)	430 m a.s.l. – 790 m a.s.l.	33.5 m
	B_03a B_03b	5,622,650 – 5,623,680 (1,030 m)	5,412,620 – 5,413,720 (1,100 m)	400 m a.s.l. – 760 m a.s.l.	17.5 m
C	C_01	5,622,650 – 5,623,010 (360 m)	5,412,650 – 5,412,970 (320 m)	580 m a.s.l. – 750 m a.s.l.	14.0 m
	C_02	5,622,720 – 5,623,560 (840 m)	5,412,680 – 5,412,470 (790 m)	550 m a.s.l. – 740 m a.s.l.	12.5 m
D	D_01	5,622,660 – 5,624,080 (1,420 m)	5,412,680 – 5,413,600 (920 m)	370 m a.s.l. – 730 m a.s.l.	17.0 m
E	E_01 E_02 E_03 E_04 E_05	5,622,650 – 5,624,070 (1,420 m)	5,412,630 – 5,413,880 (1,250 m)	230 m a.s.l. – 720 m a.s.l.	33.0 m

Greisen bed	Greisen layer	Extension from North to South	Extension from East to West	Altitude intervals	Maximum vertical thickness
F	F_01	5,622,650 – 5,623,930 (1,280 m)	5,412,800 – 5,413,470 (670 m)	410 m a.s.l. – 690 m a.s.l.	9.0 m
G	G_01	5,622,660 – 5,623,500 (850 m)	5,412,770 – 5,413,600 (830 m)	430 m a.s.l. – 680 m a.s.l.	13.0 m
H	H_01	5,622,650 – 5,623,470 (820 m)	5,412,760 – 5,413,600 (840 m)	430 m a.s.l. – 670 m a.s.l.	15.0 m
I	I_01	5,622,670 – 5623580 (910 m)	5,412,920 – 5413650 (730 m)	350 m a.s.l. – 660 m a.s.l.	5.5 m
J	J_01	5,622,670 – 5,623,330 (660 m)	5,412,810 – 5,413,650 (840 m)	310 m a.s.l. – 640 m a.s.l.	19.0 m
K	K_01	5,622,870 – 5,623,040 (170 m)	5,413,150 – 5,413,260 (110 m)	470 m a.s.l. – 500 m a.s.l.	3.5 m

Greisen layer "B_01" extends from west to east over a distance of 1,340 m, while in north-south direction it reaches 1,450 m. It can be described as the most extensive and important greisen body of the deposit.

The altitude of greisen layer "B_01" ranges from 305 m a.s.l. to 815 m a.s.l. The maximum vertical thickness (median) is 29.5 m in layer "B_01a". Layers "B_01b" and "B_01c" are small splitting-offs of the main layer "B_01a".

Greisen layer "B_02" extends 1,090 m from east to west and 1,430 m from north to south. The maximum vertical thickness is to be found in layer "B_02b" with around 33.5 m. Layer "B_02a" consists of very small splitting-offs that are situated in the top region of layer "B_02b".

The bottommost greisen layers of bed "B" are "B_03a" and "B_03b". They do extent about 1,100 m from east to west and 1,030 m from north to south. The thickest layer is "B_03a" with a maximum of around 17.5 m.

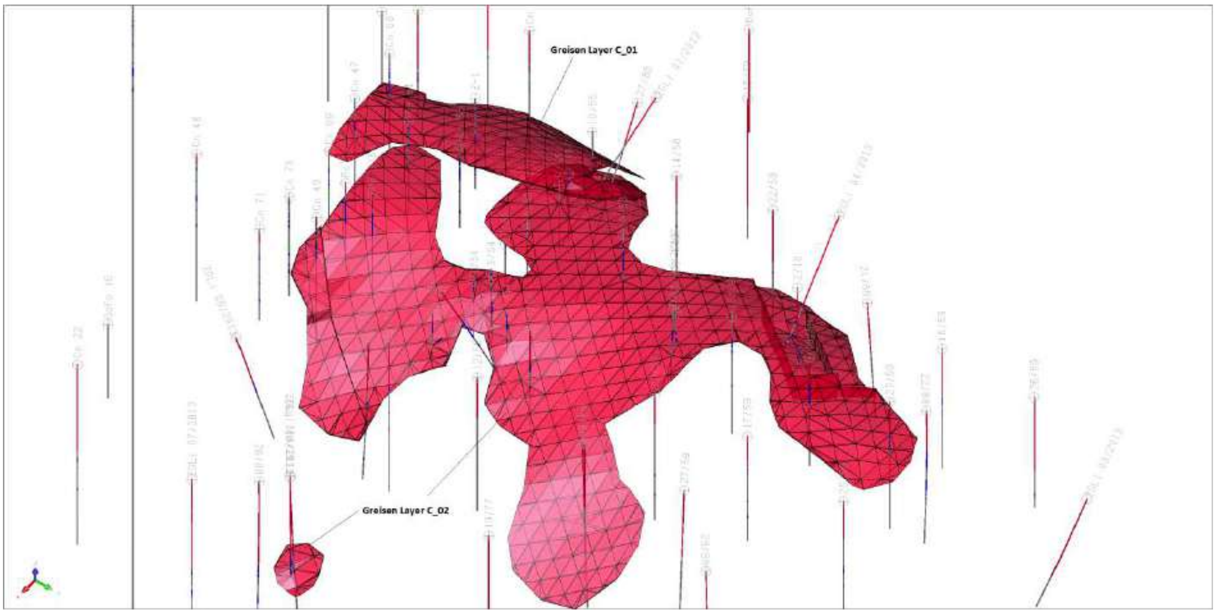


Figure 8: 3D model of greisen bed "C" with its subordinated layers, view in south-westward direction

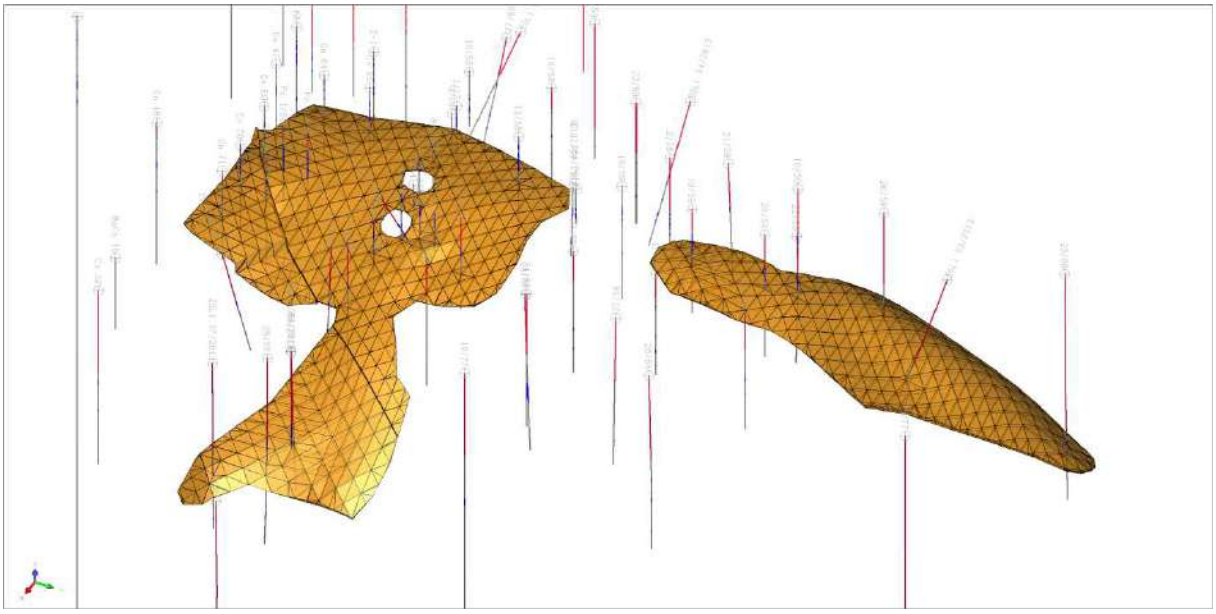


Figure 9: 3D model of greisen bed "D", view in south-westward direction

Greisen beds "C" and "D" (see *Figure 8* and *Figure 9, page 24*) are to be found underneath greisen bed "B". They are composed of a group of thinner greisen layers being located between the major beds "B" and "E". Greisen layer "C_01" is developed at the western slope of the deposit and extends 320 m from east to west and 360 m from north to the south. It shows a maximum vertical thickness of 14.0 m. The layer "C_02" is found below and has a wider extension to the centre of the deposit. With an extension of 790 m from east to west and 840 m from north to the south it is remarkably larger than "C_01". Despite of that, the maximum thickness is smaller, it is at 12.5 m. Layer "D_01" representing the whole of greisen bed "D" reaches 920 m from east to west and 1,420 from north to the south. Its maximum thickness accounts for 17.0 m.

The greisen bed "E" consists of numerous larger and smaller separate bodies of 5 subordinated layers that taken together cover large parts of the horizontal extension of the license area (see *Figure 10*). Bed "E" can be assessed as the second most important ore bearing greisen bed. In difference to greisen bed "B" the thickest parts are not generally located close to the centre of the deposit but more likely they occur at the fringe adjacent to the centre. Greisen bed "E" extends 1,250 m from east to west and 1,420 m from north to the south. The greatest thickness is reached at the north and east slopes with about 33.0 m.

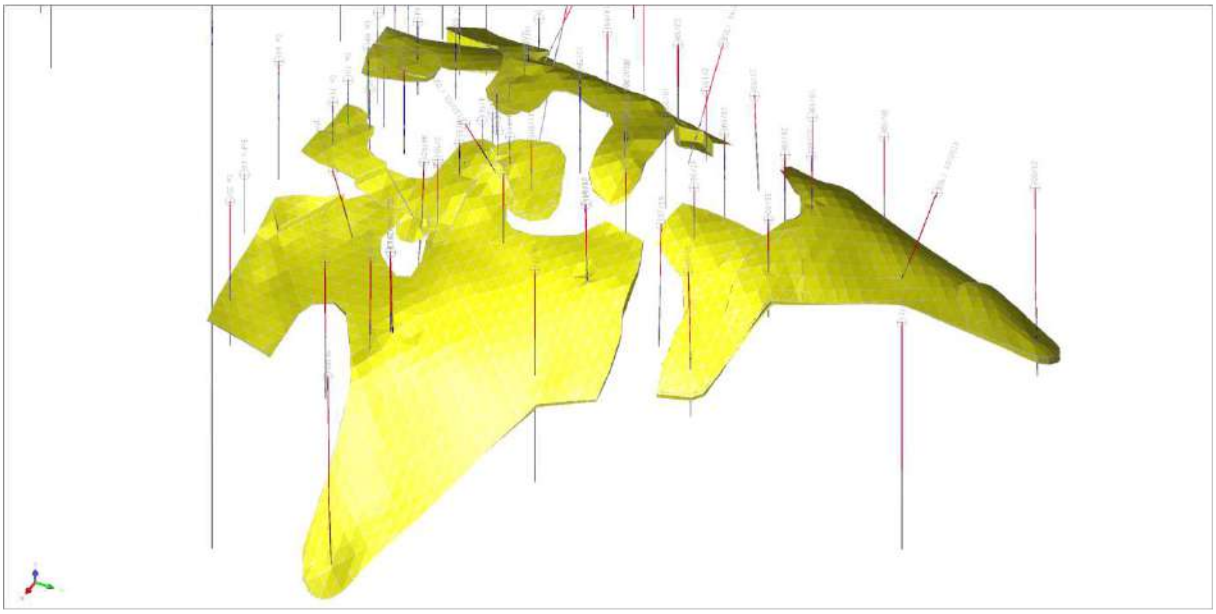


Figure 10: 3D model of greisen bed "E" with its subordinated layers, view in south-westward direction

Greisen beds "F" and "G" respectively layers "F_01" and "G_01" occur below greisen bed "E". They are characterised by a less intensive mineralisation and a smaller extension (see *Figure 11*). Greisen bed "F" extends 670 m from east to west and 1,280 m from north to the south. Greisen bed "G" has an extension of 830 m east to west and 850 m from north to the south. The maximum thicknesses are 9.0 m ("F") or 13.0 m ("G") respectively.

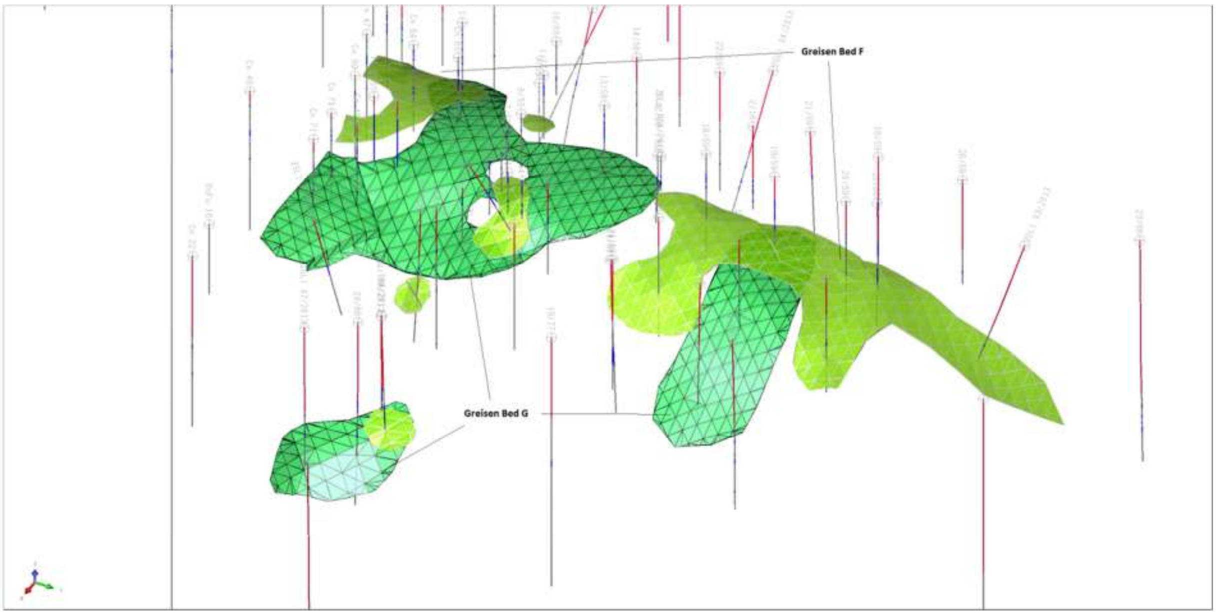


Figure 11: 3D model of greisen beds "F" and "G", view in south-westward direction

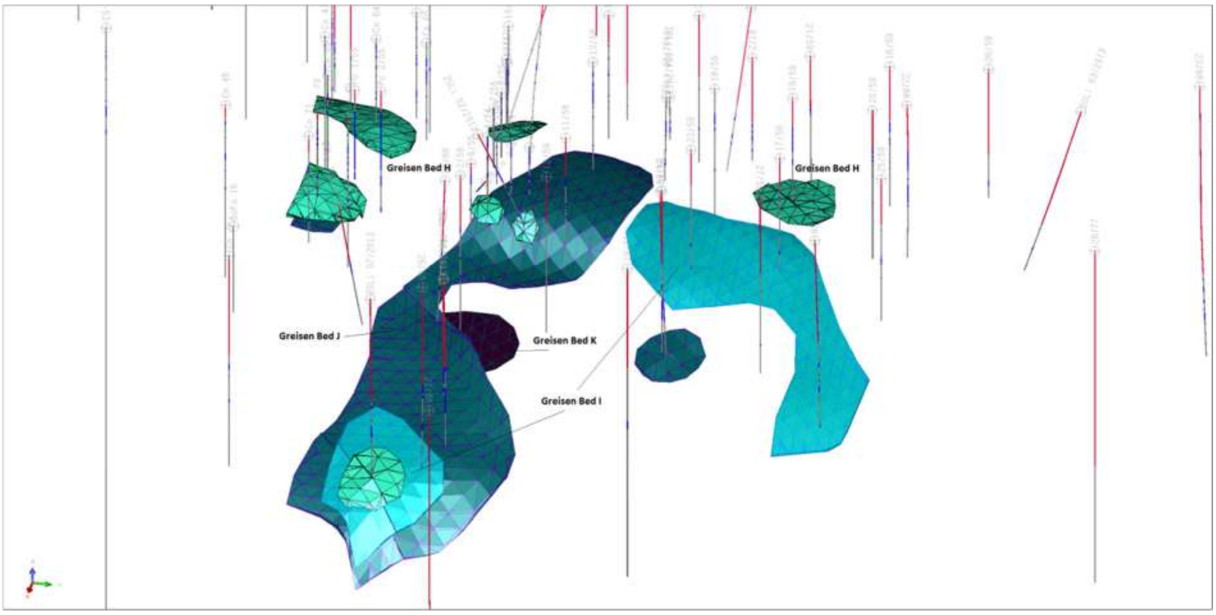


Figure 12: 3D model of greisen beds "H", "I", "J" and "K", view in south-westward direction

The lowermost positioned greisen beds "H", "I", "J" and "K", which are represented in the geological model by the layers "H_01", "I_01", "J_01" and "K_01", are clearly smaller than the greisen beds in the hanging wall (see *Figure 12*). They mostly consist out of several isolated bodies. Within this group layer "J_01" was identified as the thickest one with maximal 19.0 m.

In *Appendix VI* various spatial views of the geological 3D model and the block model are presented. *Appendix VII* shows cross sections of the main geological structures from north to south and from east to west.

4.4 Model of Tectonic Structures

Because of the geotechnical relevance already known tectonic structures were implemented into the 3D geological model. A horizontal mine plan for the 752 m a.s.l. level (schematic geological level plan, "Tiefer-Bünau-Stolln" level, 1:1,000) was used to get a basic approach for the fault system. It had been presented by LÄCHELT (1960) in attachment 4 of [83] and resulted from the lithium drilling campaign performed at Zinnwald from 1958 to 1960.

On the mentioned level plan mainly veins, the so called "Morgengänge", which strike from northeast to southwest, were shown. These strike directions at the 752 m a.s.l. level were used for 3D modelling. It was assumed that the faults reach from the surface to the lower boundary of the model at the 500 m a.s.l. level. They have a steep dip angle of 85 degrees. Displacements are mostly less than one meter.

On the same level plan faults striking from northwest to southeast are not explicitly shown. We have to assume that many of the mine workings of this orientation had been driven along fissures/cleavages (so called "Querklüfte"). A separate file was implemented for these structures. They are shown as vertical-standing planes. The interpretation results are presented in *Appendix VI*, Page 6. These structures may require certain correction, when additional data from new exploration phases should be available.

4.5 Validation of the Geological and Structural Model

The validation of the geological and structural model was done continuously by Dipl. Geol. Jörg Neßler (University of Mining and Technology, Freiberg). German and Czech geologic plans of the "Tiefer Bünau Stolln" level were geo-referenced and plotted against the models. Several inspections of the geology at the "Tiefer Bünau Stolln" level were undertaken to verify the models. In this regard even for tectonic structures good congruence could be demonstrated. However some uncertainties remain for the detailed geological structure of the eastern part of the deposit.

5 METHODOLOGY OF MINERAL RESOURCE ESTIMATION

5.1 Volumetric Modelling

Empty block models had to be defined for each greisen bed. A horizontal discretisation of 5 m x 5 m was chosen. The vertical blocking was set to 1 m due to the minimum thickness of economically minable ore beds of 2 m and in order to consider sufficiently the significantly differing lithium grades in vertical direction as found in the drillhole sample data.

No sub-blocking was applied. Volume adjustment is done by calculation of partial percentage factors for each block.

The following *Table 13* gives an overview of the block model parameterisation:

Table 13: Parameterisation of the block model

Parameter	x	y	z
Minimum	5,412,500	5,622,600	200 m
Maximum	5,413,900	5,624,100	850 m
Extent	1,400 m	1,500 m	650 m
Parent Block	5 m	5 m	1 m
Sub Block	-	-	-
Max. Number of Blocks	54,600,000		

To reduce the random access memory requirements, the block models have been constrained by the greisen bed top and bottom boundary planes as defined in the geological model. All blocks intersecting the named boundary planes or located inside the beds were assigned to the constrained block model. In general, mineralised portions have not been extrapolated more than 50 m from drillhole collar position. As an additional boundary the German-Czech borderline was included.

By using a 2D 5-m-interval equidistant grid the base points for interpolation of vertical thickness of the greisen beds were defined. Their spatial position is identical with the location of the column midpoints of the block model. The vertical thickness was calculated by subtracting the altitudes of the bottom from those of the top boundary planes, which was done for all greisen layers. The respective values were assigned to the field "m_greisen" by nearest neighbour algorithm. Attribute fields were assigned to the empty block model (see *Table 14* on following page).

Table 14: Attribute fields of the block model

Parameter / Field	Explanation	Data type	Decimals	Background value
li_idia	lithium grade by anisotropic inverse distance interpolation [ppm]	float	0	0
li_sampdist,	anisotropic distance to nearest applied sample point, inverse distance interpolation [m]	float	0	0
li_sampavdist,	average anisotropic distance to applied sample points, inverse distance interpolation [m]	float	0	0
li_sampno,	number of sample points applied for interpolation, inverse distance interpolation [-]	integer	0	0
li_idiasampdist	anisotropic distance to nearest applied sample point, anisotropic inverse distance interpolation [m]	float	0	0
li_idiasampavdist	average anisotropic distance to applied sample points, anisotropic inverse distance interpolation [m]	float	0	0
li_idiasampno	number of sample points applied for anisotropic inverse distance interpolation [-]	integer	0	0
m_greisen	vertical thickness of greisen beds [m]	float	0	0
li_linprod	li linear productivity = m_greisen * li_idi [ppm · m]	float	0	0
li_resclass	lithium resource class [-]	integer (1 = measured, 2 = indicated, 3 = inferred, 4 = unclassified)	0	0
pp	greisen partial percentage factor for volume adjustment [-]	float	3	0

5.2 Bulk Density and Moisture Content Measurement

Moisture content determinations of LÄCHELT (1960) [83] resulted in an average of 0.5% H_2O. Because of this low water content no necessity existed for correcting the dry bulk density value.

Table 15 gives an overview of the bulk densities determined during different exploration campaigns. It can be stated that the greisens show densities close to 2.7 g/cm³. Consequently, the value of 2.7 g/cm³ was applied for resource calculation of the greisens.

Greisenised albite granite shows slightly lower densities around 2.65 g/cm³. Albite granite as the host rock itself was determined to have a dry bulk density of about 2.6 g/cm³.

On rock porosity no information was available.

Table 15: Classification of ore types

<table>
<tr><th>Petrographic unit</th><th>Location</th><th>Method of determination</th><th>Bulk density [g/cm³]</th></tr>
<tr><td>greisen</td><td>drillholes 1/54 – 27/59, 40 samples[1]</td><td>hydrostatic weighing</td><td>2.70</td></tr>
<tr><td>greisen</td><td>8 samples[2]</td><td>not defined</td><td>2.72</td></tr>
<tr><td>greisen</td><td>Reichtroster Weitung[3]</td><td rowspan="8">DIN 18136, DIN 52105, DIN 1048, DGEG Recommendation No. 1.</td><td>2.73</td></tr>
<tr><td>greisen, kaolinised</td><td>Reichtroster Weitung[3]</td><td>2.48 – 2.50</td></tr>
<tr><td>albite granite</td><td>drillhole ZGLi 01/2012 sample no. 90[4]</td><td>2.59</td></tr>
<tr><td>albite granite</td><td>drillhole ZGLi 01/2012 sample no. 232[4]</td><td>2.52</td></tr>
<tr><td>rhyolite</td><td>drillhole ZGLi 02/2012 sample no. 28[4]</td><td>2.56</td></tr>
<tr><td>albite granite (medium altered to mica-greisen)</td><td>drillhole ZGLi 02/2012 sample no. 73[4]</td><td>2.64</td></tr>
<tr><td>albite granite (medium altered to mica-greisen)</td><td>drillhole ZGLi 02/2012 sample no. 160[4]</td><td>2.63</td></tr>
<tr><td>albite granite (strongly altered to mica-greisen)</td><td>drillhole ZGLi 02/2012 sample no. 181[4]</td><td>2.69</td></tr>
</table>

1) LÄCHELT, A. (1960): Bericht über die Ergebnisse der Erkundungsarbeiten 1954/55 und 1958/60 mit Bohrungen auf Lithium in Zinnwald (Erzgebirge). Unveröff. Bericht, Ergebnisbericht, Freiberg
2) GRUNEWALD, V. (1978b): Neueinschätzung Rohstofführung Erzgebirge, Gebiet Osterzgebirge – Metallogenie und Prognose Zinnwald, Teil 2: Prognose. Unveröff. Bericht, Zentrales Geologisches Institut der DDR, Berlin 1978
3) KÖHLER, A. (2011): Untersuchungen zur Standsicherheit eines unregelmäßig ausgeformten Felshohlraumes am Beispiel der Reichtroster Weitung im Grubenfeld Zinnwald. Diplomarbeit, TU Bergakademie Freiberg, 31.07.2011
4) SOLARWORLD SOLICIUM GMBH (2013): Measurement of uniaxial pressure strength accordingly to DIN 18136, DIN 52105, DIN 1048, DGEG Recommendation No. 1.

