Boliden Summary Report

Resources and Reserves | 2020

Laver project

Prepared by
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Front page: The historic old Laver mine looking south towards Lill-Laverberget. Photo from July, 2017

1 SUMMARY

Table 1 is a summary table containing estimated Mineral Resources of the Laver project, per 2020-12-31. These figures remain unchanged from the previous year's disclosure.

There are not currently and have not previously been any Mineral Reserves estimated for Laver project.

Table 1. Mineral resources of the Laver project, per 31st December, 2020

Classification	2020 kton	Au (g/t)	Ag (g/t)	Cu (%)	Mo (g/t)	2019 kton	Au (g/t)	Ag (g/t)	Cu (%)	Mo (g/t)
Mineral Resources										
Measured	**1 100**	**0.11**	**4.4**	**0.20**	**18**	1 100	0.11	4.4	0.20	18
Indicated	**512 400**	**0.13**	**3.1**	**0.22**	**36**	512 400	0.13	3.1	0.22	36
Total M&I	**513 500**	0.13	**3.1**	**0.22**	**36**	513 500	0.13	3.1	0.22	36
Inferred	**550 600**	**0.10**	**3.1**	**0.21**	**33**	550 600	0.10	3.1	0.21	33

2 GENERAL INTRODUCTION

This report is issued annually to inform the public (shareholders and potential investors) of the mineral assets in the Laver project held by Boliden. The report is a summary of internal reports for the Laver project. Boliden is changing reporting standard from Fennoscandian Review Board (FRB) to the Pan-European Reserves and Resources Reporting Committee (PERC) "PERC Reporting Standard 2017". The PERC Reporting Standard is an international reporting standard that has been adopted by the mining associations in Sweden (SveMin), Finland (FinnMin) and Norway (Norsk Bergindustri), to be used for exploration and mining companies within the Nordic counties.

The previously used FRB standard will no longer be maintained. The PERC standard has more clearly defined requirements on reporting and on Competent Persons. Boliden is currently in the process of updating procedures and many of the reports and estimations summarized here are compiled according to the previous standard (FRB). We consider this data accurate and reliable. The process of creating PERC compliant estimations, studies and reports for all Projects and Mines is underway.

2.1 Pan-European Standard for Reporting of Exploration Results, Mineral Resources and Mineral Reserves – The PERC Reporting Standard

PERC is the organisation responsible for setting standards for public reporting of Exploration Results, Mineral Resources and Mineral Reserves by companies listed on markets in Europe. PERC is a member of CRIRSCO, the Committee for Mineral Reserves International Reporting Standards, and the PERC Reporting Standard is fully aligned with the CRIRSCO Reporting Template.

The PERC standard sets out minimum standards, recommendations and guidelines for Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves in Europe.

2.2 Definitions

Public Reports on Exploration Results, Mineral Resources and/or Mineral Reserves must only use terms set out in the PERC standard.

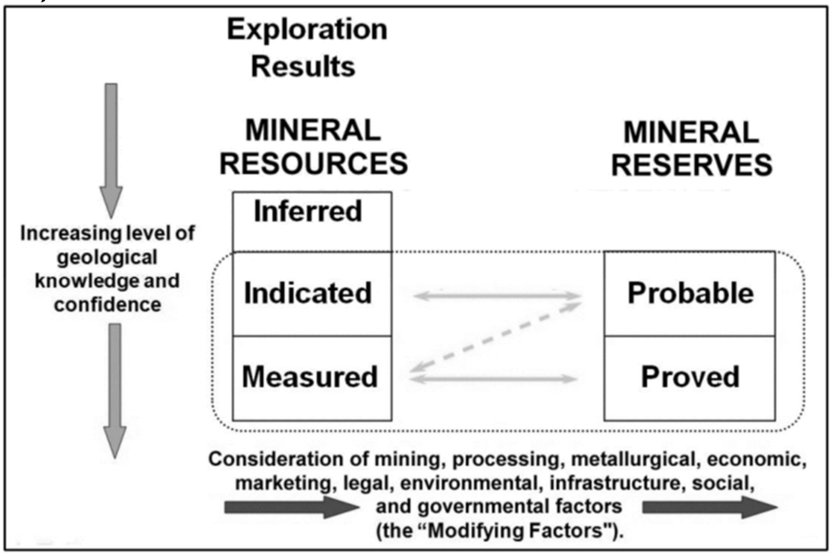

Figure 1. General relationship between Exploration Results, Mineral Resources and Mineral Reserves (PERC 2017).

2.2.1 Mineral resource

A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction.

2.2.2 Mineral reserve

A Mineral Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource.

It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified.

2.3 Competence

Table 2. Contributors and responsible competent persons for this report

Description	Contributors	Responsible CP
Compilation of this report	Gregory Joslin	Peter Svensson
Geology	Gregory Joslin	Peter Svensson
Resource estimations	Gregory Joslin	Gunnar Agmalm
Mineral processing	Gregory Joslin	Peter Svensson
Mining	Gregory Joslin	Peter Svensson
Environmental and legal permits	Gregory Joslin	Peter Svensson

Peter Svensson works for Boliden as the Manager for Field Exploration. He is a member of Australian Institute of Geoscientists (MAIG) since 2009. Peter Svensson has over 15 years of experience in the Exploration and Mining industry. Gunnar Agmalm is Boliden's Ore reserves and Project Evaluation manager and a member of the Australian Institute of Mining and Metallurgy (AusIMM) and Fennoscandian Association for Metals and Minerals Professionals (FAMMP).