5.3 Simplified 2D Model of Greisen Beds (Ore Type 1)

In order to have an additional certainty of the complex lithium block-modelling procedure, a simple numerical model of lithium ore contained by the greisen envelops was applied. For each greisen bed (see determination criteria *Chapter 4.1*) and for each drillhole, apparent interval thicknesses fulfilling the cut-off grade condition were added up separately. Weighted mean lithium grades were calculated for each drillhole also. The resulting data set was used to interpolate an equidistant grid of 5 m x 5 m by inverse distance algorithm of the thicknesses and grades within the German part of the deposit. The result was used as a measure for checking the reliability of the lithium resource derived from anisotropic inverse distance interpolation.

5.4 Simplified 2D Model of Greisenised Granite (Ore Type 2)

For each drillhole apparent thicknesses of greisenised intervals (see determination criteria *Chapter 4.1*) were added up. The resulting data set was used to inverse distance interpolate an equidistant grid of 5 m x 5 m of thicknesses within the German part of the deposit. Overall weighted mean lithium, tin, tungsten, K_2O and Na_2O grades were calculated for the greisenised granite and assigned to the greisenised ore tonnage derived from the aforementioned grid calculation. As a result a mineral potential could be estimated.

5.5 Prospects for Eventual Economic Extraction

Concerning the minimum vertical thickness of economically mineable greisen bed ore, a value of 2 m was chosen as a reasonable measure. The consequential limitation of the lithium orebodies was not done with the 3D geological model only but also in the block model by using the interpolated vertical thickness (attribute field "m_greisen") as a limitation parameter in a database query.

The reasonable base case lithium cut-off grade was defined by SWS as 2.500 ppm Li. As alternative cases 2,000 ppm, 2,250 ppm, 2,750 ppm and 3,000 ppm were chosen.

Based on the vertical thickness the linear productivity of the Li mineralisation was calculated in order to include potential high-grade intervals with vertical thicknesses below 2 m of the block model into the resource estimate (see *Chapter 4.3*). Lithium linear productivity is the product of vertical greisen bed thickness and lithium grade. Depending on the minimum vertical thickness and the lithium cut-off grades, linear productivity cut-off grades are: 4,000 ppm · m, 4,500 ppm · m, 5,000 ppm · m, 5,500 ppm · m and 6,000 ppm · m.

5.6 Summary Statistics of all Explorations Campaigns

Raw data obtained from statistical calculations performed for the several exploration campaigns was extracted from the database, analysed and summarised.

The analysis included:

- summarised statistic parameters of all exploration campaigns
- histograms (*Appendix IIIa*) and boxplots (*Appendix IIIb*)
- frequency distributions and comparison of data of different exploration campaigns
- correlation of Li, Sn, W, K_2O and Na_2O contents (*Appendix IIIc*)
- determination of outlier grades (see
- *Table* 34)

Before performing the statistical analysis, all data below the laboratory detection limit (sometimes presented as "0" in the older reports) have been substituted by the half the lower detection limit value (see *Table 16*).

Table 16: Substitution of values below the lower detection limit of the raw data

Exploration campaign No.*)	Li	Sn	W
(4)	No samples below detection limit	No samples below detection limit	No samples below detection limit
(5)	8 substitutions for core samples (0 replaced by 50 ppm)	No samples below detection limit	120 substitutions for core samples (0 replaced by 50 ppm)
(6)	No samples below detection limit	No samples below detection limit	38 substitutions for core samples (0 replaced by 5 ppm)
(7)	No samples below detection limit	26 substitutions for core samples (0 replaced by 5 ppm)	157 substitutions for core samples (0 replaced by 5 ppm)
(8)	No samples below detection limit	No samples below detection limit	No samples below detection limit

*) For details see *Appendix I*

A summary of the statistical analysis is given in *Table 17* to *Table 20*. These results confirm that the lithium mineralisation shows a low coefficient of correlation (0.38 - 0.96) meaning that the lithium grades do not vary much around the mean value (homogene distribution).

In contrast, the elements tin and tungsten show high coefficients of correlation with 1.30 - 3.76 or 0.76 – 13.70 respectively, meaning the variation of their grades is high in relation to the arithmetic mean and show an erratic distribution. Coefficient of variation of K_2O grades accounts for only 0.30 whereas assays of Na_2O shows a value of 0.97 (core samples) up to 3.55 due to significant variation between greisen and greisenised granite.

Table 17: Statistical parameters of the lithium assays

Lithium	**Exploration campaign number and sampling method**						
Parameter	**(4) Core samples**	**(5) Core samples**	**(6) Rock chip samples**	**(6) Pick samples**	**(7) Rock chip samples**	**(8) Core samples**	**(8) Channel samples**
Number of samples	581	854	373	1,341	1,188	1,247	83
Minimum [ppm]	279	50	30	50	30	10	390
Maximum [ppm]	14,817	9,400	3,520	20,000	5,108	13,500	6,890
Arithm. Mean [ppm]	3,230	1,883	844	2,018	975	2,001	3,281
Median [ppm]	3,112	1,600	730	1,600	773	1,800	3,350
5% Quantile [ppm]	1,068	400	61	100	77	183	761
25% Quantile [ppm]	2,276	1,000	167	750	236	1,110	2,775
75% Quantile [ppm]	3,855	2,400	1,301	2,900	1,389	2,460	4,205
95% Quantile [ppm]	6,085	4,400	1,986	4,800	2,667	4,731	4,927
Stand. Deviation [ppm]	1,655	1,202	684	1,938	925	1,367	1,255
Variance [ppm²]	2,740,628	1,445,664	467,252	3,755,682	855,564	1,869,071	1,575,814
Coefficient of Variation	0.51	0.64	0.81	0.96	0.95	0.68	0.38

Table 18: Statistical parameters of the tin assays

Tin	**Exploration campaign number and sampling method**								
Parameter	**(4) Core sam-ples**	**(5) Core sam-ples**	**(6) Rock chip sam-ples**	**(6) Core sam-ples**	**(6) Pick sam-ples**	**(7) Rock chip sam-ples**	**(7) Core sam-ples**	**(8) Core sam-ples**	**(8) Chan-nel sam-ples**
Number of samples	514	404	373	106	1,342	1,188	397	1,244	83
Minimum [ppm]	1	100	4	10	11	3	5	2	49
Maximum [ppm]	11,000	11,780	2,960	7,390	10,000	29,500	5,900	10,800	5,670
Arithm. Mean [ppm]	533	920	319	702	471	352	608	359	848
Median [ppm]	200	600	89	475	160	69	360	62	312
5% Quantile [ppm]	5	200	13	35	30	8	5	9	94
25% Quantile [ppm]	100	400	35	193	90	26	130	26	148
75% Quantile [ppm]	500	900	340	875	320	306	700	241	1,070
95% Quantile [ppm]	2,500	2,500	1,630	1,705	1,600	1,350	1,908	1,570	3,227
Stand. Deviation [ppm]	1,066	1,196	481	1,004	1,219	1,323	831	973	1,141
Variance [ppm²]	1,137,013	1,431,398	231,276	1,008,151	1,485,788	1,750,444	689,990	947,144	1,301,324

Coefficient of Variation [-]	2.00	1.30	1.51	1.43	2.59	3.76	1.37	2.71	1.34

Table 19: Statistical parameters of the tungsten assays

Tungsten	**Exploration campaign number and sampling method**								
Parameter	**(4) Core samples**	**(5) Core samples**	**(6) Rock chip samples**	**(6) Core samples**	**(6) Pick samples**	**(7) Rock chip samples**	**(7) Core samples**	**(8) Core samples**	**(8) Channel samples**
Number of samples	519	301	373	106	1,329	1,188	397	1,247	83
Minimum [ppm]	50	50	20	5	1	20	5	6	25
Maximum [ppm]	8,000	11,410	341	480	4,645	500	64,080	5,520	3,810
Arithm. Mean [ppm]	594	431	34	34	133	43	236	70	358
Median [ppm]	600	200	30	10	50	30	10	24	125
5% Quantile [ppm]	250	50	20	5	16	30	5	13	32
25% Quantile [ppm]	500	50	20	5	30	30	5	17	54
75% Quantile [ppm]	700	500	30	30	85	30	40	40	332
95% Quantile [ppm]	800	1,100	64	118	375	107	300	204	1,789
Stand. Deviation [ppm]	454	926	28	64	408	48	3,237	246	692
Variance [ppm²]	206,155	858,213	805	4,102	166,842	2,312	10,475,614	60,389	478,178
Coefficient of Variation [-]	0.76	2.15	0.85	1.88	3.08	1.11	13.70	3.51	1.93

Table 20: Statistical parameters of the K_2O and Na_2O assays

	Exploration campaign number and sampling method			
Parameter	**(8) Core samples K_2O**	**(8) Channel samples K_2O**	**(8) Core samples Na_2O**	**(8) Channel samples Na_2O**
Number of samples	1,247	83	1,247	82
Minimum [wt%]	0.03	0.84	0.01	0.01
Maximum [wt%]	8.68	4.61	7.45	3.21
Arithm. Mean [wt%]	3.29	2.47	1.46	0.13
Median [wt%]	3.25	2.45	1.23	0.04
5% Quantile [wt%]	1.73	1.25	0.03	0.01
25% Quantile [wt%]	2.70	1.94	0.06	0.02
75% Quantile [wt%]	3.94	2.78	2.66	0.06
95% Quantile [wt%]	4.76	3.99	3.87	0.14
Stand. Deviation [wt%]	1.00	0.79	1.41	0.45

Variance [wt%²]	0.99	0.62	2.00	0.20
Coefficient of Variation [-]	0.30	0.32	0.97	3.55

Data of exploration campaigns No.s (4) to (7) often lacks of detailed information on sampling procedures or assays do not comply with the necessary quality norms. Accordingly, it becomes necessary to prove the comparability before integrating the data in the estimation process.

Assays of exploration campaign No. (8) were taken as a reference measure when checking the results of the other exploration campaigns concerning reliability and applicability. During exploration campaign No. (8) sampling and analysis works were based on high quality standards. All procedures were documented and can be traced back. The sampling methods were in compliance with PERC reporting standard (see PERC report (2014) [54]).

5.7 *Summary Statistics of Exploration Campaign (8)*

Hereinafter a detailed statistical characterisation of data of exploration campaign No. (8) is given. Similar graphs of the other exploration campaigns are presented in *Appendix IIIa*.

The following charts show histograms of all assays of exploration campaign No. (8) for sample interval lengths, lithium, tin, tungsten, K_2O and Na_2O grades.

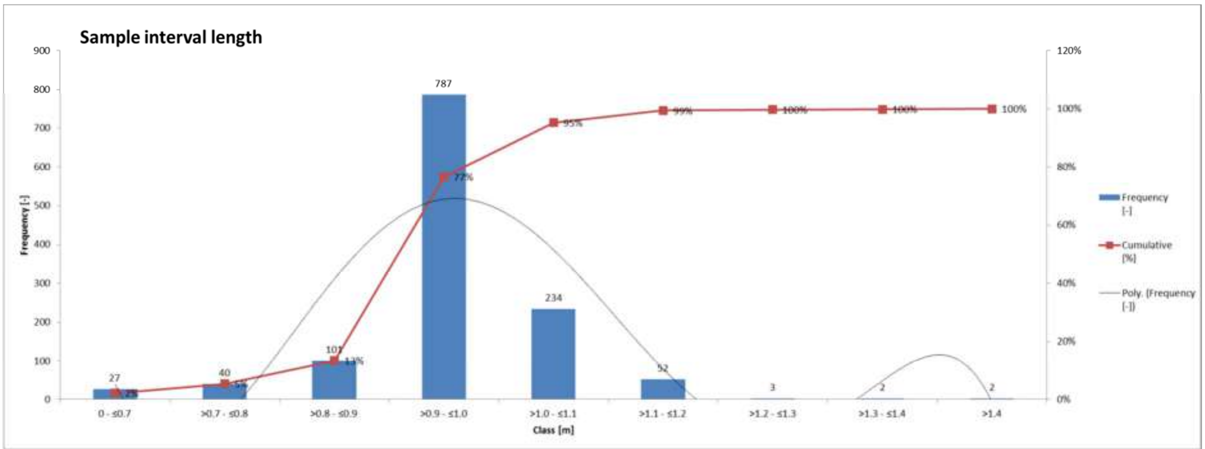


Figure 13: Frequency distribution of all sample interval lengths of exploration campaign No. (8)

Lithium grades show normal frequency distributions where greisen mean values account for 3,000 to 4,000 ppm and greisenised granite mean values account for 1,500 to 2,000 ppm.

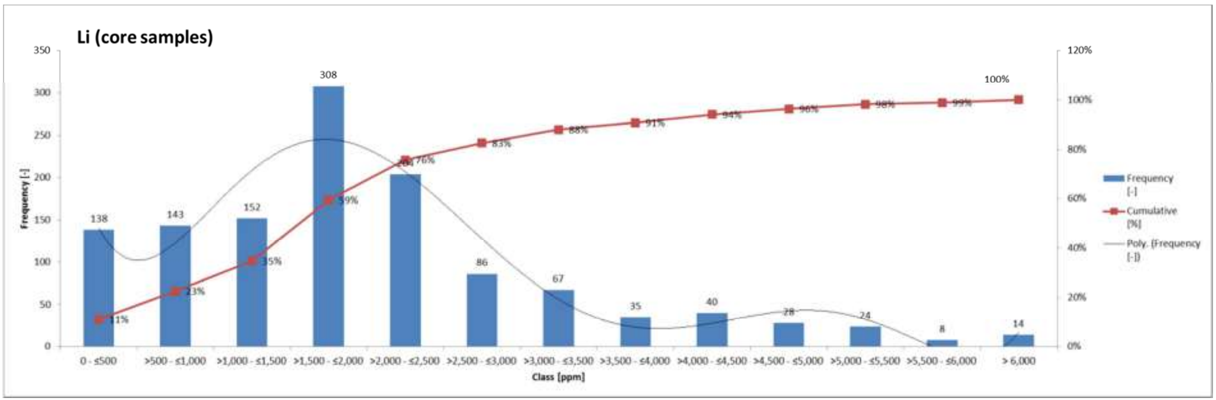


Figure 14: Frequency distribution of all lithium drill core assays of exploration campaign No. (8)

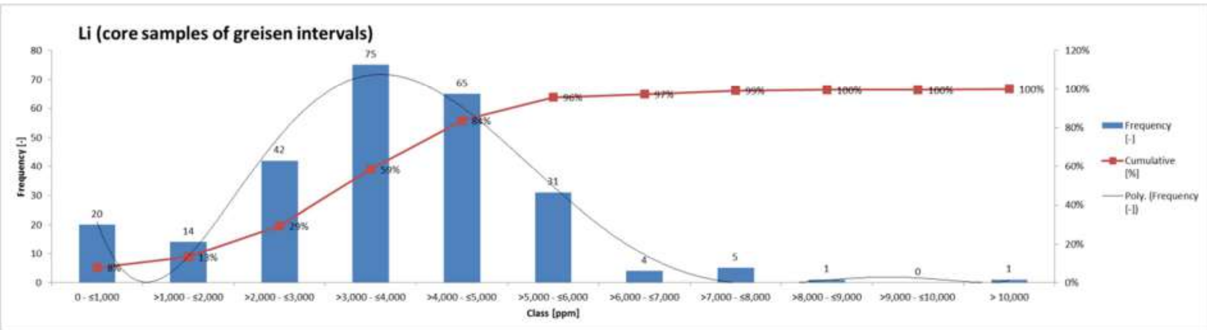


Figure 15: Frequency distribution of greisen lithium drill core assays of exploration campaign No. (8)

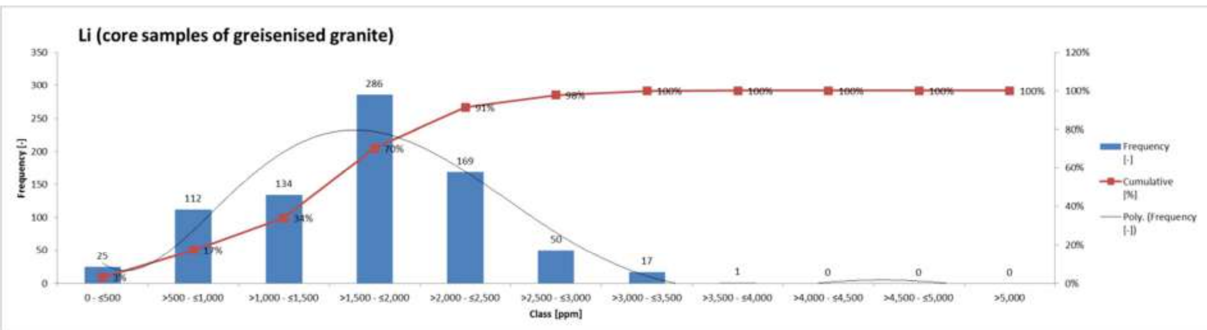


Figure 16: Frequency distribution of greisenised granite lithium drill core assays of exploration campaign No. (8)

Tin grade frequency distributions show two generations of mineralisation.

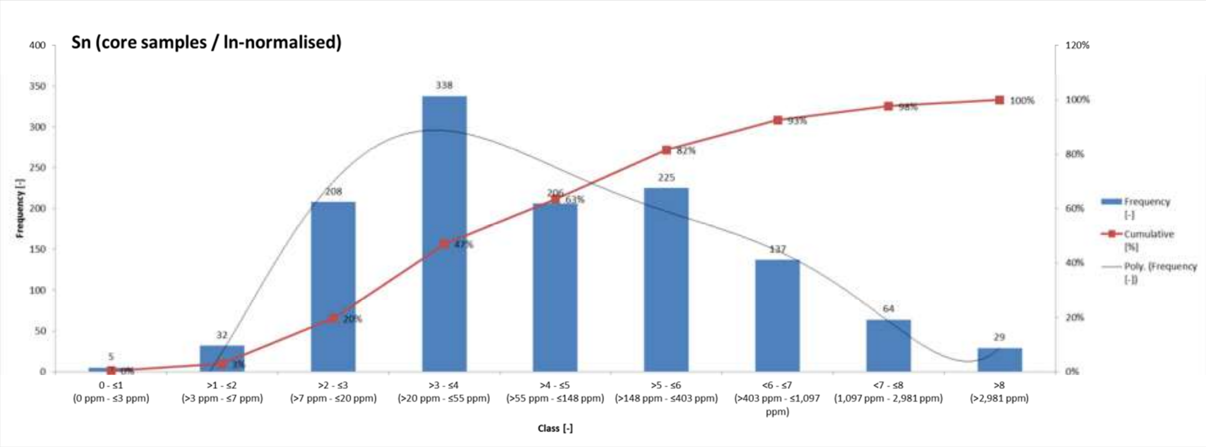


Figure 17: Frequency distribution of all tin drill core assays of exploration campaign No. (8)

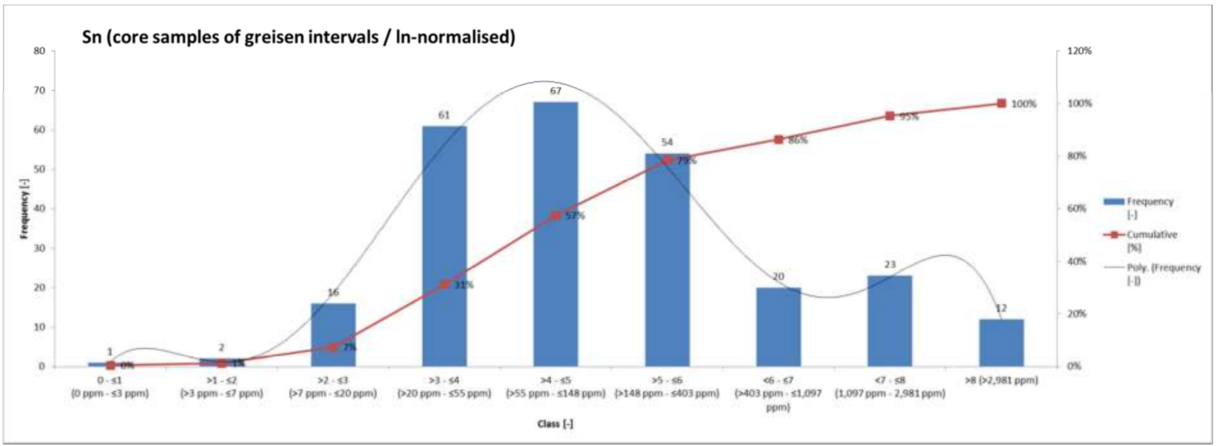


Figure 18: Frequency distribution of greisen tin drill core assays of exploration campaign No.(8)

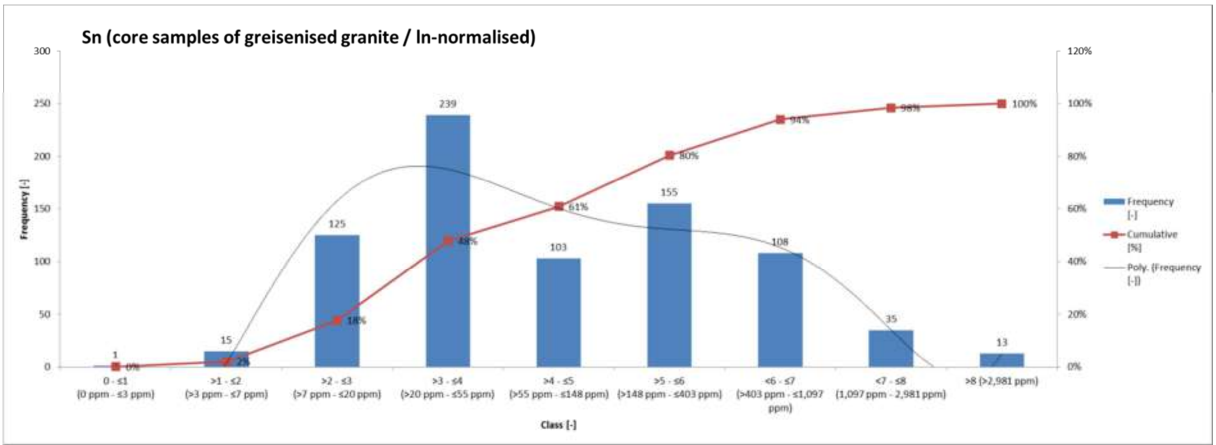


Figure 19: Frequency distribution of greisenised granite tin drill core assays of exploration campaign No. (8)

Tungsten grades tend to be mostly below 100 ppm.

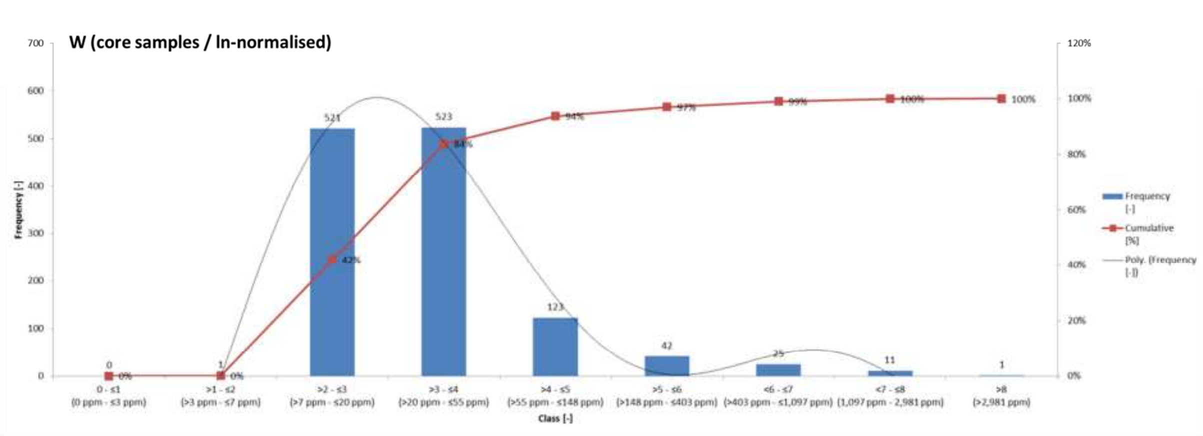


Figure 20: Frequency distribution of all tungsten drill core assays of exploration campaign No. (8)

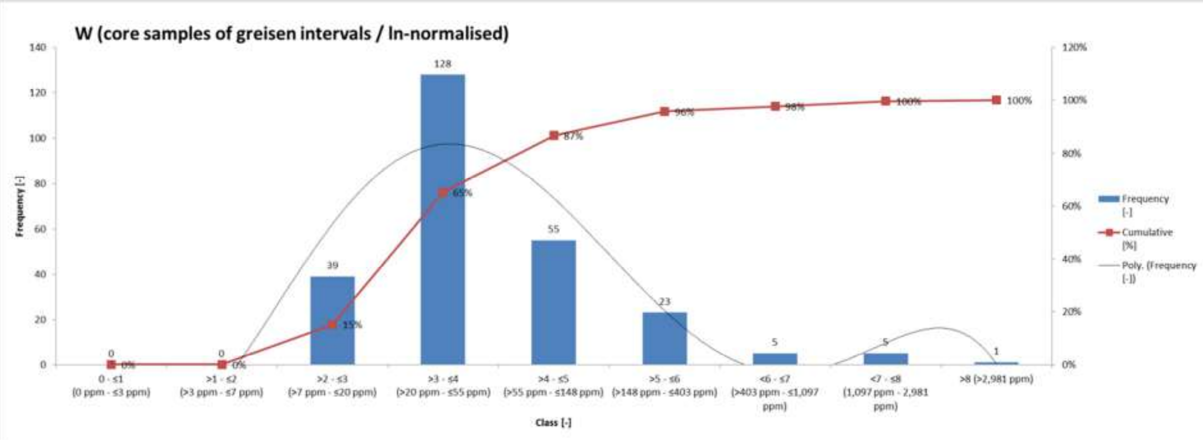


Figure 21: Frequency distribution of greisen tungsten drill core assays of exploration campaign No. (8)

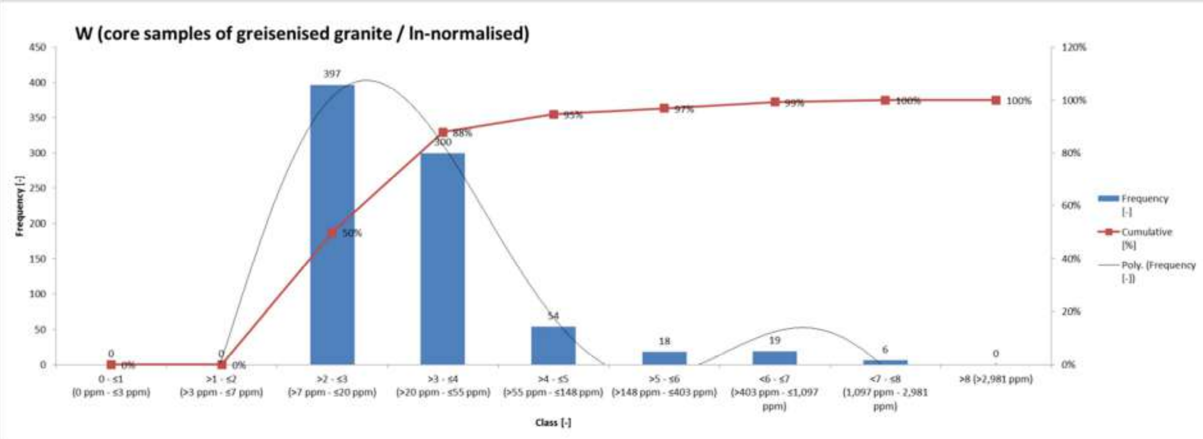


Figure 22: Frequency distribution of greisenised granite tungsten drill core assays of exploration campaign No. (8)

The mean K_2O grades of greisen beds (2 – 3 wt%) are lower than those of greisenised granite (3 – 4 wt%) or other petrographic units.

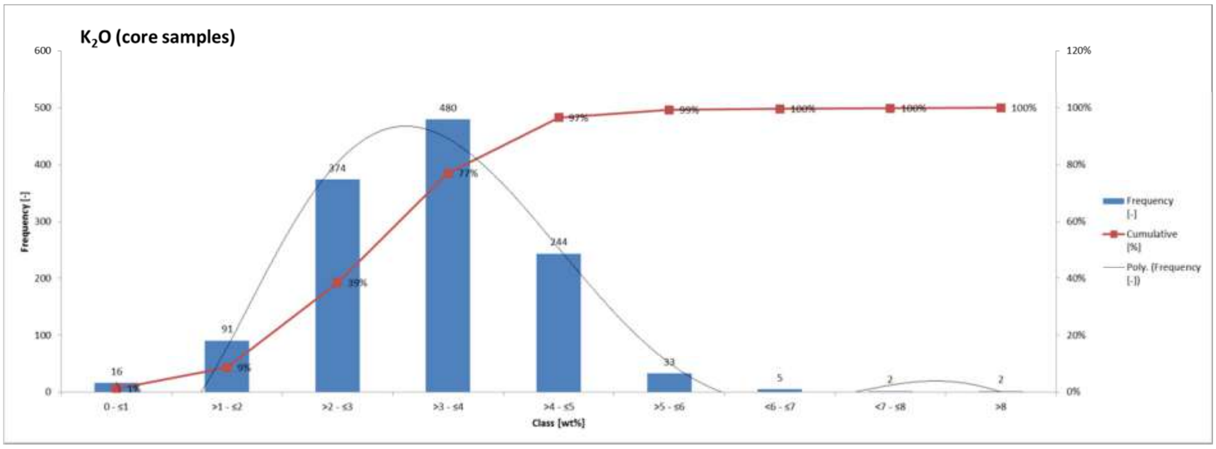


Figure 23: Frequency distribution of all K_2O drill core assays of exploration campaign No. (8)

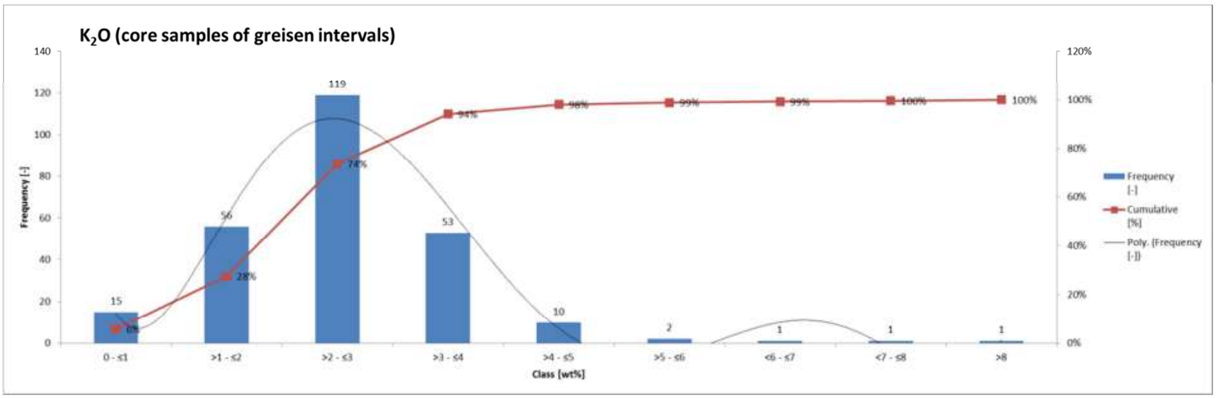


Figure 24: Frequency distribution of greisen K_2O drill core assays of exploration campaign No. (8)

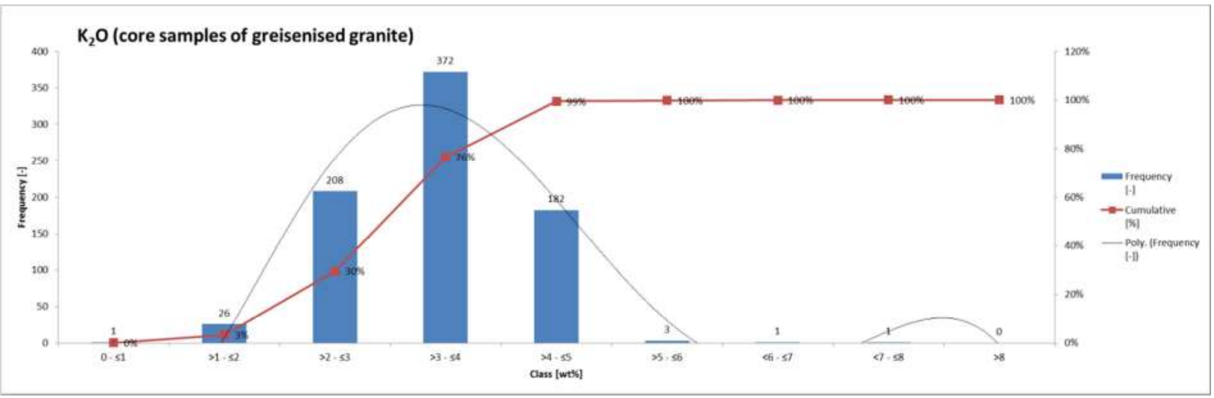


Figure 25: Frequency distribution of greisenised granite K_2O drill core assays of exploration campaign No. (8)

Na_2O grades show two populations which can be correlated with the intensity of metasomatic alteration. Greisen beds have mean grades of 0.03 to 0.04 wt%, whereas greisenised granite shows mean grades of 2.0 to 3.0 wt%. Thus, Na_2O can be used in the Zinnwald deposit as geochemical criterion for distinguishing greisens from greisenised or unaltered granite.

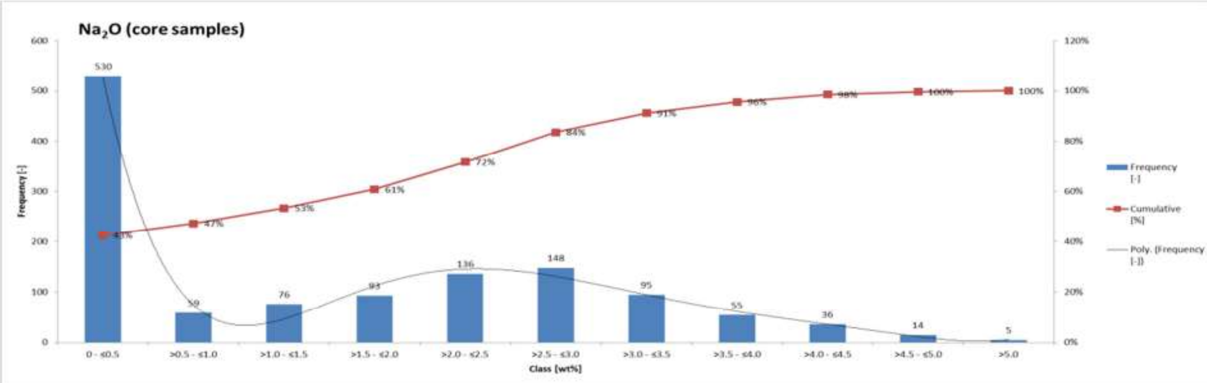


Figure 26: Frequency distribution of all Na_2O drill core assays of exploration campaign No. (8)

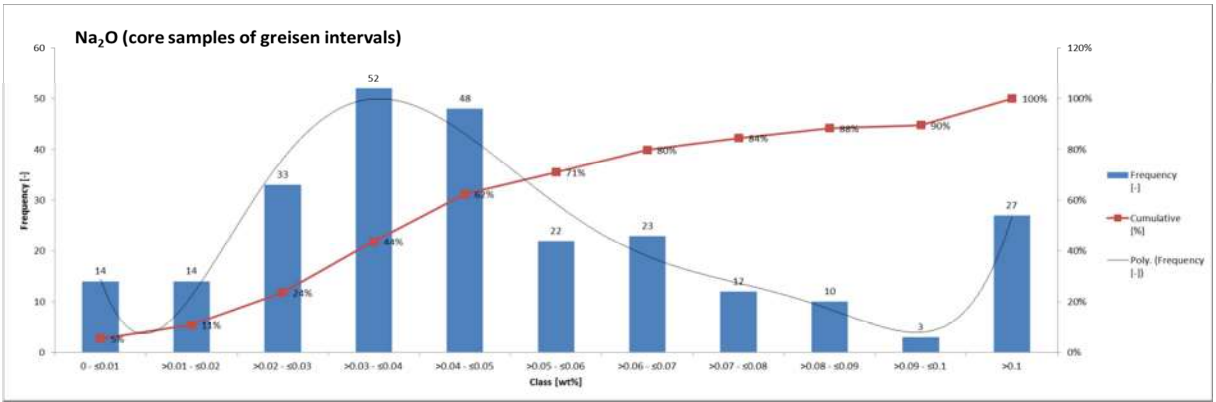


Figure 27: Frequency distribution of greisen bed Na_2O drill core assays of exploration campaign No. (8)

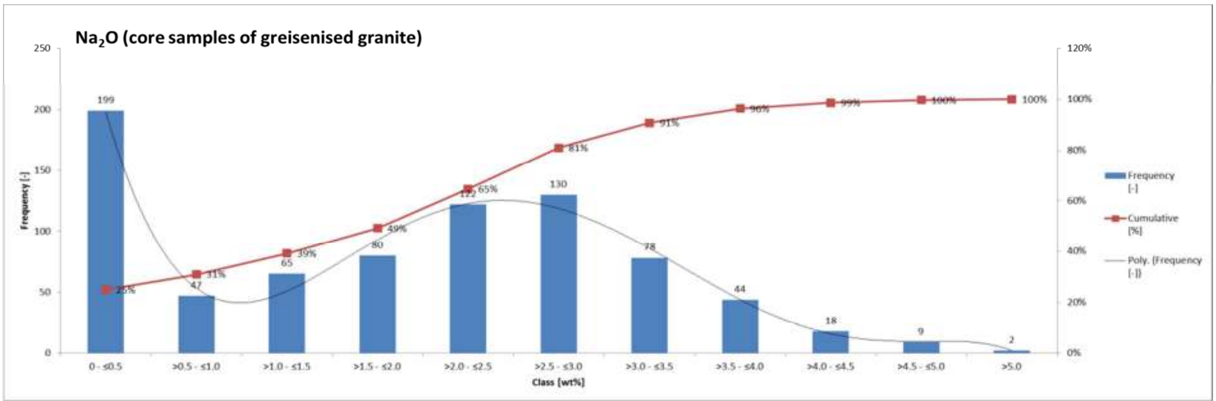


Figure 28: Frequency distribution of greisenised granite Na_2O drill core assays of exploration campaign No. (8)

Table 21: Comparison of summary statistical parameters for lithium, tin and tungsten of exploration campaign No. (8)

Greisen assays | *Greisenised granite assays*

Lithium (Li) – Core samples + Na2O2 digestion ICP-MS

Parameter	Value (Greisen)	Unit	Value (Greisenised granite)	Unit
Samples	258	[-]	794	[-]
Minimum	10	[ppm]	140	[ppm]
Maximum	13.500	[ppm]	3.840	[ppm]
Arithm. Mean	3.618	[ppm]	1.683	[ppm]
Median	3.650	[ppm]	1.740	[ppm]
5% Quantile	257	[ppm]	667	[ppm]
25% Quantile	2.850	[ppm]	1.270	[ppm]
75% Quantile	4.645	[ppm]	2.070	[ppm]
95% Quantile	5.882	[ppm]	2.694	[ppm]
Standard Deviation	1.682	[ppm]	621	[ppm]
Variance	2.830.553	[ppm²]	385.241	[ppm²]
Coefficient of Variation	0,46	[-]	0,37	[-]

Tin (Sn) – Core samples + X-ray fluorescence analysis (2012) + Na2O2 digestion ICP-MS (2013)

Parameter	Value (Greisen)	Unit	Value (Greisenised granite)	Unit
Samples	256	[-]	794	[-]
Minimum	2	[ppm]	2	[ppm]
Maximum	10.000	[ppm]	10.800	[ppm]
Arithm. Mean	555	[ppm]	322	[ppm]
Median	113	[ppm]	60	[ppm]
5% Quantile	17	[ppm]	11	[ppm]
25% Quantile	42	[ppm]	26	[ppm]
75% Quantile	311	[ppm]	274	[ppm]
95% Quantile	2.785	[ppm]	1.458	[ppm]
Standard Deviation	1.411	[ppm]	793	[ppm]
Variance	1.991.802	[ppm²]	628.153	[ppm²]
Coefficient of Variation	2,54	[-]	2,46	[-]

Tungsten (W) – Core samples + X-ray fluorescence analysis (2012) + Na2O2 digestion ICP-MS (2013)

Parameter	Value (Greisen)	Unit	Value (Greisenised granite)	Unit
Samples	258	[-]	794	[-]
Minimum	12	[ppm]	9	[ppm]
Maximum	5.520	[ppm]	1.695	[ppm]
Arithm. Mean	138	[ppm]	57	[ppm]
Median	40	[ppm]	21	[ppm]
5% Quantile	17	[ppm]	13	[ppm]
25% Quantile	26	[ppm]	16	[ppm]
75% Quantile	70	[ppm]	32	[ppm]
95% Quantile	360	[ppm]	151	[ppm]
Standard Deviation	459	[ppm]	154	[ppm]
Variance	210.537	[ppm²]	23.611	[ppm²]
Coefficient of Variation	3,33	[-]	2,71	[-]

Table 22: Comparison of summary statistical parameters for K_2O and Na_2O of exploration campaign No. (8)

Greisen assays

Potassium oxide (K_2O)
Core samples + ICP-AES (2012-2013)

Parameter	Value		Unit
Samples	258		[-]
Minimum	0.03		[wt%]
Maximum	8.68		[wt%]
Arithm. Mean	2.54		[wt%]
Median	2.54		[wt%]
5% Quantile	0.67		[wt%]
25% Quantile	1.93		[wt%]
75% Quantile	3.03		[wt%]
95% Quantile	4.30		[wt%]
Standard Deviation	1.08		[wt%]
Variance	1.17		[(wt%)²]
Coefficient of Variation	0.43		[-]

Sodium oxide (Na_2O)
Core samples + ICP-AES (2012-2013)

Parameter	Value		Unit
Samples	258		[-]
Minimum	0.01		[wt%]
Maximum	3.53		[wt%]
Arithm. Mean	0.16		[wt%]
Median	0.05		[wt%]
5% Quantile	0.01		[wt%]
25% Quantile	0.04		[wt%]
75% Quantile	0.07		[wt%]
95% Quantile	0.28		[wt%]
Standard Deviation	0.50		[wt%]
Variance	0.25		[(wt%)²]
Coefficient of Variation	3.19		[-]

Greisenised granite assays

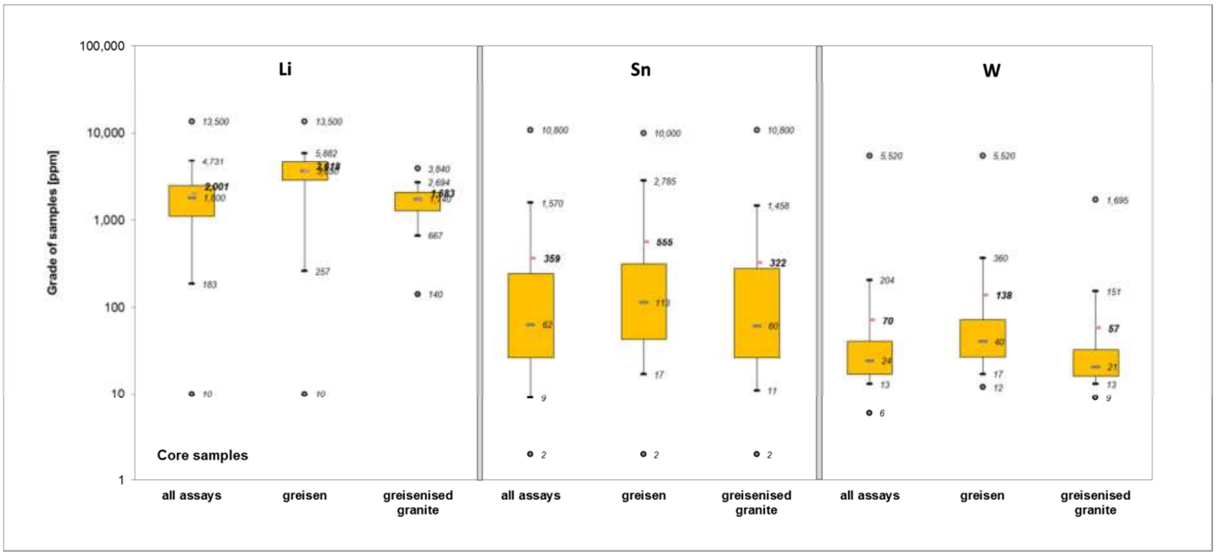
Potassium oxide (K_2O)
Core samples + ICP-AES (2012-2013)

Parameter	Value		Unit
Samples	794		[-]
Minimum	0.90		[wt%]
Maximum	7.18		[wt%]
Arithm. Mean	3.41		[wt%]
Median	3.39		[wt%]
5% Quantile	2.21		[wt%]
25% Quantile	2.88		[wt%]
75% Quantile	3.96		[wt%]
95% Quantile	4.60		[wt%]
Standard Deviation	0.76		[wt%]
Variance	0.57		[(wt%)²]
Coefficient of Variation	0.22		[-]

Sodium oxide (Na_2O)
Core samples + ICP-AES (2012-2013)

Parameter	Value		Unit
Samples	794		[-]
Minimum	0.02		[wt%]
Maximum	5.85		[wt%]
Arithm. Mean	1.84		[wt%]
Median	2.04		[wt%]
5% Quantile	0.04		[wt%]
25% Quantile	0.51		[wt%]
75% Quantile	2.84		[wt%]
95% Quantile	3.75		[wt%]
Standard Deviation	1.29		[wt%]
Variance	1.67		[(wt%)²]
Coefficient of Variation	0.70		[-]

Boxplots of the assays present clearly the differences in lithium frequency distributions of greisen and greisenised granite. Tin and tungsten grades are slightly increased in greisen whereas K_2O and Na_2O grades are decreased.



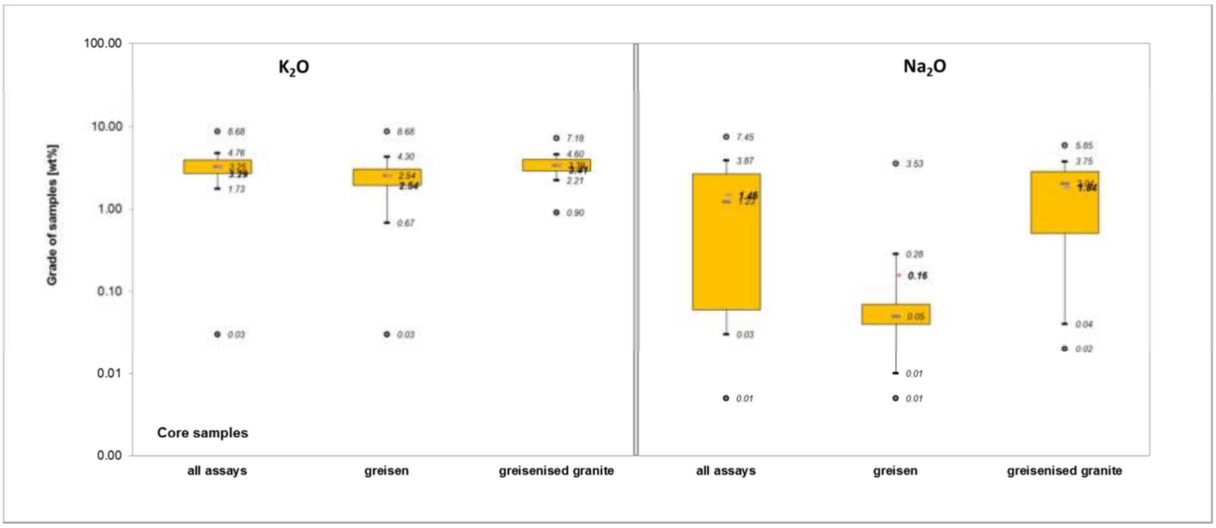


Figure 29: Boxplots of drill core assays of exploration campaign No. (8)

5.8 Correlation Analysis of Geochemical Components

Regarding the correlation matrix of exploration campaign No. (8) no significant relationships between the selected components lithium, tin, tungsten and Na_2O could be found (see *Table 23*). Only for Li and K_2O linear correlation was found in the greisen beds, probably referred to the joint occurrence of these components in the mineral zinnwaldite ($KLiFeAl(AlSi_3)O_{10}(OH,F)_2$).

Table 23: Drill core assays exploration campaign No. (8), linear coefficient of correlation R^2

		Li	Sn	W	K_2O	Na_2O
all assays	**Li**	1.00				
	Sn	0.02	1.00			
	W	0.03	0.07	1.00		
	K_2O	0.01	0.01	0.00	1.00	
	Na_2O	0.19	0.01	0.01	0.05	1.00
assays of greisen	**Li**	1.00				
	Sn	0.01	1.00			
	W	0.02	0.03	1.00		
	K_2O	**0.70**	0.08	0.02	1.00	
	Na_2O	0.00	0.01	0.00	0.00	1.00
assays of greisenised granite	**Li**	1.00				
	Sn	0.00	1.00			
	W	0.00	0.11	1.00		
	K_2O	0.06	0.04	0.05	1.00	
	Na_2O	0.05	0.01	0.00	0.03	1.00

Correlation analysis of the samples of explorations campaigns No.s (4) to (7) underline the lack of a relationship between Li, Sn and W grades (Table 24).

Table 24: Coefficient of linear correlation of the mineralisation of Li, Sn and W

Exploration campaign No.	R^2 Li - Sn	R^2 Li - W	R^2 Sn - W
(4)	0.004 (core samples)	0.000 (core samples)	0.044 (core samples)
(5)	0.022 (core samples)	0.022 (core samples)	0.038 (core samples)
(6)	0.138 (rock chip samples) 0.018 (pick samples)	0.095 (rock chip samples) 0.014 (pick samples)	0.212 (rock chip samples) 0.034 (core samples) 0.020 (pick samples)
(7)	0.035 (rock chip samples)	0.113 (rock chip samples)	0.029 (rock chip samples) 0.000 (core samples)
(8)	0.015 (channel samples)	0.005 (channel samples)	0.020 (channel samples)

5.9 Comparison of Frequency Distribution of Exploration Campaign (8) to Campaigns (4) - (7)

The following comparison based on cross-plotting of percentiles is done for greisen interval samples only, since numerical interpolation of lithium grades is restricted to greisens within this study. Greisenised granite intervals were not determined correctly throughout the exploration campaigns No.s (4) to (7) and therefore no consistent data collectives could be formed and analysed.

Lithium core sample assays of exploration campaign No. (4) are comparable with those of campaign No. (8) while the number of sample assays is almost similar. Assays of the Czech exploration campaign No. (5) tend to be 700 ppm lower. This might be caused due to a weaker degree of mineralisation in the Czech domain or due to a systematic error of geochemical analysis (method has not been specified). For this Report the decision was made to join the three data collectives for interpolation purposes and to take the Czech data only as a conservative estimate into account.

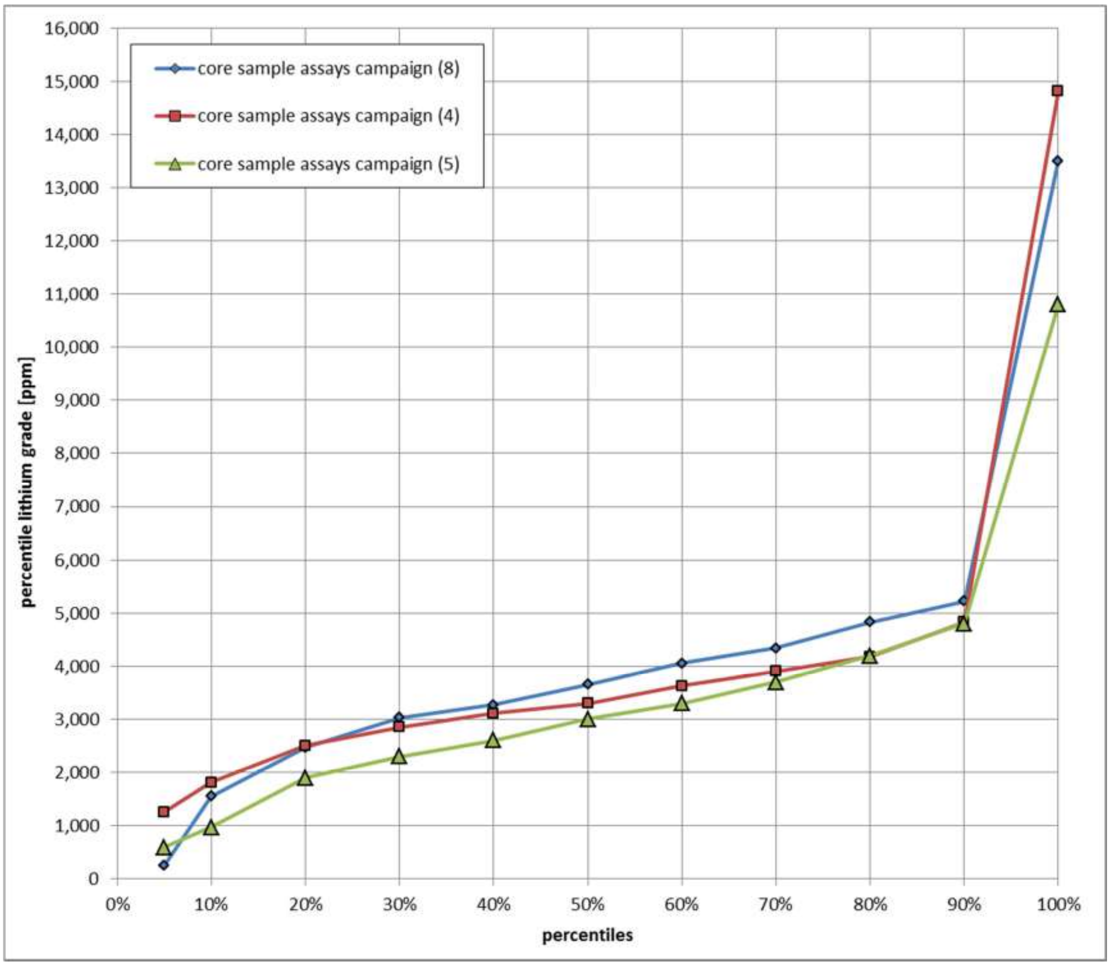


Figure 30: Comparison of lithium drill core assays of exploration campaigns No.s (4), (5) and (8)

Table 25: Comparison of lithium drill core assays of exploration campaigns No.s (4), (5) and (8)

	Li core sample assays exploration campaign (8)		Li core sample assays exploration campaign (4)		Li core sample assays exploration campaign (5)	
Percentile	Li grade [ppm]	number of samples [-]	Li grade [ppm]	number of samples [-]	Li grade [ppm]	number of samples [-]
5%	257	13	1,256	19	600	14
10%	1,547	26	1,811	38	970	28
20%	2,470	52	2,508	76	1,900	55
30%	3,031	77	2,847	115	2,300	83
40%	3,270	103	3,112	153	2,600	111
50%	3,650	129	3,298	191	3,000	139
60%	4,052	155	3,623	229	3,300	166
70%	4,340	181	3,902	267	3,700	194
80%	4,832	206	4,180	306	4,200	222
90%	5,222	232	4,826	344	4,800	249
100%	13,500	258	14,817	382	10,800	277

Plotting tin core sample assays of exploration campaign No. (8) against those of campaigns No.s (4), (5) and (7) revealed systematic differences. Tin grades are generally twice as big in the low grade range of 100 ppm for campaigns (4) and (7). Results of campaign (5) are nearly 4-5 times higher whereby it has to be kept in mind that number of samples is much lower.

Table 26: Comparison of tin drill core assays of exploration campaigns (4), (5), (7) and (8)

	Sn core sample assays exploration campaign (8)		Sn core sample assays exploration campaign (4)		Sn core sample assays exploration campaign (5)		Sn core sample assays exploration campaign (7)	
Percentile	Sn grade [ppm]	number of samples [-]	Sn grade [ppm]	number of samples [-]	Sn grade [ppm]	number of samples [-]	Sn grade [ppm]	number of samples [-]
5%	17	13	7	17	200	13	10	3
10%	24	26	10	33	200	26	20	7
20%	36	51	80	67	300	53	70	14
30%	53	77	100	100	400	79	90	20
40%	78	102	200	134	500	105	160	27
50%	113	128	200	167	500	132	220	34
60%	166	154	300	200	600	158	280	41
70%	210	179	410	234	800	184	420	48
80%	452	205	700	267	900	210	810	54
90%	1,473	230	1,000	301	1,900	237	1,340	61
100%	10,000	256	11,000	334	8,300	263	5,900	68

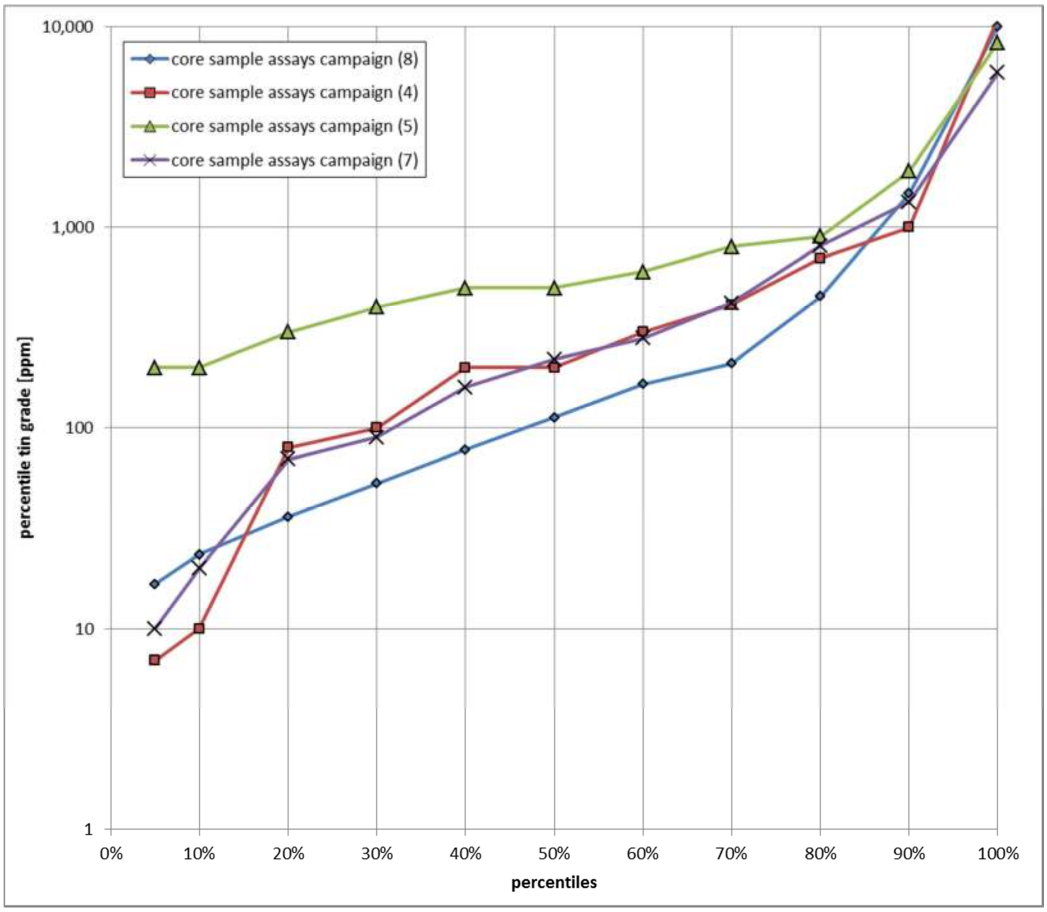


Figure 31: Comparison of tin drill core assays of exploration campaigns No.s (4), (5), (7) and (8)

High variation of the curves in *Figure 31* was caused by samples from different tin domains of the deposit and/or by analytical errors. As a result from this the frequency distributions of the different campaigns were not directly comparable. Thus, the respective data collectives could not be merged for interpolation purposes. Only statistical analysis and deduction of an overall mean tin grade was feasible.

Accordingly it must be taken into account, that the geochemical analysis results of exploration campaign No. (8) may indicate different generations of tin mineralisation. The low grade population of sample assays (mean grade at about 100 ppm) might be related to fine grained disperse tin mineralisation in the greisens. The higher graded group (mean grade around 2,000 ppm) might reflect veins and seams (latter ones also known as "Flöze"). The existing drill core data were insufficient for proper distinguishing the spatial distribution of the veins and seams from each other.

That's why only an overall mean tin grade characterising the dispersed mineralisation in the greisens was determined. This approach can be defined as a conservative measure for resource estimation.

Henceforth, the unified data of the exploration campaigns No. (4), (7) and (8) will be used for summarising statistical analysis. Tin data of campaigns No.s (4) and (7) was corrected by the factor 0.6.

On examination of tungsten grade frequency distributions only campaign No. (7) seems to be comparable with campaign No. (8) as presented in *Figure 32*.

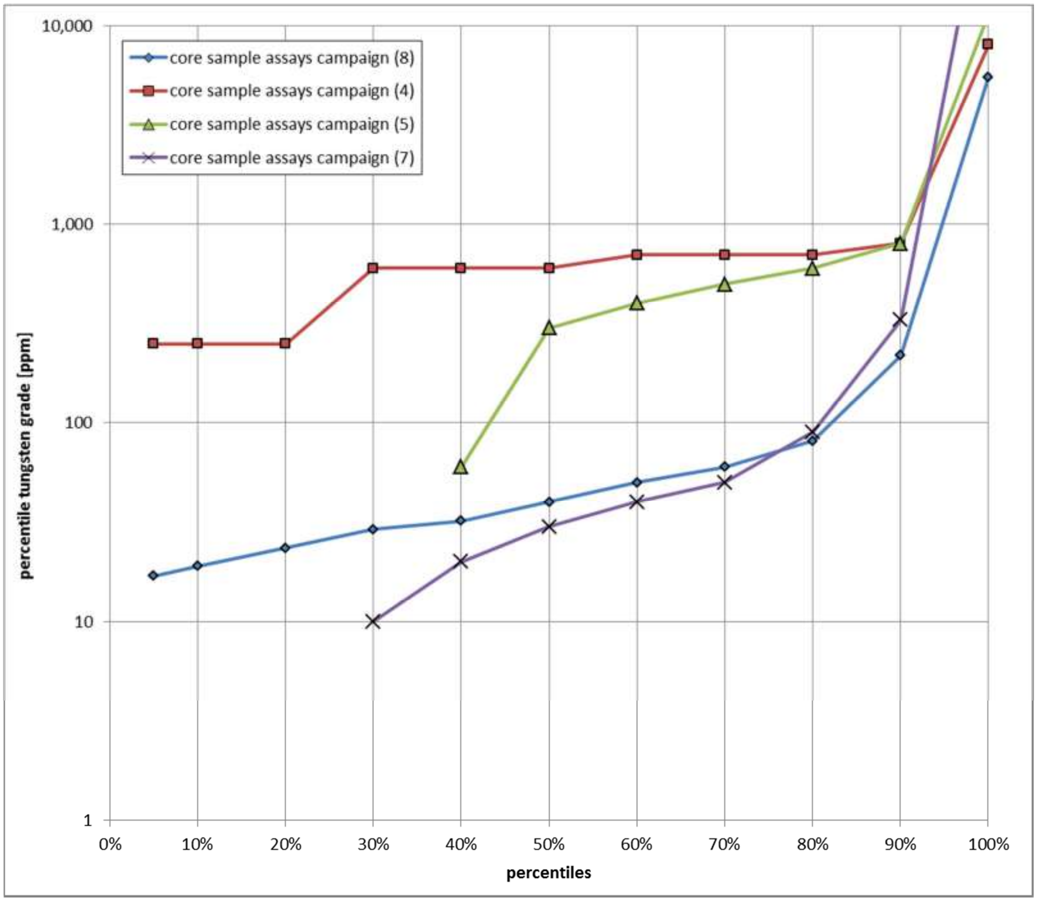


Figure 32: Comparison of tungsten drill core assays of exploration campaigns No.s (4), (5), (7) and (8)

Table 27: Comparison of tungsten drill core assays of exploration campaigns No.s (4), (5), (7) and No. (8)

	W core sample assays exploration campaign (8)		W core sample assays exploration campaign (4)		W core sample assays exploration campaign (5)		W core sample assays exploration campaign (7)	
Percentile	**W grade [ppm]**	**number of samples [-]**	**W grade [ppm]**	**number of samples [-]**	**W grade [ppm]**	**number of samples [-]**	**W grade [ppm]**	**number of samples [-]**
5%	17	13	250	17	0	6	0	3
10%	19	26	250	33	0	12	0	6
20%	23	52	250	67	0	24	0	11
30%	29	77	600	100	0	36	10	17
40%	32	103	600	134	60	48	20	22
50%	40	129	600	167	300	60	30	28
60%	50	155	700	200	400	72	40	34
70%	60	181	700	234	500	84	50	39
80%	81	206	700	267	600	96	90	45
90%	219	232	800	301	800	108	330	50
100%	5,520	258	8,000	334	11,410	120	64,080	56

Campaigns No.s (4) and (5) show percentile tungsten grades, which are 10 or more times higher than those of campaigns No.s (7) and (8). It is obvious that the grades of campaigns No.s (4) and (5) have been rounded because of the imprecision of the analytical method that has not been explicitly specified in the sources of information.

In accordance with these observations BESSER and KÜHNE (1989) [103] suggested already that the tungsten grades of the exploration campaign No. (4) should not be considered as being qualified for resource estimation purposes.

The unified data of the exploration campaigns No.s (7) and (8) was used to determine an overall mean tungsten grade for the greisen beds similar to the method of mean tin grade determination. No correction factors were applied.

In campaign No. (8) the comparison of lithium assays from core samples with those from channel samples showed good correlation although having different quantity of samples. Underground pick samples of campaign No. (6) and rock chip samples of campaign No. (7) provided differing results. The different data collectives must not be used together for interpolation purpose

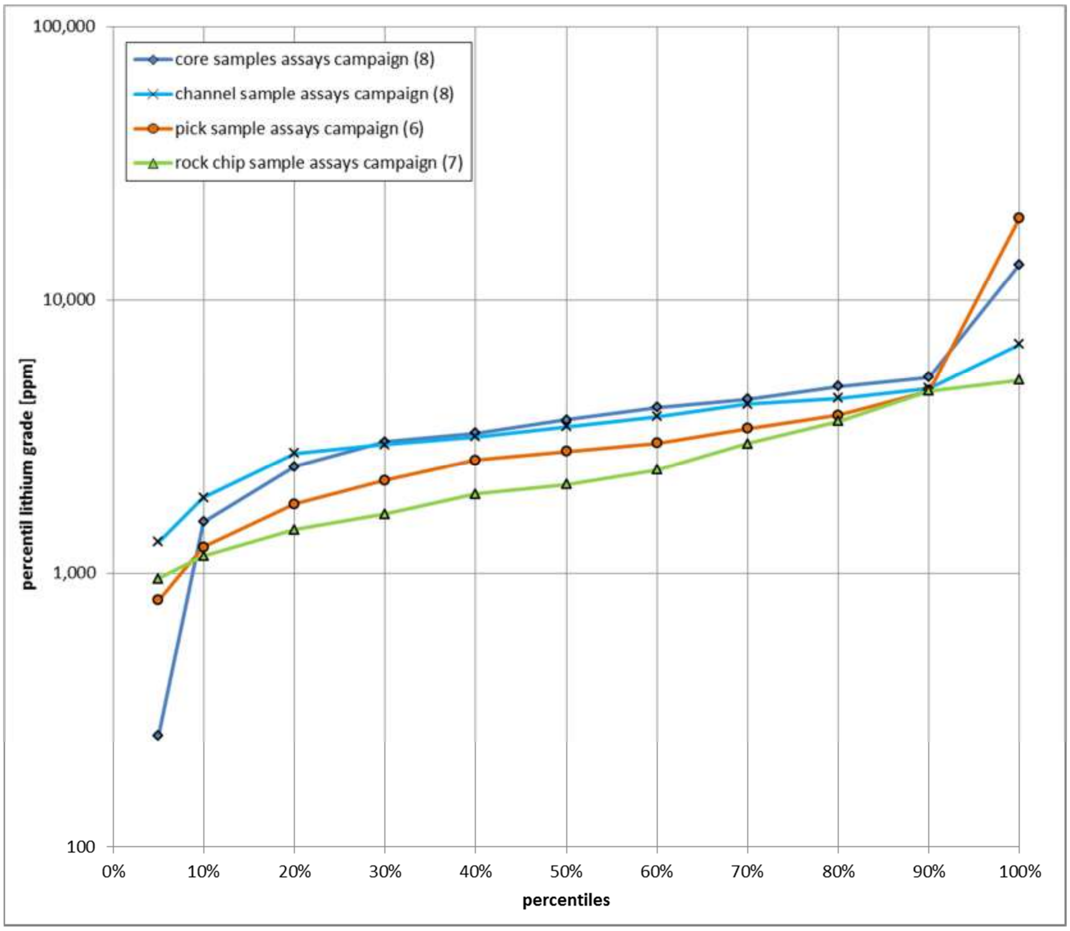


Figure 33: Comparison of lithium assays of exploration campaigns No.s (6), (7) and (8)

Table 28: Comparison of lithium assays of exploration campaigns No.s (6), (7) and (8)

	Li core sample assays exploration campaign (8)		Li channel sample assays exploration campaign (8)		Li pick sample assays exploration campaign (6)		Li rock chip sample assays exploration campaign (7)	
Percentile	**Li grade [ppm]**	**number of samples [-]**	**Li grade [ppm]**	**number of samples [-]**	**Li grade [ppm]**	**number of samples [-]**	**Li grade [ppm]**	**number of samples [-]**
5%	257	13	1,308	4	800	34	956	6
10%	1,547	26	1,900	8	1,255	68	1,162	13
20%	2,470	52	2,760	15	1,800	136	1,448	25
30%	3,031	77	2,964	23	2,200	205	1,652	38
40%	3,270	103	3,168	31	2,600	273	1,954	51
50%	3,650	129	3,440	39	2,800	341	2,126	64
60%	4,052	155	3,746	46	3,000	409	2,398	76
70%	4,340	181	4,164	54	3,400	477	2,994	89
80%	4,832	206	4,368	62	3,800	546	3,608	102
90%	5,222	232	4,754	69	4,645	614	4,654	114
100%	13,500	258	6,890	77	20,000	682	5,108	127

Figure 34 shows a comparison of tin and tungsten assays of campaign No. (8) and the campaigns No.s (6) and (7). Significant differences can be mentioned between core and channel sample assays of campaign No. (8) and between the assays of campaign No. (8) and No.s (6) and (7).

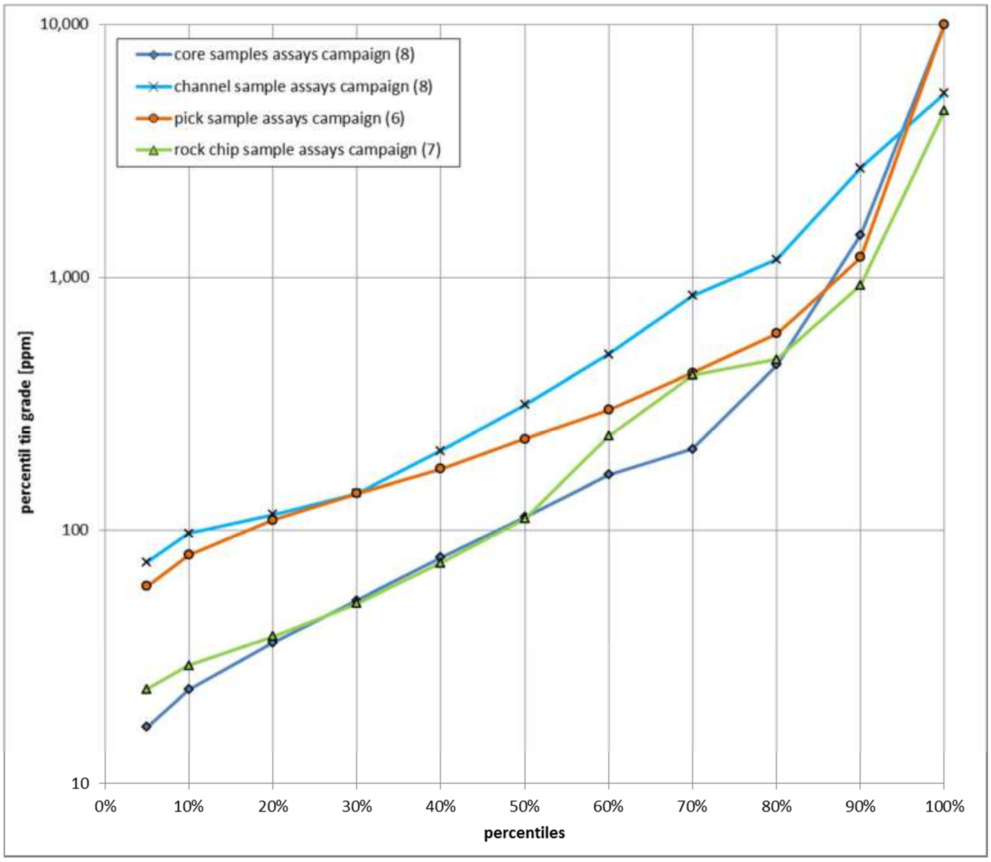


Figure 34: Comparison of tin assay results of exploration campaigns No.s (6), (7) and (8)

Taking into account the high variation coefficients, the conclusion can be deduced that the different tin and tungsten domains occurring in the deposit might have influenced the results. In addition, inaccuracies resulting from sampling and geochemical analysis method cannot be excluded. It is impossible to distinguish between the different sources of error.

Table 29: Comparison of tin assays of the exploration campaigns No.s (6), (7) and (8)

	Sn core sample assays exploration campaign (8)		Sn channel sample assays exploration campaign (8)		Sn pick sample assays exploration campaign (6)		Sn rock chip sample assays exploration campaign (7)	
Percentile	Sn grade [ppm]	number of samples [-]	Sn grade [ppm]	number of samples [-]	Sn grade [ppm]	number of samples [-]	Sn grade [ppm]	number of samples [-]
5%	17	13	75	4	60	34	24	6
10%	24	26	97	8	80	68	29	13
20%	36	51	116	15	110	136	38	25
30%	53	77	140	23	140	205	52	38
40%	78	102	206	31	175	273	74	51
50%	113	128	314	39	230	341	111	64
60%	166	154	496	46	300	409	236	76
70%	210	179	848	54	420	477	411	89
80%	452	205	1,174	62	600	546	475	102
90%	1,473	230	2,702	69	1,200	614	932	114
100%	10,000	256	5,330	77	10,000	682	4,560	127

Table 30: Comparison of tungsten assays of the exploration campaigns No.s (6), (7) and (8)

	W core sample assays exploration campaign (8)		W channel sample assays exploration campaign (8)		W pick sample assays exploration campaign (6)		W rock chip sample assays exploration campaign (7)	
Percentile	W grade [ppm]	number of samples [-]	W grade [ppm]	number of samples [-]	W grade [ppm]	number of samples [-]	W grade [ppm]	number of samples [-]
5%	17	13	40	4	25	34	30	6
10%	19	26	40	8	29	68	30	13
20%	23	52	52	15	35	135	30	25
30%	29	77	60	23	45	203	30	38
40%	32	103	94	31	50	271	30	51
50%	40	129	130	39	60	339	30	64
60%	50	155	180	46	70	406	30	76
70%	60	181	300	54	90	474	59	89
80%	81	206	438	62	135	542	72	102
90%	219	232	746	69	312	609	107	114
100%	5,520	258	3,610	77	4,645	677	500	127

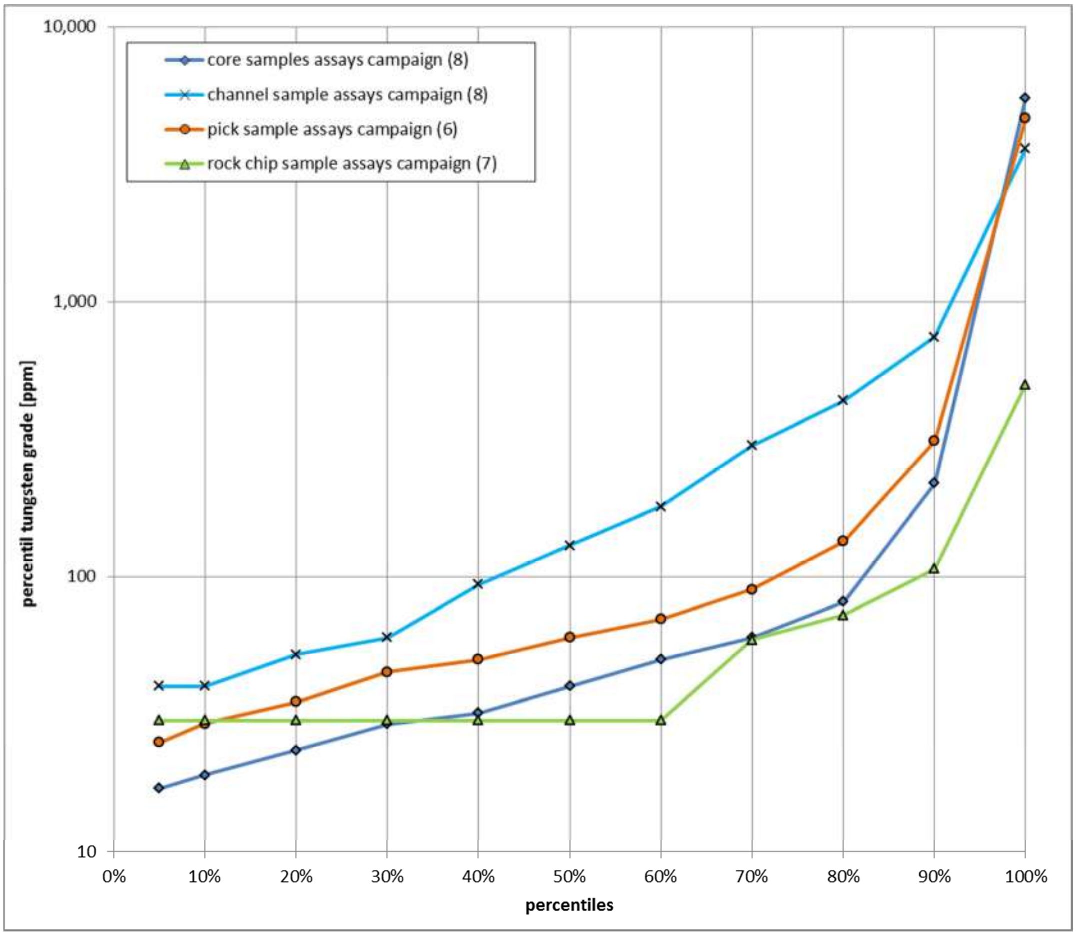


Figure 35: Comparison of tungsten assays of exploration campaigns No.s (6), (7) and (8)

Core sample assays of exploration campaign No. (8) seemed to present a conservative measure for tin and tungsten estimation. They were consequently used for the summarising statistical analysis as already described before.

Investigation of K_2O and Na_2O grades of greisen beds during exploration campaign No. (8) showed nearly similar frequency distributions for both data collectives. This can be explained by the same method of analysis applied and the relatively low coefficients of variation.

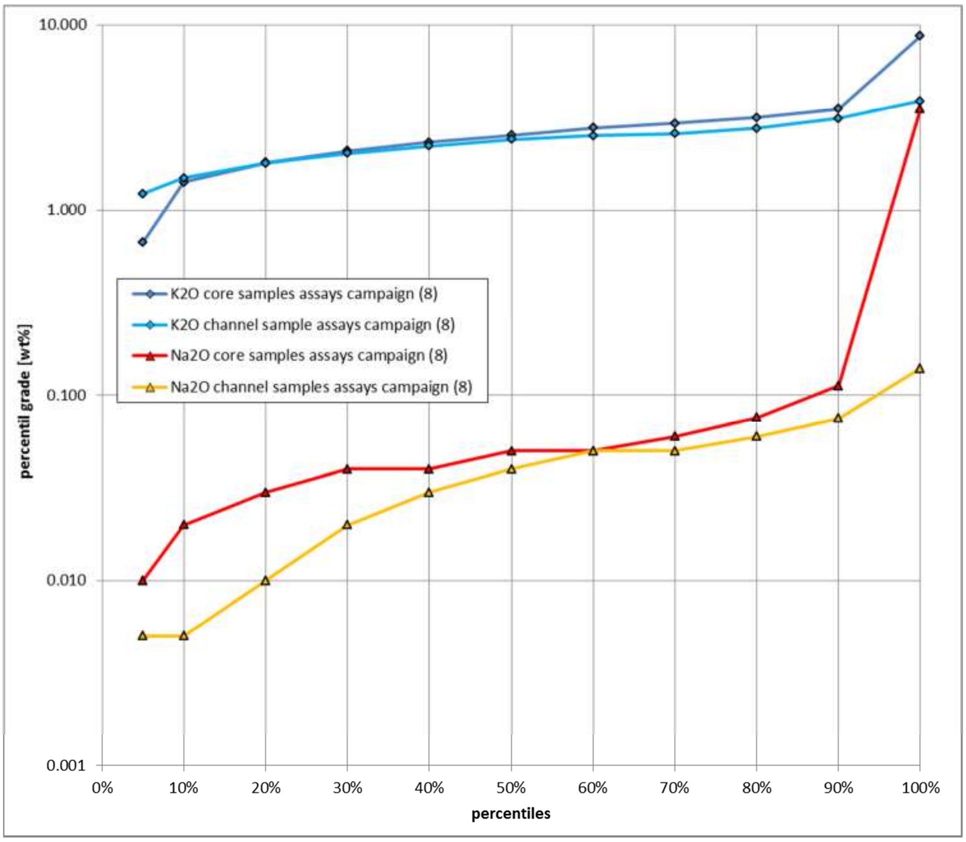


Figure 36: Comparison of K_2O and Na_2O assays of exploration campaign No. (8)

Table 31: Comparison of K_2O and Na_2O assays of exploration campaign No. (8)

	K_2O core sample assays exploration campaign (8)		K_2O channel sample assays exploration campaign (8)		Na_2O core sample assays exploration campaign (8)		Na_2O channel sample assays exploration campaign (8)	
Percentile	K_2O grade [wt%]	number of samples [-]	K_2O grade [wt%]	number of samples [-]	Na_2O grade [wt%]	number of samples [-]	Na_2O grade [wt%]	number of samples [-]
5%	0.67	13	1.23	4	0.01	13	0.01	4
10%	1.42	26	1.50	8	0.02	26	0.01	8
20%	1.81	52	1.80	15	0.03	52	0.01	15
30%	2.09	77	2.02	23	0.04	77	0.02	23
40%	2.33	103	2.22	31	0.04	103	0.03	30
50%	2.54	129	2.41	39	0.05	129	0.04	38
60%	2.78	155	2.52	46	0.05	155	0.05	46
70%	2.95	181	2.59	54	0.06	181	0.05	53
80%	3.17	206	2.77	62	0.08	206	0.06	61
90%	3.52	232	3.13	69	0.11	232	0.08	68
100%	8.68	258	3.88	77	3.53	258	0.14	76

5.10 Conclusion of Comparison of Sample Data Frequency Distributions

As conclusion of comparison of sample data frequency distributions, data processing and statistical analysis can be summarised as follows:

Table 32: Data joins used for resource and potential estimation

Component	Data collectives	Purpose	Compositing
Lithium	core sample assays of campaigns (4), (5) and (8)	compositing and anisotropic inverse distance interpolation within greisen beds, determination of mean lithium grade for greisenised granite	1-m-interval composites for drillhole greisen bed intersections none
Tin	core sample assays of campaigns (4), (7) with correction factor **0.6** and (8) without correction factor	determination of mean tin grade of low graded sample population for greisen beds, determination of mean tin grade of low graded sample population for greisenised granite	none none
Tungsten	core sample assays of campaigns (7) and (8)	determination of mean tungsten grade of low graded sample population for greisen beds determination of mean tungsten grade of low graded sample population for greisenised granite	none none
K_2O	core sample assays and channel assays of campaign (8)	determination of mean K_2O grade for greisen beds determination of mean K_2O grade for greisenised granite	none none
Na_2O	core sample assays and channel assays of campaign (8)	determination of mean Na_2O grade for greisen beds determination of mean Na_2O grade for greisenised granite	none none

Data joins are also used for deduction of mean grades of greisenised granite. Since greisenised intersection intervals have not been distinguished properly during exploration campaigns (4) to (7) determination approach of *Chapter 4.1* must be applied.

Anisotropic inverse distance interpolation method provides estimation of minerals resources for lithium within the greisen beds. Deduction of overall mean grades is used for estimation of potential only.

5.11 Summary Statistics of Data Joins and Data Pre-processing

Summarising of Li grades derived from core sample assays of explorations campaigns No. (4), (5) and (8) reveals a clear difference between greisens and greisenised granite. Arithmetic mean of greisens was found to be 3,390 ppm Li whereas greisenised granite showed only 1,858 ppm Li (see *Table 33* and *Figure 37* to *Figure 39*).

Table 33: Summarised statistics of unified Li drill core assay data of exploration campaigns No.s (4), (5) and (8)

Lithium (Li) Core sample assays of greisen exploration campaigns (4), (5) and (8)			
Parameter	**Value**		**Unit**
Samples	918		[-]
Minimum	10		[ppm]
Maximum	14,817		[ppm]
Arithm. Mean	3,390		[ppm]
Median	3,298		[ppm]
5% Quantile	776		[ppm]
25% Quantile	2,500		[ppm]
75% Quantile	4,168		[ppm]
95% Quantile	5,808		[ppm]
Standard Deviation	1,678		[ppm]
Variance	2,815,082		[ppm²]
Coefficient of Variation	0.49		[-]

Lithium (Li) Core sample assays of greisenised granite exploration campaigns (4), (5) and (8)			
Parameter	**Value**		**Unit**
Samples	1,138		[-]
Minimum	140		[ppm]
Maximum	11,194		[ppm]
Arithm. Mean	1,858		[ppm]
Median	1,825		[ppm]
5% Quantile	720		[ppm]
25% Quantile	1,391		[ppm]
75% Quantile	2,218		[ppm]
95% Quantile	3,100		[ppm]
Standard Deviation	830		[ppm]
Variance	689,489		[ppm²]
Coefficient of Variation	0.45		[-]

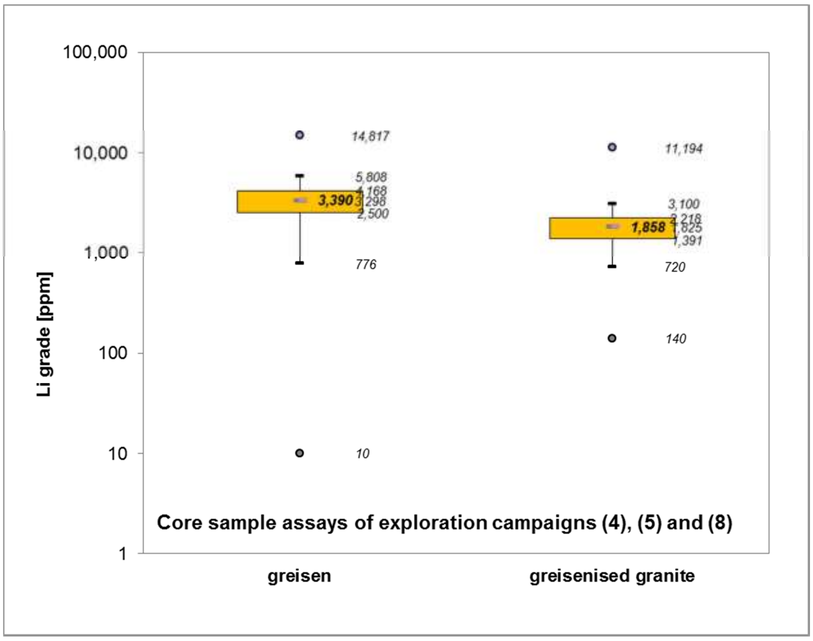


Figure 37: Boxplots of unified Li drill core assay data of exploration campaigns No.s (4), (5) and (8)

The Li grade frequency distribution histograms shown in *Figure 38* and *Figure 39* describe the shape of normal distributions. Both the Li grade populations of the greisens and the greisenised granite can be clearly distinguished from each other.

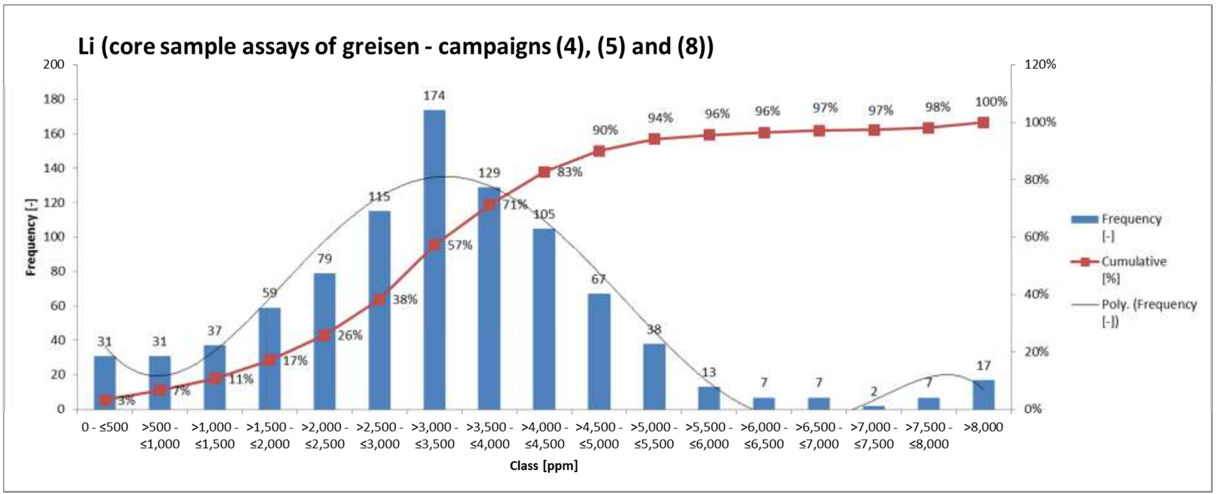


Figure 38: Histogram of unified *Li assay from greisens of exploration campaigns No.s (4), (5) and (8)*

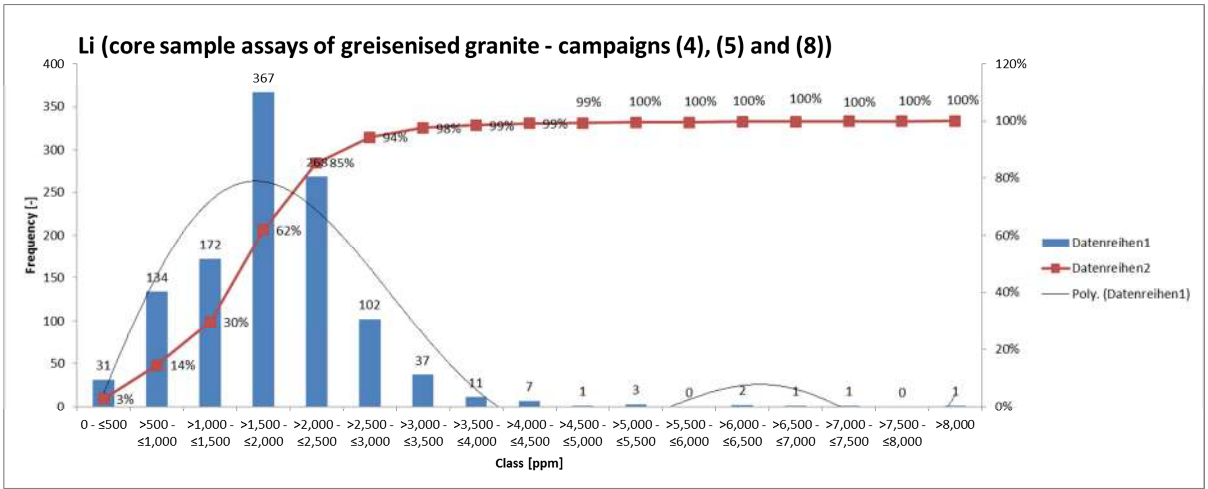


Figure 39: Histogram of unified *Li assay from greisenised granite of exploration campaigns No.s (4), (5) and (8)*

Based on the frequency distribution the top-cut for outliers of lithium grade of the raw data was found to be 7,000 ppm. Consequently, 43 Li grade values accounting at levels exceeding 7,000 ppm had to be substituted by the threshold value before using them for compositing (see

Table 34).

Table 34: Top-cutted Li grades

hole_id	depth from [m]	depth to [m]	Apparent thickness [m]	Petro-graphic unit	Greisen layer	Ore interval	Li grade sample assay [ppm]	Li grade for estimation purpose [ppm]
1/54	10.00	10.10	0.10	TGQ+GM	B_01	432	14,817	7,000
1/54	22.00	22.10	0.10	TGQ+GM	B_02	466	9,475	7,000
1/54	28.00	28.10	0.10	TGQ+GM	B_02	466	14,073	7,000
1/54	60.00	60.10	0.10	TGQ+GM	C	513	11,194	7,000
10/55	90.40	90.75	0.35	TGQ+GM	E	550	8,639	7,000
10/55	92.65	93.45	0.80	TGQ+GM	E	550	7,757	7,000
13/58	108.10	108.70	0.60	PG			7,153	7,000
13/58	108.70	108.90	0.20	TGQ	D	532	7,153	7,000
13/58	108.90	109.40	0.50	TGGM	D	532	7,153	7,000
20/59	123.50	124.10	0.60	PG_GGM_3			7,013	7,000
20/59	124.10	125.50	1.40	TGGM	D	535	7,013	7,000
3/54	4.00	4.10	0.10	TGQ+GM	B_02	474	11,658	7,000
3/54	50.00	50.10	0.10	TGQ+GM	C	520	7,339	7,000
3/54	67.99	68.00	0.01	TGQ+GM	D	537	8,686	7,000
3/54	70.19	70.20	0.01	TGQ+GM	E	569	9,336	7,000
6/55	37.59	37.60	0.01	TGQ+GM	B_02	477	7,060	7,000
7/55	6.35	6.80	0.45	TGQ+GM	B_02	478	8,407	7,000
7/55	6.80	6.85	0.05	TGQ+GM	B_02	478	8,407	7,000
7/55	6.85	7.35	0.50	TGQ+GM	B_02	478	7,942	7,000
8/55	52.99	53.00	0.01	TGQ+GM	E	572	9,011	7,000
9/55	91.65	92.25	0.60	TGQ+GM	F	593	7,850	7,000
9/55	92.55	92.75	0.20	TGQ+GM	F	593	10,311	7,000
9/55	92.75	92.76	0.01	TGQ+GM	F	593	10,311	7,000
9/55	92.76	92.85	0.09	TGQ+GM	F	593	10,311	7,000
9/55	92.85	93.75	0.90	TGQ+GM	F	593	10,311	7,000
Cn 22	214.85	215.30	0.45	TGQ+GM	B_02	479	10,300	7,000
Cn 22	277.00	278.00	1.00	TGQ+GM	E	575	8,400	7,000
Cn 22	278.00	278.70	0.70	TGQ+GM	E	575	10,800	7,000
Cn 22	280.00	281.30	1.30	PG			8,400	7,000
Cn 23	114.45	114.60	0.15	TGQ+GM	A	426	9,400	7,000
ZGLi 01/2012	124.90	126.00	1.10	TGQ+GM	B_02	764	7,980	7,000
ZGLi 01/2012	143.40	143.70	0.30	PG	B_03	507	7,010	7,000
ZGLi 01/2012	143.70	143.80	0.10	PG_GGM_1	B_03	507	7,010	7,000
ZGLi 01/2012	143.80	144.25	0.45	TGQ+GM	B_03	507	7,010	7,000
ZGLi 02/2012	61.20	61.90	0.70	YI			9,520	7,000
ZGLi 02/2012	96.95	98.10	1.15	TGQ+GM	B_02	490	7,640	7,000
ZGLi 02/2012	111.50	112.50	1.00	TGQ+GM	B_02	490	7,770	7,000
ZGLi 02/2012	112.50	113.45	0.95	TGQ+GM	B_02	490	8,160	7,000
ZGLi 02/2012	194.95	195.50	0.55	TGQ+GM	G	610	7,470	7,000
ZGLi 05/2013	59.55	60.03	0.48	TGGM	B_01	462	13,500	7,000
ZGLi 06A/2013	229.50	230.10	0.60	TGQ+GM	D	547	7,640	7,000
ZGLi 06A/2013	230.10	230.55	0.45	TGGM	E	586	7,640	7,000
ZGLi 06A/2013	261.60	262.45	0.85	TGGM	E	586	7,590	7,000

A summary of drill core assays of the greisen intersections intervals is given in *Table 35*. The *Table 37* summarises the general statistics of the greisen bed drill core assays for lithium.

Table 35: Summary of the drillhole intersections with the greisen beds

Greisen bed	Number of drillhole intersections	Number of drillhole intersections assayed for Li by ≥75% of the length	Number of drillhole intersections assayed for Sn by ≥75% of the length	Number of drillhole intersections W assayed for W by ≥75% of the length
A	17	7	7	4
B 01	54	25	26	16
B 02	46	22	23	15
B 03	36	14	15	12
C	31	11	14	8
D	26	15	17	9
E	64	25	35	20
F	18	8	10	7
G	18	12	11	7
H	15	7	10	7
I	7	3	5	4
J	9	4	7	7
K	1			

Table 36: Summary statistics of the greisen bed lithium drill core assays

Lithium						
Greisen bed	A	B 01	B 02	B 03	C	D
Number of sample assays	53	250	284	91	62	107
5% Quantile [ppm]	800	890	1,161	1,000	2,040	350
25% Quantile [ppm]	1,300	2,248	2,408	1,995	2,750	2,300
75% Quantile [ppm]	3,400	3,797	4,180	3,680	4,041	4,064
95% Quantile [ppm]	4,640	5,390	6,143	5,792	6,292	6,285
Median [ppm]	2,508	3,110	3,365	2,833	3,576	3,340
Arithmetic Mean [ppm]	2,656	3,131	3,503	3,006	3,718	3,279
Minimum[ppm]	600	20	100	310	400	100
Maximum[ppm]	9,400	14,817	14,073	7,010	11,194	8,686
Standard Deviation [ppm]	1,547	1,620	1,757	1,426	1,527	1,547
Variance [ppm²]	2,349,284	2,614,327	3,077,605	2,012,264	2,293,530	2,371,599
Coefficient of Variation [-]	0.58	0.52	0.50	0.47	0.41	0.47
Greisen bed	E	F	G	H	I	J
Number of sample assays	203	33	74	31	14	10
5% Quantile [ppm]	1,259	2,025	156	841	2,485	596
25% Quantile [ppm]	2,600	3,100	1,410	2,153	2,738	871
75% Quantile [ppm]	4,465	4,738	3,288	4,000	3,462	2,630
95% Quantile [ppm]	6,368	10,311	4,400	4,500	4,448	3,858
Median [ppm]	3,437	3,530	2,527	3,100	2,935	2,075
Arithmetic Mean [ppm]	3,615	4,427	2,371	2,960	3,167	2,013
Minimum[ppm]	150	600	0	600	2,183	511
Maximum[ppm]	10,800	10,311	7,470	4,691	4,600	4,420
Standard Deviation [ppm]	1,658	2,603	1,357	1,231	671	1,256
Variance [ppm²]	2,736,867	6,572,131	1,817,486	1,467,351	417,775	1,419,863
Coefficient of Variation [-]	0.46	0.59	0.57	0.42	0.21	0.62

Lithium grades of greisen bed intersection intervals, comprising greisen intervals and inter-burden (formation: see *Chapter 4.1*), are characterised by the following boxplots:

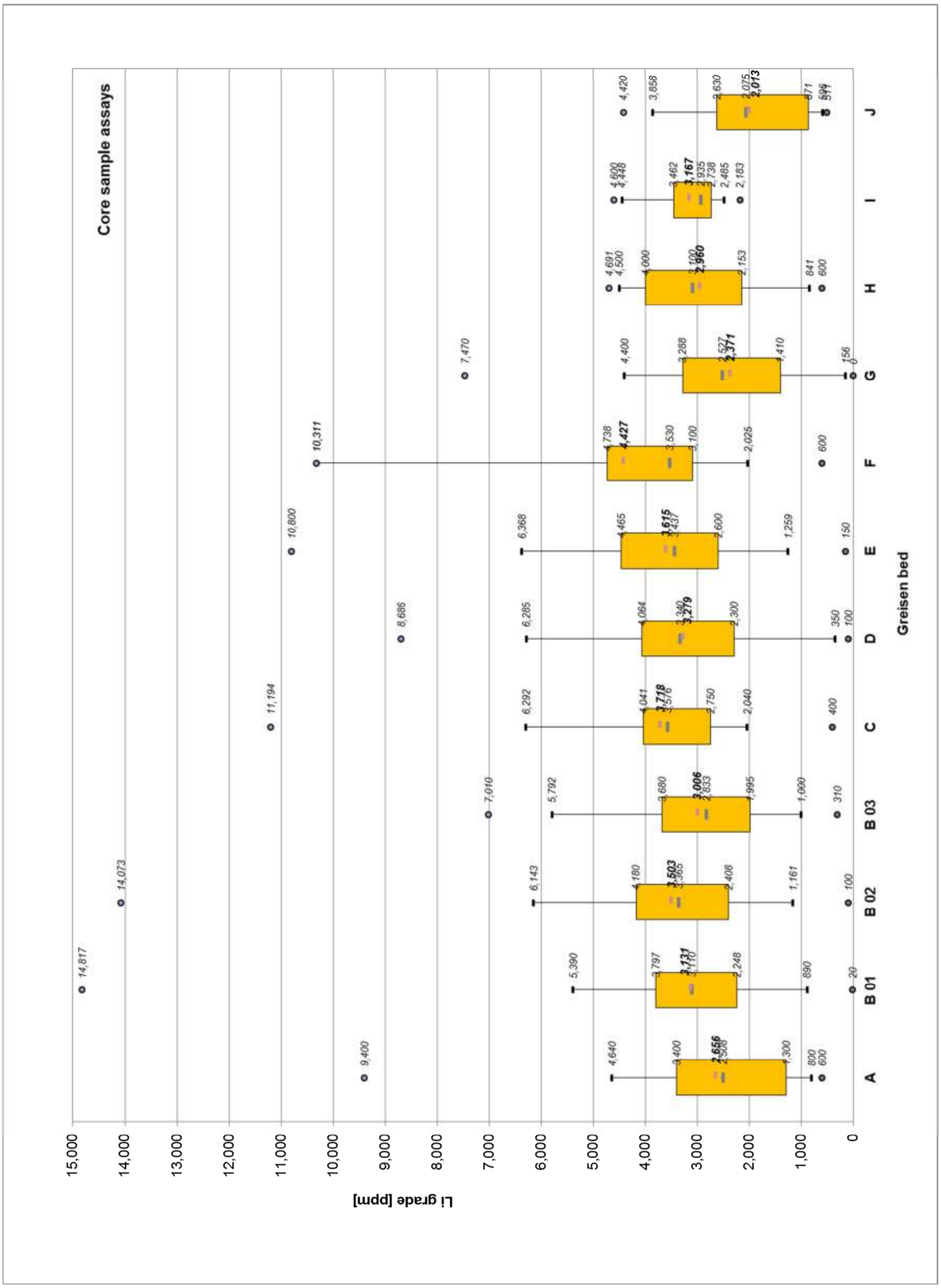


Figure 40: Boxplots of unified Li drill core assay data, comparison of greisen beds

Most of the tin grades of greisens and greisenised granite were below 1,800 ppm respectively less than 900 ppm (see *Table 37* and *Figure 40* to *Figure 42*).

Table 37: Summarising statistics of unified Sn drill core assay data of the exploration campaigns No.s (4), (7) and (8)

Tin (Sn) Core sample assays of greisen exploration campaigns (4), (7) and (8)				Tin (Sn) Core sample assays of greisenised granite exploration campaigns (4), (7) and (8)			
Parameter	**Value**		**Unit**	**Parameter**	**Value**		**Unit**
Samples	478		[-]	Samples	362		[-]
Minimum	1		[ppm]	Minimum	1		[ppm]
Maximum	10,000		[ppm]	Maximum	5,900		[ppm]
Arithm. Mean	400		[ppm]	Arithm. Mean	243		[ppm]
Median	120		[ppm]	Median	71		[ppm]
5% Quantile	5		[ppm]	5% Quantile	5		[ppm]
25% Quantile	60		[ppm]	25% Quantile	18		[ppm]
75% Quantile	300		[ppm]	75% Quantile	248		[ppm]
95% Quantile	1,800		[ppm]	95% Quantile	906		[ppm]
Standard Deviation	933		[ppm]	Standard Deviation	515		[ppm]
Variance	870,322		[ppm²]	Variance	265,363		[ppm²]
Coefficient of Variation	2.33		[-]	Coefficient of Variation	2.12		[-]

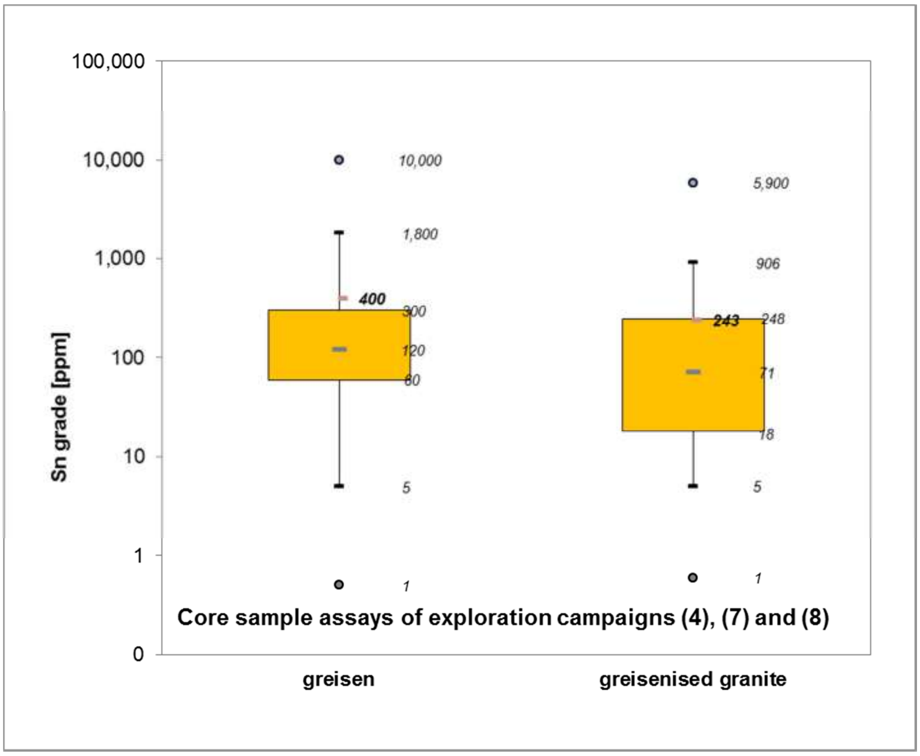


Figure 41: Boxplots of unified Sn drill core assay data of exploration campaigns No.s (4), (7) and (8)

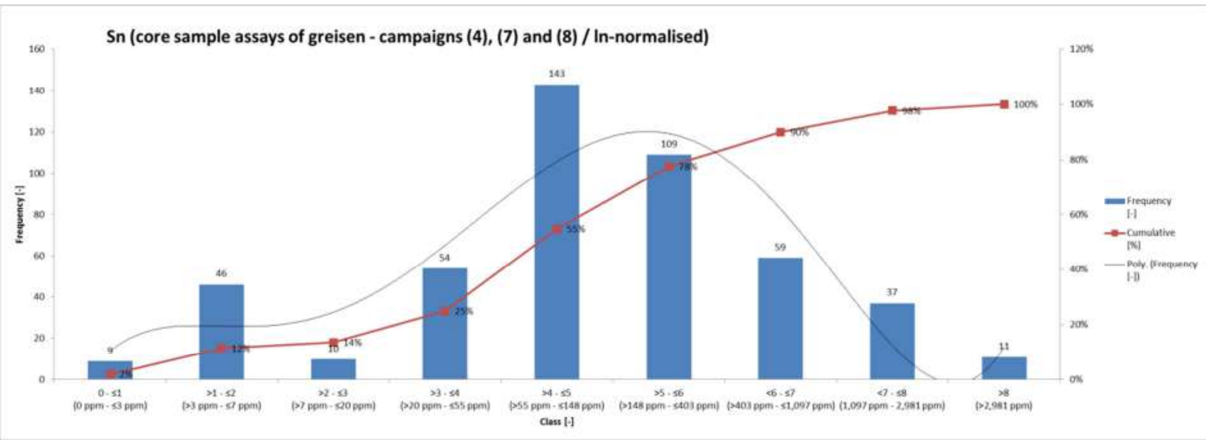


Figure 42: Histogram of unified Sn drill core assay data from greisen beds of exploration campaigns No.s (4), (7) and (8)

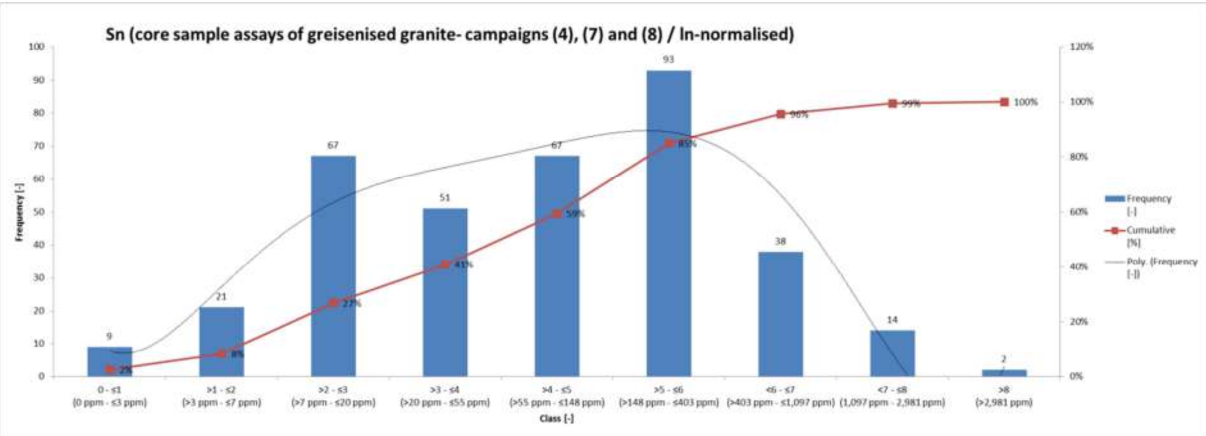


Figure 43: Histogram of unified Sn drill core assay data from greisenised granite of exploration campaigns No.s (4), (7) and (8)

The class with the maximum number of tungsten grade values of the sample population seems to be close to detection limit (20 - 50 ppm) or even below for both the greisens and the greisenised granite (see *Table 38* and *Figure 43* to *Figure 45*). In general most of the tungsten grade assays account for less than 300 ppm for greisens and for less than 80 ppm for greisenised granite.

Table 38: Summarising statistics of unified W drill core assay data of exploration campaigns No.s (7) and (8)

Tungsten (W) Core sample assays of greisen exploration campaigns (7) and (8)				Tungsten (W) Core sample assays of greisenised granite exploration campaigns (7) and (8)			
Parameter	**Value**		**Unit**	**Parameter**	**Value**		**Unit**
Samples	200		[-]	Samples	326		[-]
Minimum	23		[ppm]	Minimum	11		[ppm]
Maximum	2,530		[ppm]	Maximum	904		[ppm]
Arithm. Mean	87		[ppm]	Arithm. Mean	45		[ppm]
Median	41		[ppm]	Median	31		[ppm]
5% Quantile	30		[ppm]	5% Quantile	18		[ppm]
25% Quantile	30		[ppm]	25% Quantile	30		[ppm]
75% Quantile	72		[ppm]	75% Quantile	41		[ppm]
95% Quantile	309		[ppm]	95% Quantile	78		[ppm]
Standard Deviation	195		[ppm]	Standard Deviation	69		[ppm]
Variance	37,893		[ppm²]	Variance	4,716		[ppm²]
Coefficient of Variation	2.24		[-]	Coefficient of Variation	1.52		[-]

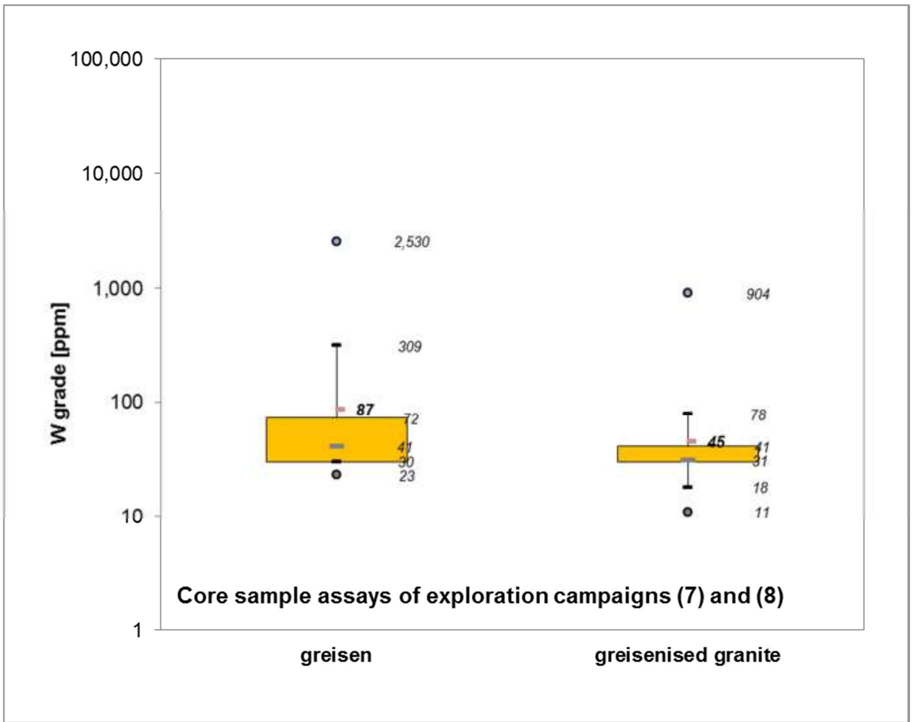


Figure 44: Boxplots of unified W drill core assay data of exploration campaigns No.s (7) and (8)

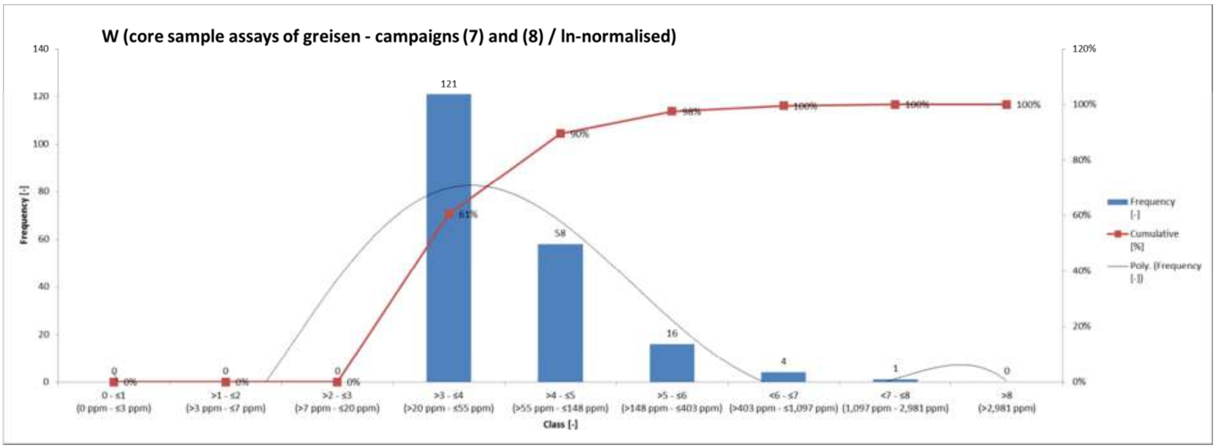


Figure 45: Histogram of unified W drill core assay data from greisen beds of exploration campaigns No.s (7) and (8)

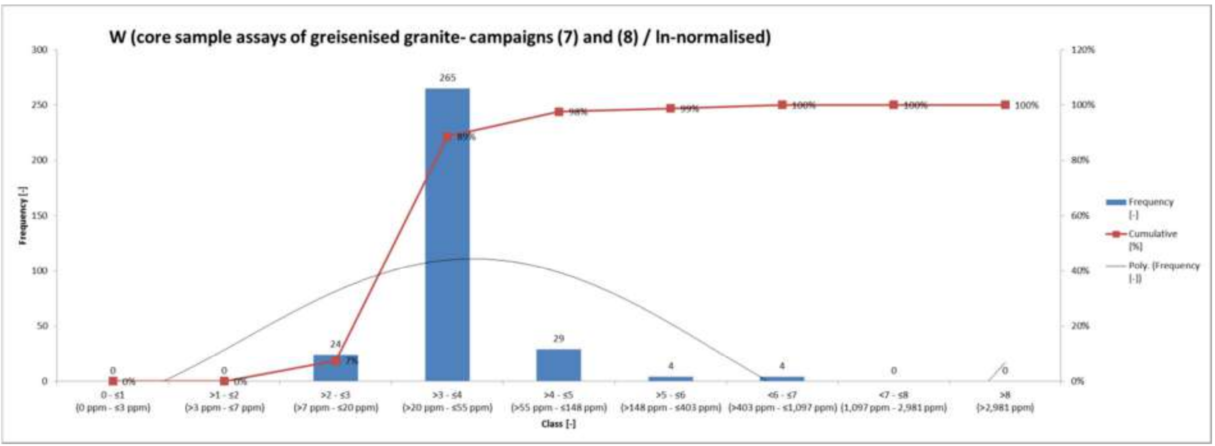


Figure 46: Histogram of unified W drill core assay data from greisenised granite of exploration campaigns No.s (7) and (8)

Since samples assays for potassium oxide and sodium oxide are only available for exploration campaign No. (8) the parameters of the summary statistic already given in *Chapter 5.7* is used to for estimating the potentials.

The following *Table 39* summarises the arithmetic mean grades derived from the statistics of the unified data collectives. The rounded values as shown in brackets have been used for estimating the up-side potential of the minor elements.

Table 39: Summary of arithmetic mean grades of Li, Sn, W, K_2O and Na_2O

Component	Greisen mean grades	Greisenised granite mean grades
Li [ppm]	3,390	1,858 (1,800)
Sn [ppm]	400 (400)	243 (240)
W [ppm]	87 (80)	45 (40)
K_2O [wt%]	2.54 (2.50)	3.41 (3.40)
Na_2O [wt%]	0.16	1.84

5.12 Compositing

Compositing has been done for Li drill core assays within greisen bed intersections only. This is because of the lack of reliable drill core assays of tin, tungsten, potassium oxide and sodium oxide and because of the lack of correct distinction of greisenised zones throughout the different exploration campaigns.

Tin and tungsten grades generally tend to be very low within greisen beds and greisenised granite except for some singular intervals that might be related veins, small seams or stockworks having a local spatial extension. For potassium oxide and sodium oxide core sample assays are available for exploration campaign No. (8) only.

Consequently, tin, tungsten and potassium oxide are estimated as potentials and are reported by ore volume / tonnage and a mean grade.

Li core samples assays of the exploration campaigns No.s (4), (5) and (8) were composited downhole and with 1 m interval length. Small intervals of less than 0.5 m length were appended to the neighbouring 1 m interval.

All ore bed interval intersections with ≥75% sampled apparent interval thickness were used for Li resource classification. The midpoints of the concerned interval intersections were applied to interpolate classification zones within the greisen beds basing on the anisotropic reach parameter of the inverse distance interpolation process (range parameter: see *Chapter 5.13*). Interval intersections with less than 75% sampled apparent thickness were composited and used for interpolation but, could not be utilised for resource classification. Thus, resource classes nearby these intersection intervals were controlled by the next intersection intervals with ≥75% sampled apparent interval thickness.

The following *Table 40* summarises the general statistics of the composites.

Table 40: Summary statistics of the 1 m composite intervals of the lithium drill core assays

Lithium						
Greisen bed	**A**	**B 01**	**B 02**	**B 03**	**C**	**D**
Number of composites	42	230	204	75	40	80
5% Quantile [ppm]	805	1,020	1,400	1,612	2,033	171
25% Quantile [ppm]	1,300	2,289	2,645	2,160	3,136	2,315
75% Quantile [ppm]	3,388	3,615	4,096	3,494	4,430	4,158
95% Quantile [ppm]	4,482	4,722	5,360	5,192	5,811	5,679
Median [ppm]	2,550	3,061	3,340	2,805	3,796	3,342
Arithmetic Mean [ppm]	2,446	2,968	3,364	2,939	3,761	3,271
Minimum[ppm]	600	29	100	522	1,240	102
Maximum[ppm]	4,900	6,910	7,000	6,700	6,503	7,000
Standard Deviation [ppm]	1,215	1,167	1,212	1,221	1,082	1,460
Variance [ppm²]	1,440,968	1,356,763	1,461,916	1,470,770	1,140,576	2,104,668
Coefficient of Variation [-]	0.50	0.39	0.36	0.42	0.29	0.45
Greisen bed	**E**	**F**	**G**	**H**	**I**	**J**
Number of composites	173	24	64	27	13	10
5% Quantile [ppm]	1,428	1,276	300	755	2,490	661
25% Quantile [ppm]	2,688	2,812	1,762	1,845	2,918	1,217
75% Quantile [ppm]	4,590	4,145	3,105	3,825	3,544	2,630
95% Quantile [ppm]	5,536	6,399	4,137	4,398	4,409	3,858
Median [ppm]	3,484	3,569	2,527	3,140	2,968	2,134
Arithmetic Mean [ppm]	3,556	3,640	2,337	2,837	3,206	2,105
Minimum[ppm]	150	685	90	600	2,183	511
Maximum[ppm]	7,000	7,000	4,900	4,691	4,600	4,420
Standard Deviation [ppm]	1,347	1,508	1,150	1,233	653	1,181
Variance [ppm²]	1,803,414	2,179,964	1,301,768	1,464,302	393,139	1,255,476
Coefficient of Variation [-]	0.38	0.41	0.49	0.43	0.20	0.56

An overview of frequency distribution histograms of lithium grade composites sorted by greisen beds is contained in *Appendix VIb*.

Figure 47 on the following page presents a boxplot of composited lithium grades for the different greisen beds.

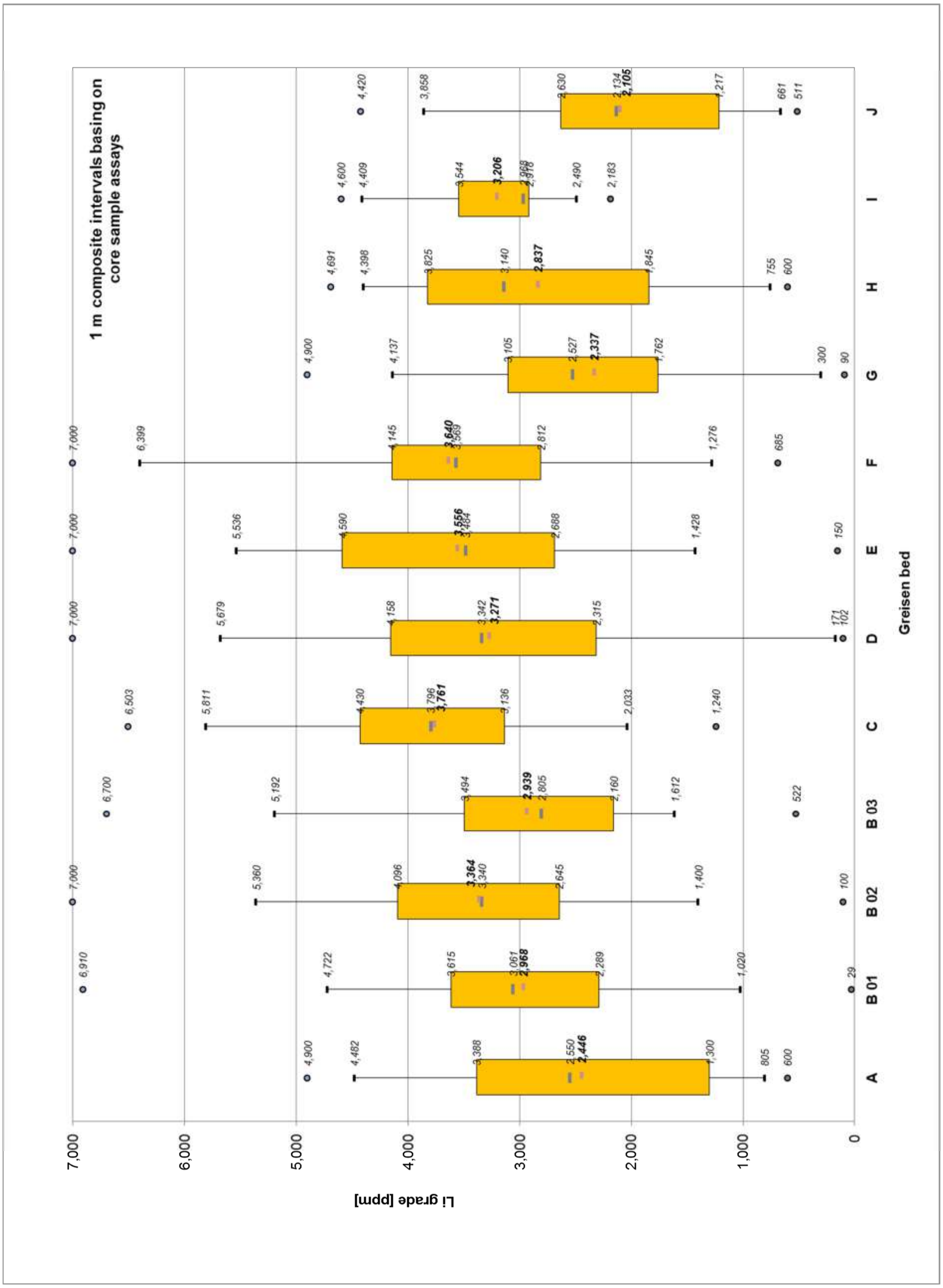


Figure 47: Boxplots of 1 m interval Li grade composites

5.13 Geostatistics

The classification of the determined lithium resources is based on a geostatistical spatial analysis of the 1 m composites of the lithium grades within the greisen ore bodies, which is characterised by a normal frequency distribution.

It is assumed that the intensity of the Li mineralisation has a layered pattern that is parallel to the bottom and top boundary of the greisen beds. That means that grades do not vary too much in x- and y- direction, but in the vertical direction.

To make use of the knowledge of the mineralisation genesis process, composite points were projected to a planar zone surrounding the central plane of the greisen beds. This equates to a coordinate transformation in vertical direction. Then geostatistical variogram analysis was performed based upon the entire transformed composite data keeping a space of 100 m in vertical direction between the data collectives of each greisen bed in order to not cross the composite points of other greisen beds in the process of analysis.

The resulting variogram parameters are presented in *Table 41*. Semivariograms can be seen in *Figure 48* to *Figure 50*.

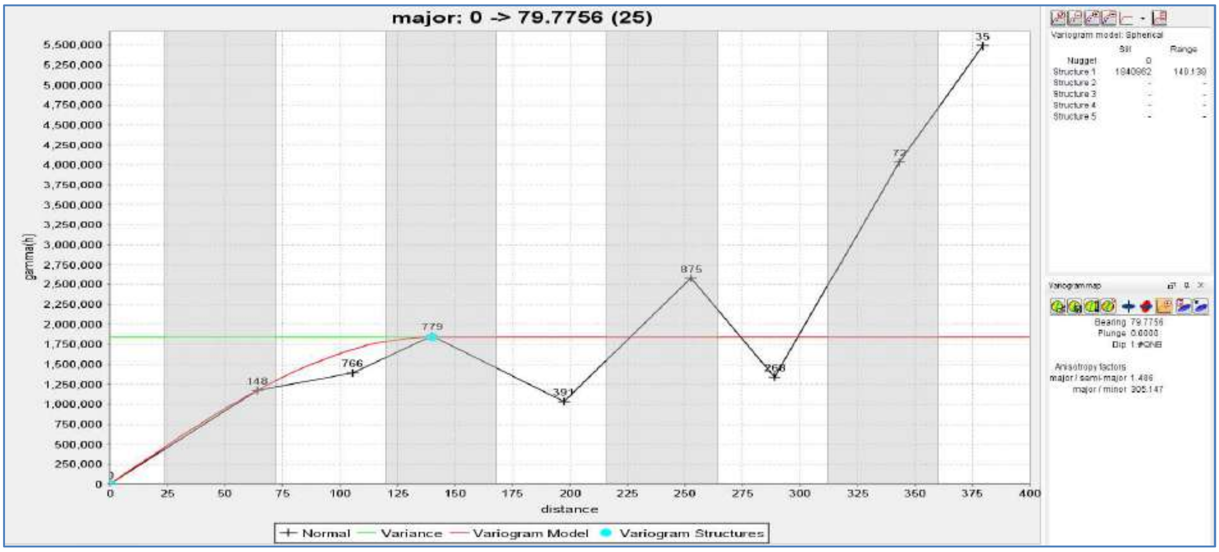


Figure 48: Semivariogram of the major axis of lithium composites of the greisen beds

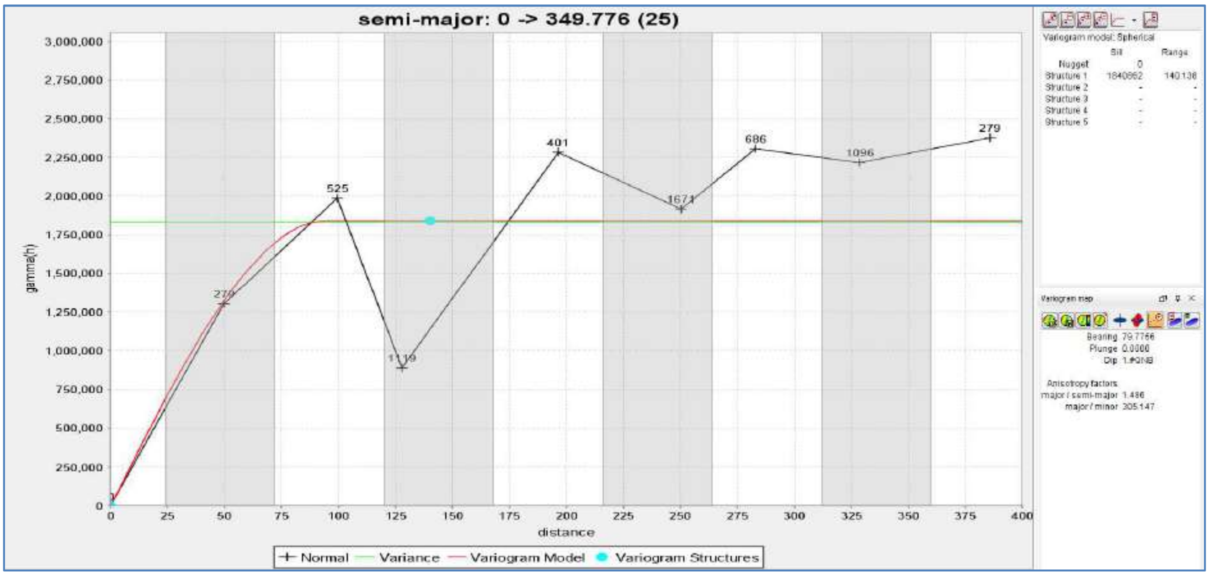


Figure 49: Semivariogram of the semi-major axis of lithium composites of the greisen beds

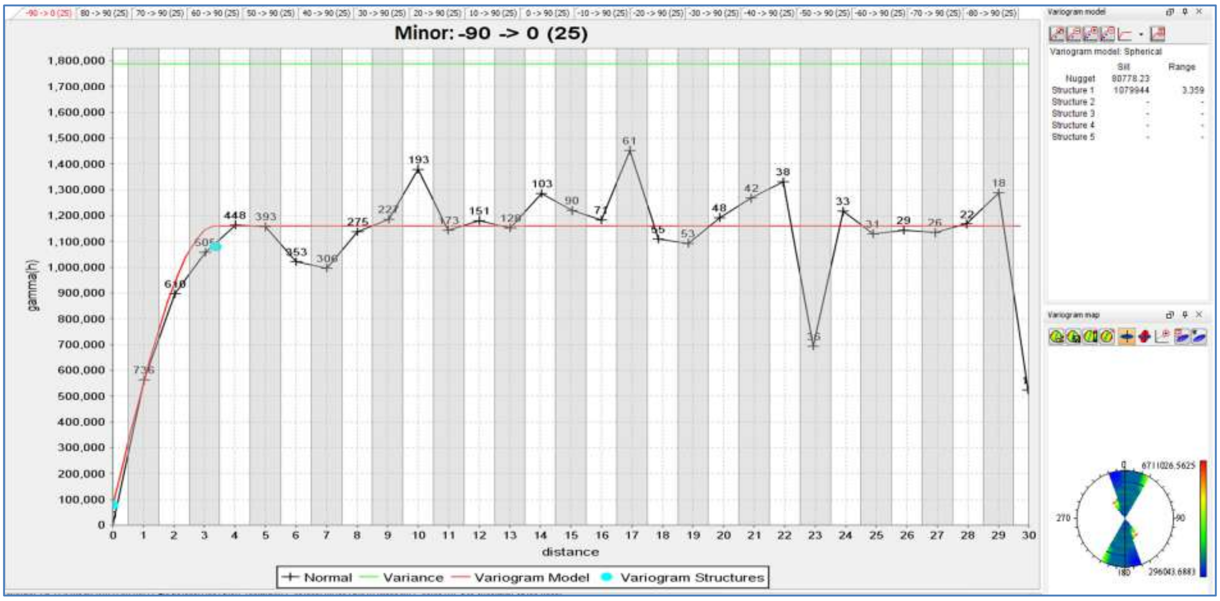


Figure 50: Semivariogram of the minor axis of lithium composites of the greisen beds

Table 41: Variogramm parameters

Parameter	Value
Nugget	0
Sill	1,850,000
Major (bearing of the interpolation ellipsoid)	angle: 80°, range: 140 m
Semi-major (plunge of the interpolation ellipsoid)	angle: 350°, range: 95 m
Minor (dip of the interpolation ellipsoid)	angle: -90°, range: 3 m

The range of the geostatistical relationship between lithium grades accounts for 140 m, having an azimuth of 80° (major axis) and 95 m, having an azimuth of 350° (semi-major axis) within the greisen beds. The minor axis dips with 90° and shows a range of around 3 m (equates to the vertical cross section of the greisen beds).

Since lithium assay data collectives are very small, especially for the less extensive greisen beds, inverse distance interpolation procedure was chosen to transfer the statistical characteristics of the sample data into a spatially distribution of grades within the block model.

5.14 Parameterisation of the Interpolation Procedure

Since plausible semivariograms could only be generated without differentiating several greisen beds, the kriging interpolation algorithm was not applicable to estimate the lithium resource. However lithium is Gaussian distributed and shows a very low coefficient of variation. That's why inverse distance method could be used to interpolate grades. The following parameters are based on the the semivariogram analysis and have been chosen for parameterisation of the search ellipsoid of the anisotropic inverse distance interpolation:

Table 42: Parameters chosen for search ellipsoid of the anisotropic inverse distance interpolation

Parameter	Value
Minimum number of composites to apply	1
Maximum number of composites to apply	10
Maximum number of composites per drillhole	1
Maximum horizontal search radius of the ellipsoid (major)	280 m (twice the major range)
Maximum horizontal search radius of the ellipsoid (semi-major)	190 m (twice the semi-major range)
Maximum vertical search radius of the ellipsoid (minor and vertical constraint)	100 m

The inverse distance interpolation results were assigned to a planar block model as an intermediate step. Therefore lithium composite points had to be projected to a planar zone surrounding the central plane of the greisen beds. Vertical discretisation of composites from different greisen beds was handled by storing them in different files being used for the interpolation and by constraining the interpolation process to each greisen bed respectively greisen layer separately. After that interpolated lithium grades were projected in vertical direction to their true spatial location in a second block model.

5.15 Validation of the Geological Model of Ore Type 1

A simplified 3D surface model, basing on the thickness of drillhole intersection intervals of "Ore type 1" (greisen) below 740 m a.s.l., has been created to prove the corresponding total greisen volume of the block model. Calculations amounted to a total volume of

18,413,000 m³ (49,715 kt, 2.7 t/m³)

which almost equals to the total volume of all greisen beds together (18,480,000 m³, 49,895 kt, 2.7 t/m³) that have been reported from the block model (see *Chapter 6.2*).

5.16 Block Model Validation

Block model validation has been done by comparing percentile graphs of raw sample assay grades, composite grades and interpolated grades of the block centre points (summary of all greisen beds: see *Figure 51,* single graphs of the greisen beds: *see Appendix IVc*).

The percentile graph on the following page, representing a summary of all greisen lithium assay data, composite point and block centre point lithium grade data, reveals that there is a good congruousness between the grade frequency distributions. Accordingly lithium grades have been properly assigned to the block model by inverse distance interpolation.

Slight deviation of about 5% in the percentile classes below 30% and above 60% especially for the classes "Indicated" and "Inferred" are caused due to effects of the interpolation procedure leading to averaging of the grades with increasing distance to the next sample point.

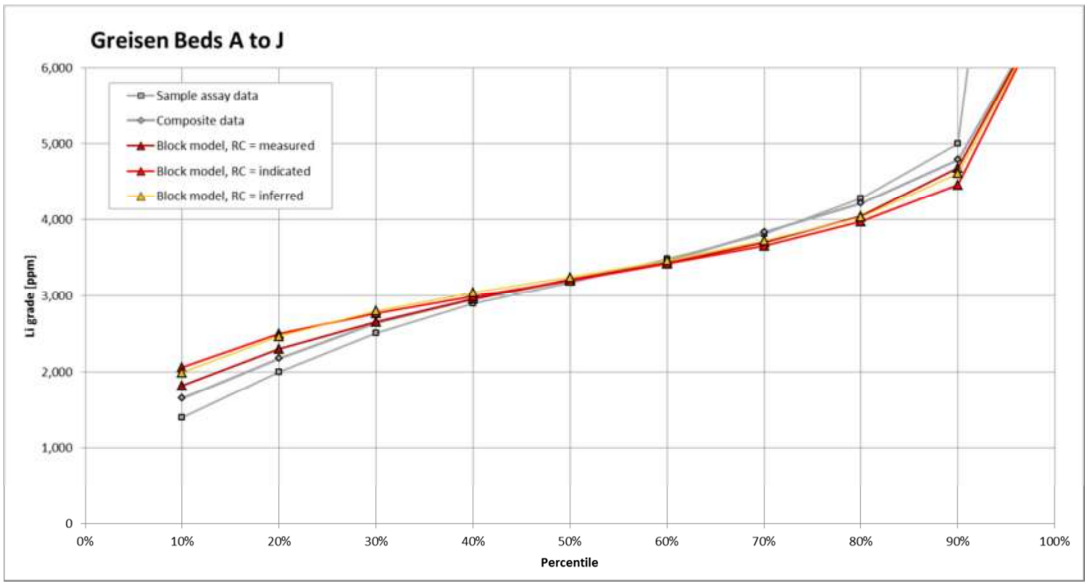


Figure 51: Percentile chart of lithium drill core assays compared to composite and block model centre point lithium grades

6 REPORTING OF MINERAL RESOURCES AND POTENTIALS

6.1 Preface

The Li resource and up-side potential of Li, Sn, W and K_2O have been calculated for the German part of the deposit and below a level of 740 m a.sl. Detailed estimates are given in *Appendix V*.

6.2 Mineral Resource Classification

The mineral resources in this estimate were estimated using the Pan-European Standard for Reporting of Exploration Results, Minerals Resources and Reserves (PERC). Definitions and Guidelines are approved and published by the Pan-European Reserves and Resources Reporting Committee on March 15th, 2013.

Li Mineral Resource of Greisen Beds (Ore Type 1)

Variogram ranges (see Chapter 5.13) have been used as a measure to derive contiguous zones classifying the lithium mineral resource.

From the drillholes only core sample assays were applied. Furthermore not less than 75% of the intersected greisen interval had to be assayed to generate a classification zoning surrounding the drillhole intersection interval, as determined for the project.

The criteria used to classify the resource are summarised as follows:

- "**Measured"** – High level of confidence in data quality, high level of confidence in grade estimation, geological and grade continuity. For the greisen beds (Ore Type 1) necessary horizontal distance to drillhole samples accounts for ≤ 70 m in east to west direction and ≤47 m in north to south direction as supported by the variogram ranges. A single greisen bed body must be intersected and sampled by at least two drillholes according to the above defined rules. Estimation uncertainty ratio accounts for ± 20%.
- "**Indicated"** – Moderate level of confidence in data quality, moderate level of confidence in grade estimation, geological and grade continuity. More widely spaced drillhole sample data. Horizontal distance to drillhole samples accounts for > 70 m to ≤ 140 m in east to west direction and > 47 m to ≤ 95 m in north to south direction. A single greisen bed body must be intersected and sampled by at least two drillholes according to the above defined rules. Estimation uncertainty ratio accounts for ± 40%.

- "**Inferred"** – Moderate level of confidence in data quality, low level of confidence in grade estimation, geological and grade continuity. Sparse drilling data compared to variogram ranges: spacing of >140 m to ≤ 280 m in east to west direction and > 95 m to ≤ 180 m in north to south direction. A single greisen bed body must be intersected and sampled by at least one drillhole according to the above defined rules. Estimation uncertainty ratio accounts for ± 80%.

Lithium inventory of greisen beds that could not be classified because of being too far away from a sampled intersection interval is reported as a potential. It might be seen as an **"Unclassified Potential"** also.

Anisotropic inverse distance interpolation was used to estimate the lithium grades within the greisen bed envelopes. The results have been verified by a simplified grid based 2D model using inverse distance algorithm. In general, resources have not been extrapolated more than 50 m beyond individual drillhole intersections with the greisen beds (half of the range of the semi-major).

Sn, W and K_2O Potential of Greisen Beds (Ore Type 1)

Tin and tungsten weighted mean grades measured in the greisen bed intervals (drill core samples) of the exploration campaigns No.s (4), (5) and (8) were applied to the total greisen mass and the ore tonnage respectively, as derived from the block model.

Also, K_2O weighted mean grade measured in the greisen bed intervals (drill core samples and channel samples) of the SWS exploration campaign No. (8) was applied to the total greisen tonnage and ore tonnage derived from the block model.

Li, Sn, W and K_2O Potential of Greisenised Granite (Ore Type 2)

Volume of greisenised granite was derived from a simplified 2D grid based model. The volume then was multiplied by the bulk density in order to estimate the total tonnage. The weighted mean lithium, tin, tungsten and K_2O grades, obtained from drill core sample assays of exploration campaigns No.s (4) to (8) and channel samples of exploration campaign No. (8), were applied to the total tonnage of greisenised granite.

6.3 Reporting of Mineral Resources and Potentials

Because of the old mine workings existing in the top of the deposit the resources and potentials get reported only for the depth interval below the elevation level of 740 m a.s.l. Only the data of the German part of the deposit is included in this study.

In a first stage, the geological inventory comprising the whole resource without regard of economical conditioning is presented, i.e. a Li cut-off of 0 ppm and no minimum thickness was used.

Based on this, under consideration of economic conditions such as lithium cut-off grades and minimum vertical thickness of greisen beds, resources and potentials of the lithium ore were reported.

Mean Na_2O grades of greisen and greisenised granite are shown in this report, because of being of interest as an extraction interfering component in ore processing. From a geochemical point of view Na_2O grades are a measure to clearly divide greisen from greisenised granite.

6.4 The Lithium Mineral Inventory

The mineral inventory of lithium was estimated from the block model on the base of a 0 ppm cut-off and without a constraint of minimum thickness of the geological bodies of "Ore Type 1".

Table 43: Mineral inventory of Li, deposit Zinnwald, German part below 740 m a.s.l.

Mineral inventory "Ore Type 1"	Volume [10^3 m³]	Tonnage [10^3 tonnes]	Mean Li grade [ppm]
Total	***18,480***	***49,895***	***3,200***

6.5 The Lithium Resource – Base Case

According to prospects for eventual economic extraction (minimum vertical thickness of greisen beds = 2 m, cut-off-value Li = 2,500 ppm) the hereinafter shown lithium resource has been calculated for the German part of the deposit and below 740 m a.s.l. as the base case. It has been compared with the case zero (minimum vertical thickness of greisen beds = 2 m, cut-off-value Li = 0 ppm) to determine the internal dilution of the orebodies.

Table 44: Li resource of Zinnwald, German part below 740 m a.s.l. – base case summary

Resource classification "Ore Type 1" greisen beds	**Ore volume [10^3 m³]**	**Ore tonnage [10^3 tonnes]**	**Mean Li grade [ppm]**	**Ore volume [10^3 m³]**	**Ore tonnage [10^3 tonnes]**	**Mean Li grade [ppm]**
	Vertical thickness ≥ 2 m, cut-off Li = 2,500 ppm			**Vertical thickness ≥ 2 m, cut-off Li = 0 ppm**		
Measured	3,808	10,283	3,661	4,601	12,422	3,287
Indicated	**6,032**	**16,287**	**3,594**	7,282	19,660	3,272
Inferred	**3,654**	**9,867**	**3,705**	4,352	11,750	3,322
Demonstrated (Measured+Indicated)	***9,840***	***26,570***	***3,620***	*11,883*	*32,082*	*3,278*
Total (Measured+Indicated+Inferred)	***13,495***	***36,437***	***3,643***	***16,235***	***43,832***	***3,290***
	Internal Dilution					
Total *(Measured+Indicated+Inferred)*	***2,740***	***7,395***	***1,550***			

In accordance to the following *Table 45* it can be stated that greisen beds "B" and "E" are the most important ore bodies of the Li deposit Zinnwald, holding around 82% of the ore tonnage of "Ore Type 1".

Except for the minor greisen bed "G" and the lowermost greisen bed "J" the mean lithium grade is remarkable higher than 3,000 ppm. It reaches from 4,242 ppm in greisen bed "H" to 3,142 ppm in greisen bed "I". The major greisen beds "B" and "E" are showing 3,424 and 4,010 ppm.

Table 45: Base case Li resource of Zinnwald, German part below 740 m a.s.l. – greisen beds

Resource classification "Ore Type 1" - greisen beds		Cut-off grade Li = 2,500 ppm, below the Tiefer-Bünau-Stollen level (≤ 740 m NN), thickness of greisen beds ≥ 2 m			Resource classification "Ore Type 1" - greisen beds		Cut-off grade Li = 2,500 ppm, below the Tiefer-Bünau-Stollen level (≤ 740 m NN), thickness of greisen beds ≥ 2 m		
Greisen bed	Resource classification	Ore volume [m³]	Ore tonnage [tonnes]	Mean lithium grade [ppm]	Greisen bed	Resource classification	Ore volume [m³]	Ore tonnage [tonnes]	Mean lithium grade [ppm]
A	Measured	0	0	0	F	Measured	45,228	122,115	3,516
	Indicated	0	0	0		Indicated	63,776	172,194	3,752
	Inferred	322	871	3,524		Inferred	69,329	187,188	3,620
	Grand total	***322***	***871***	***3,524***		***Grand total***	***178,333***	***481,497***	***3,641***
B	Measured	2,042,229	5,514,018	3,551	G	Measured	107,679	290,734	3,100
	Indicated	3,150,140	8,505,380	3,372		Indicated	90,853	245,302	2,855
	Inferred	1,060,203	2,862,551	3,332		Inferred	33,832	91,347	2,753
	Grand total	***6,252,572***	***16,881,949***	***3,424***		***Grand total***	***232,364***	***627,383***	***2,954***
C	Measured	158,378	427,622	3,497	H	Measured	0	0	0
	Indicated	165,008	445,523	3,758		Indicated	0	0	0
	Inferred	202,369	546,396	3,667		Inferred	1,334	3,601	4,242
	Grand total	***525,755***	***1,419,541***	***3,644***		***Grand total***	***1,334***	***3,601***	***4,242***
D	Measured	356,601	962,822	3,894	I	Measured	0	0	0
	Indicated	374,037	1,009,901	3,891		Indicated	0	0	0
	Inferred	152,790	412,532	3,503		Inferred	151,723	409,652	3,142
	Grand total	***883,428***	***2,385,255***	***3,825***		***Grand total***	***151,723***	***409,652***	***3,142***
E	Measured	931,147	2,514,098	4,053	J	Measured	167,184	451,396	2,880
	Indicated	1,968,296	5,314,399	3,972		Indicated	220,050	594,134	3,034
	Inferred	1,909,399	5,155,378	4,029		Inferred	73,078	197,309	2,854
	Grand total	***4,808,842***	***12,983,875***	***4,010***		***Grand total***	***460,312***	***1,242,839***	***2,949***

6.6 The Lithium Resource – Alternative Cut-off Grades

The following *Table 46* shows a summary of mean lithium grades and ore tonnages for cases with a minimum vertical thickness of the greisen beds of 2 m and lithium cut-off grades of 2,000 / 2,250 / 2,500 / 2,750 and 3,000 ppm. Detailed information on the ore tonnages and mean grades of the several greisen beds is given in *Appendix V*.

Table 46: Li resource of Zinnwald, German part below 740 m a.s.l.

Resource classification "Ore Type 1" greisen beds	Ore volume [10^3 m³]	Ore tonnage [10^3 tonnes]	Mean Li grade [ppm]	Ore volume [10^3 m³]	Ore tonnage [10^3 tonnes]	Mean Li grade [ppm]
	Vertical thickness ≥ 2 m, cut-off Li = 2,000 ppm			**Vertical thickness ≥ 2 m, cut-off Li = 2,250 ppm**		
Measured	4,234	11,431	3,529	4,032	10,888	3,594
Indicated	6,848	18,490	3,446	6,491	17,525	3,514
Inferred	4,051	10,939	3,578	3,826	10,329	3,655
Demonstrated *(Measured+Indicated)*	*11,082*	*29,921*	*3,478*	*10,523*	*28,413*	*3,544*
Total *(Measured+Indicated+Inferred)*	***15,133***	***40,860***	***3,505***	***14,349***	***38,741,992***	***3,574***
	Vertical thickness ≥ 2 m, cut-off Li = 2,500 ppm (base case)			**Vertical thickness ≥ 2 m, cut-off Li = 2,750 ppm**		
Measured	3,808	10,283	3,661	3,423	9,241	3,774
Indicated	6,032	16,287	3,594	5,373	14,508	3,708
Inferred	3,654	9,867	3,705	3,319	8,962	3,805
Demonstrated *(Measured+Indicated)*	*9,840*	*26,570*	*3,620*	*8,796*	*23,750*	*3,734*
Total *(Measured+Indicated+Inferred)*	***13,495***	***36,437***	***3,643***	***12,115***	***32,712***	***3,753***
	Vertical thickness ≥ 2 m, cut-off Li = 3,000 ppm			**Vertical thickness ≥ 2 m, cut-off Li = 0 ppm (case zero)**		
Measured	2,939	7,934	3,917	4,601	12,422	3,287
Indicated	4,557	12,303	3,852	7,282	19,660	3,272
Inferred	2,892	7,807	3,932	4,352	11,750	3,322
Demonstrated *(Measured+Indicated)*	*7,496*	*20,237*	*3,878*	*11,883*	*32,082*	*3,278*
Total *(Measured+Indicated+Inferred)*	***10,388***	***28,044***	***3,893***	***16,235***	***43,832***	***3,290***

6.7 Upside Potential of Li, Sn, W and K_2O

The Li upside potential has been estimated for the greisen beds and greisenised granite as a mineral inventory for the German part of the deposit and below 740 m a.s.l.

The Li potential within the greisen beds describes those parts of the greisen volume that have not been classified as a resource because of being situated too far away (> 280 m) from a sampled drillhole intersection.

Mean Li grades of the potential were derived from the overall mean grades of the resource classes "measured", "inferred" and "indicated" for "Ore Type 1" (greisen) and from summary statistical analysis of the drill core assays for "Ore Type 2" (greisenised granite).

The upside lithium potential of "Ore Type 1" accounts for a volume of approximately 0.9 million cubic metres or 2.4 million tonnes ore having a mean grade of 3,200 ppm. For "Ore Type 2" roundly 44 million cubic metres / 117 million tonnes ore have been estimated. "Ore Type 2" is showing a mean lithium grade of approximately 1,800 ppm.

Grades of minor elements have been calculated for "Ore Type 1" and "Ore Type 2" as a potential also. It must be mentioned that the mean tin and tungsten grades are valid for the common disperse mineral fractions being contained in the ore types. Veins, seams and locally occurring tin greisen stockworks that are embedded in the ore type bodies might show significant higher grades.

In "Ore Type 1" having a total volume of roundly 18 million cubic metres and a tonnage of 50 million tonnes mean tin grade accounts for approximately 400 ppm, mean tungsten grade for approximately 80 ppm and mean potassium oxide grade for approximately 2.5 wt%. In "Ore Type 2" having a volume of roundly 44 million cubic metres and a tonnage of around 117 million tonnes mean tin grade accounts for approximately 240 ppm, mean tungsten grade for approximately 40 ppm and mean potassium oxide grade for approximately 3.4 wt%.

6.8 Grade-Tonnage-Curves

Grade-tonnage-curves and -tables have been prepared for evaluation of the Li resource estimate below 740 m a.s.l. (see *Figure 52* and *Figure 53*). Some of the smaller greisen beds show irregular shaped curves. This is caused by small vertical thicknesses having nearly the same grade and dominating large parts of the total volume.

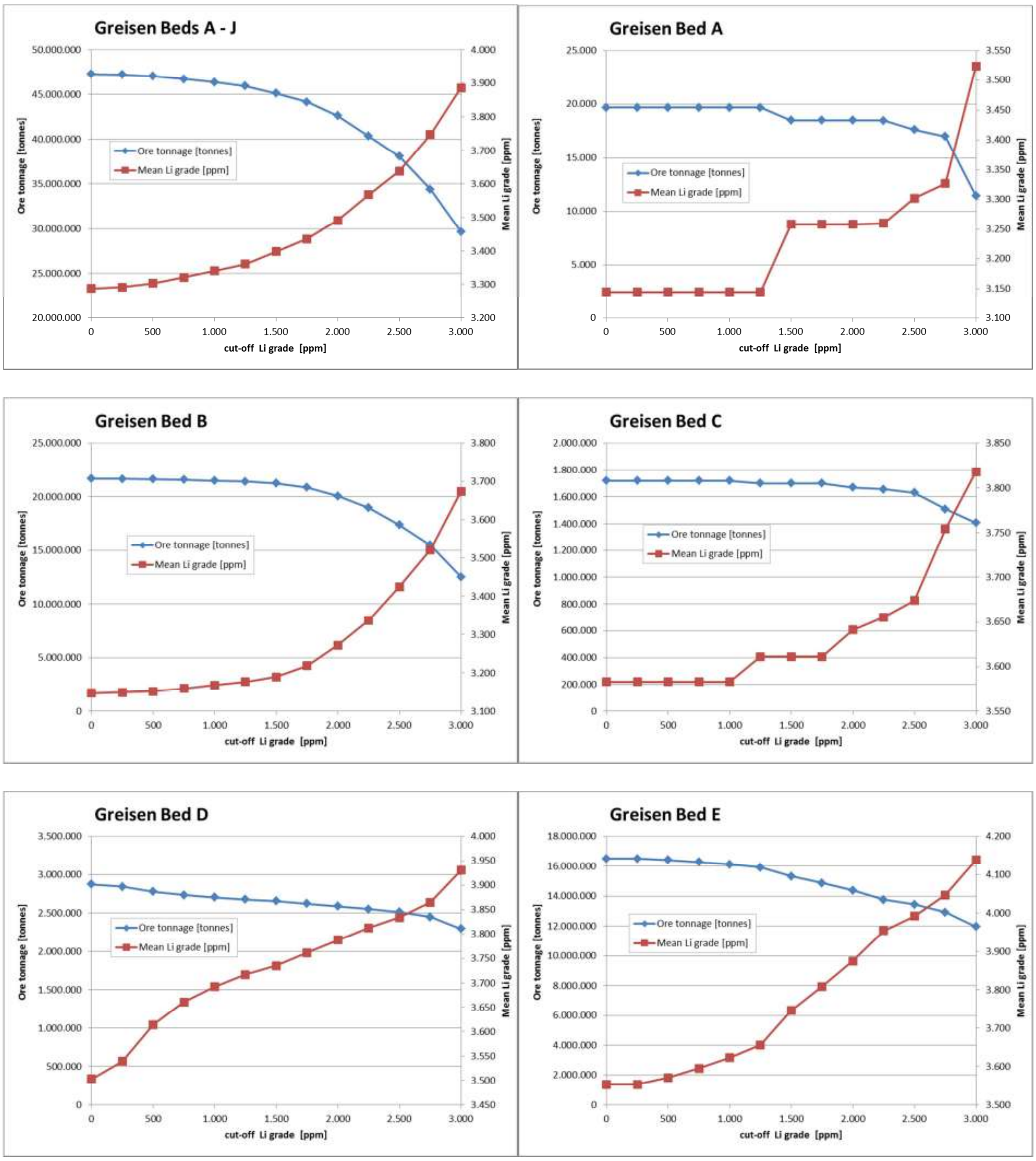


Figure 52: Grade-tonnage-curves of Li mineralization, greisen beds A to E

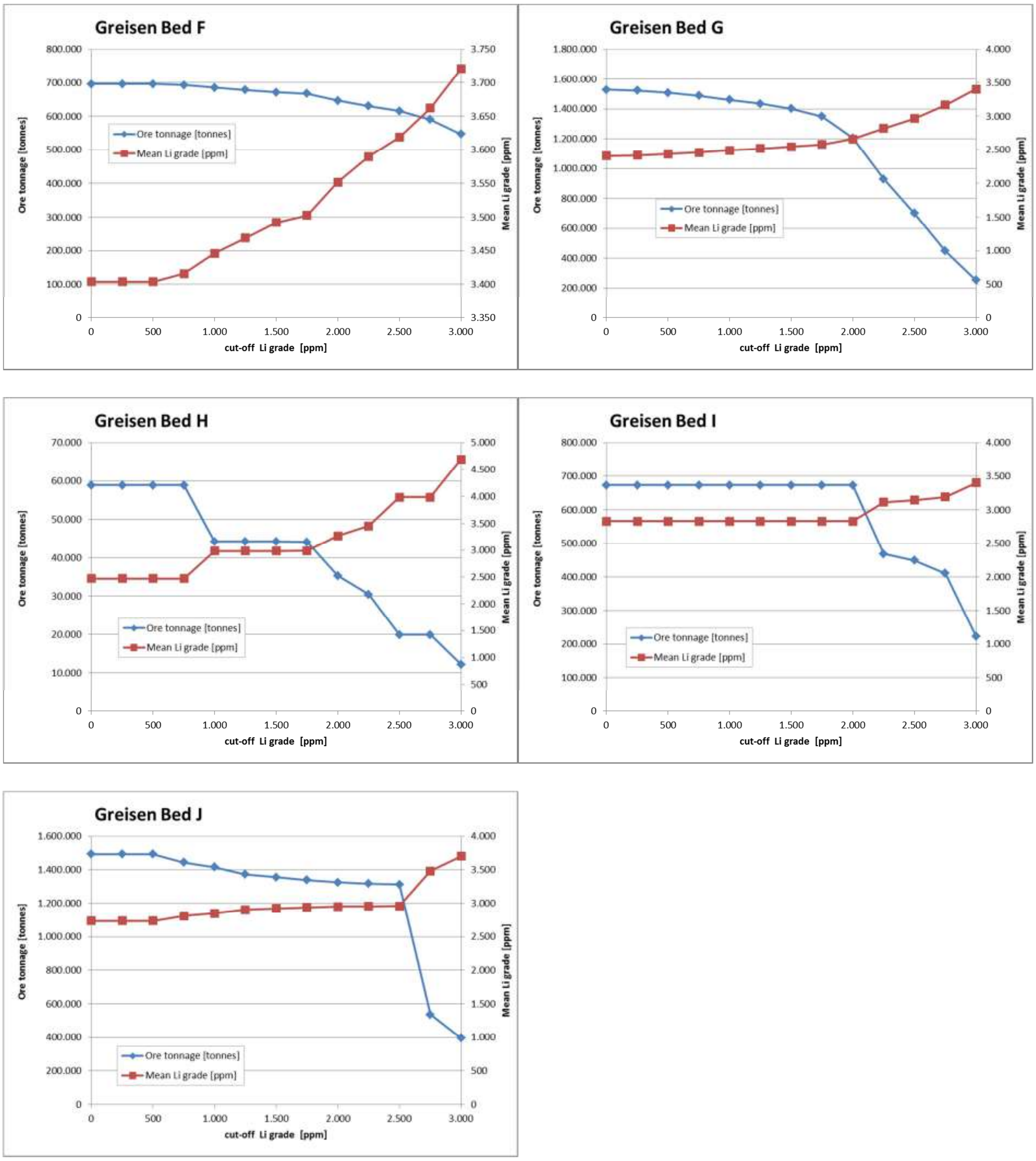


Figure 53: Grade-tonnage-curves of Li mineralization, greisen beds F to J

6.9 Comparison with Historic Resource Estimates

Lithium ore exploration was undertaken in campaigns No.s (4), (6) and (8). Greisen tonnage and mean grades are comparable in a direct way for campaigns No.s (4) and (8) only. Campaign (6) focused mainly on investigation of tin and tungsten mineralization.

Table 47: Comparison of Li ore resource and its mean Li, Sn and W grades, according to exploration campaigns

Exploration campaign No.	Resource class	Volume [10^3 m³]	Tonnage [10^3 tonnes]	Mean Li grade [ppm]	Mean Sn grade [ppm]	Mean W grade [ppm]
(4) BOLDUAN UND LÄCHELT (1960) [87]	C_1 C_2 Δ (Greisen intersection interval thickness ≥ 2 m, cut-off = 2,000 ppm)	4,000 1,000 200 Sum C_1+C_2 5,000	10,700 2,800 500 Sum C_1+C_2 13,500	3,000 Mean grade 3,000	Prognostic mean grade 500	Prognostic mean grade 200
(6) GRUNEWALD (1978b) [97]	No classification (Greisen drill-hole intersection interval thickness ≥ 5 m, cut-off = 0 ppm)	5,980	16,100	3,000	Not calculated for Li ore	Not calculated for Li ore
(8) SWS (2014)	Measured Indicated Inferred (Vertical thickness ≥ 2 m, cut-off = 2,000 ppm)	4,234 6,848 4,051 Sum 15,133	11,431 18,490 10,939 Sum 40,860	3,529 3,446 3,578 Mean grade 3,505	Potential approx. 400 Mean grade approx. 400	Potential approx. 80 Mean grade approx. 80
	Potential of greisen	approx. 900	approx. 2,400	approx. 3,200	approx. 400	approx. 80
	Potential of greisenised granite	approx. 44,000	approx. 117,000	approx. 1,800	approx. 240	approx. 40

By additionally taking geological data of campaigns No.s (5), (6), (7) and (8) and Li assay data of campaigns No.s (5) and (8) into account, it can be summarised that the Li resource nearly has been more than tripled in comparison to exploration campaign No. (4).

6.10 Risk Assessment

The overall error range of the resource estimation results from the interaction of the uncertainty ratios of different input factors, which are:

1. Errors and lack of drillhole survey data, especially for data before exploration campaign No. (7)
2. Errors of geochemical analysis, especially for data of exploration campaign No. (4)
3. Errors of data base data acquisition
4. Uncertainties of the 3D modelled geological shapes of the greisen beds
5. Lack of sufficient spatial data density, especially for greisen beds with small extension, preventing the ability to perform a reliable geostatistical analysis

The before mentioned error factors are summarized as the estimation uncertainty ratios, being ± 20% for the class measured, ± 40% for the class indicated. Applying these factors to the estimated and classified ore tonnages gives the corresponding tolerance intervals.

The *Figure 54* gives an overview of the band of uncertainty that is associated with the estimated demonstrated lithium resource. The shown ratio must be taken into account for reason of economical evaluation and determination of reserves.

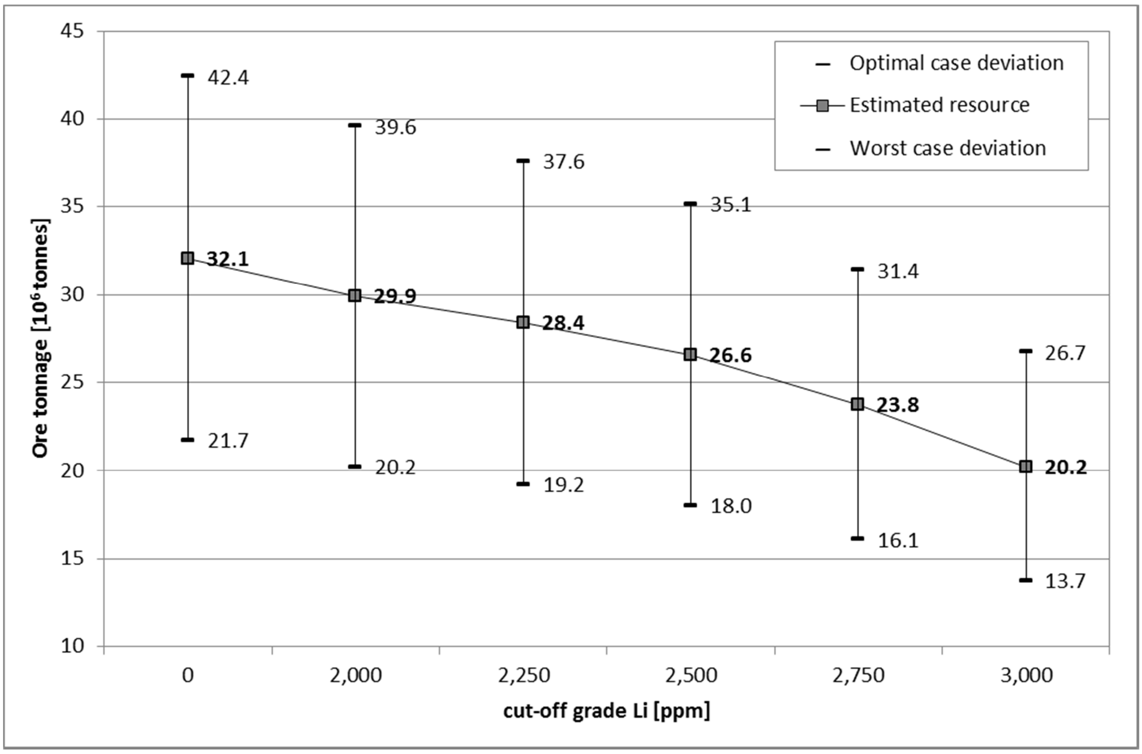


Figure 54: Tolerance intervals of the estimated demonstrated Li resource

So for example for the base case scenario (cut-off grade lithium = 2,500 ppm, minimum vertical thickness of the greisen beds = 2 m) the tolerance band of demonstrated greisen ore tonnage in place reaches from 18.0 million tonnes to 35.1 million tonnes which equals to a range of ± 32% (see *Figure 54*). The estimated value accounts for 26.6 million tonnes.

For the total resource the tolerance band encompasses values from 20.0 to 52.9 million tonnes of ore whereby the estimated value accounts for 36.4 million tonnes. Consequently the range of uncertainty equals to ± 45%.

7 SUMMARY AND CONCLUSIONS

Comprehensive data review, assessment and implementation in the SURPAC™ database were carried out for SolarWorld Solicium GmbH comprising all relevant and available geological, structural and ore quality data from the different investigations and exploration campaigns carried out in the past 60 years in the area of the Zinnwald lithium deposit.

Comprehensive data from drillholes (including 10 new ones drilled in 2012 and 2013) and results from underground channel and pick sampling as well as mapping were used in the project. They allowed distinguishing two main ore types:

"Ore Type 1": greisen

"Ore Type 2": greisenised granite

Within "Ore Type 1" 10 single greisen beds were distinguished. They form irregular shell-shaped structures, developed more or less parallel to the surface of the albite granite intrusion. The greisen beds "B" and "E" were identified as the largest and most important orebodies.

The geological 3D modelling and the resource calculation were based on these ore types and SURPAC™ (version 6.3) was used for this work.

Because of information uncertainties (predominately in sampling) related to the older exploration activities performed prior to the 1980ies the calculated tonnages and grades of ore could be reported in compliance with the PERC standards for lithium only.

Minor elements tin, tungsten and potassium oxide have been reported as upside potential. Unclassified lithium mineralisation has been reported as a potential also. Consequently, further investigations (drilling and sampling) have to be done in order to classify further resources at level of international reporting standards.

Applying prospects for eventual economic extraction (vertical thickness ≥ 2 m, cut-off = 2,500 ppm) to the mineral inventory gives a demonstrated lithium resource of 26.6 million tonnes greisen ore, showing a mean lithium grade of 3,620 ppm. The total resource as sum of the "measured", "indicated" and "inferred" classified resources consequently accounts for 36.4 million tonnes greisen ore with a mean lithium grade of 3,643 ppm.

The upside lithium potential of "Ore Type 1" accounts for a volume of approximately 2.4 million tonnes ore having a mean grade of 3,200 ppm.

Total greisen bed tonnage of "Ore Type 1" accounts for roundly 50 million tonnes showing mean grades of tin of approximately 400 ppm, tungsten of approximately 80 ppm and of potassium oxide of approximately 2.5 wt%.

Greisenised granite tonnage accounts for about 117 million tonnes with approximated mean grades of lithium of 1,800 ppm, tin of 240 ppm, tungsten of 40 ppm and potassium oxide of 3.4 wt%.

Due to diverse errors and inaccuracies of historical and recent data that could not be corrected with the benefit of hindsight or that may not have been entirely detected within the current stage of exploration, and due to sparse data density it is obvious that the estimated resources are still attended with relatively broad tolerance bands. Hence the greisen ore tonnage of 26.6 million tonnes of the base case scenario (cut-off grade lithium = 2,500 ppm, minimum vertical thickness of the greisen beds = 2 m) shows a tolerance band of demonstrated greisen ore tonnage that reaches from 18.0 million tonnes to 35.1 million tonnes which equals to a ratio of ± 32%.

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