3 THE LAVER PROJECT

The Laver project is an advanced exploration stage bulk open pit copper-gold-silver-molybdenum mining project focused on developing the Laver deposit in Norrbotten county, northern Sweden. The project has contained estimated Mineral Resources at the Laver deposit since 2012, with the latest Mineral Resource estimate completed in 2013. Exploration, technical, and economic evaluations at the Laver deposit have advanced to scoping study level. No Mineral Reserves are currently estimated within the project.

Multiple key permits are outstanding in the Laver project that are required prior to development of the deposit. These include the mining concession permit, as well as multiple environmental permits. Work is currently ongoing internally within Boliden focused on permitting, improving, and advancing the Laver project.

3.1 Major changes

No changes have been made to Mineral Resources at the Laver deposit since 2013. However, work on the project is ongoing in the form of continued exploration, cost and CAPEX optimization, environmental monitoring, stakeholder relations, and permitting. An internal audit of the project was completed in 2017, highlighting opportunity for improvement through continued work in these areas.

3.2 Location

The Laver project is located in Älvsbyn municipality, Norrbotten County, Sweden, about 700 km north of the Swedish capital Stockholm and about 90 km west of the regional economic center of Luleå (figure 2). The project consists of three exploration licences totaling about 43 square kilometers, centered around the Laver deposit. Boliden holds a number of other exploration licences in the region as part of its broader project portfolio.

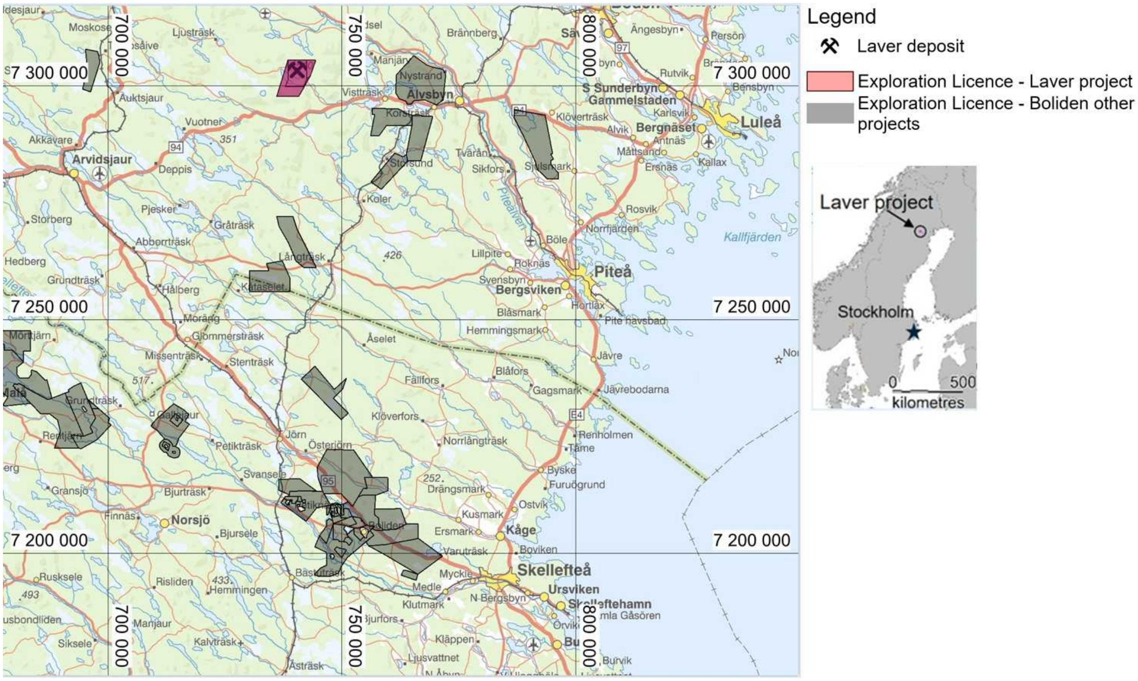

Figure 2 Location map of the Laver project. Coordinate system is SWEREF99TM (meters).

3.3 History

Historic mining took place in the Laver project area during 1938-1946 at the old Laver mine. During this period a total of approximately 1.3 Mt grading 1.5% Cu, 0.2 g/t Au, and 36 g/t Ag was ultimately processed, mainly from small scale underground mining. In the early 1970's, and again in 1997, Boliden placed renewed focus on copper exploration in the historic Laver mine area. These activities identified a broad area of low grade copper and gold mineralization in near surface bedrock at Lill-Laverberget, centered approximately 1.5 kilometres south of the historic old Laver mine workings.

In 2007 Boliden again restarted copper exploration in the historic Laver mine area. This time focus was placed on defining a large volume, near surface mineral resource suitable to low cost open pit mining. To this end exploration drilling commenced at Lill-Laverberget in 2009, and continued in three distinct campaigns through 2013. This work resulted in the definition of a new copper-gold-silver molybdenum deposit, i.e. the Laver deposit. The first Mineral Resource estimate for the Laver deposit was dated 31st of December, 2012.

As drilling advanced scoping level technical studies were initiated by Boliden investigating areas including mineral processing, mining method and scale, rock mechanics, infrastructure layout, CAPEX estimation, and potential environmental and social impacts. The latest Mineral Resource estimate for the Laver deposit, dated 31st of December 2013, is based on results from that work. In 2014 Boliden submitted an application for mining concession covering the entirety of the Laver deposit Mineral Resource. However, as of year-end 2019 a final decision on the mining concession application was still pending. Exploration and other work has continued throughout the mining concession permitting process, and an internal audit of the project was completed in 2017. Results of the audit confirmed the bulk open pit mining potential of the Laver deposit, and highlighted opportunity for project improvement through continued focus on exploration, operational cost, and CAPEX optimization.

3.4 Ownership

The Laver project is 100% owned and operated by Boliden. Additionally, Boliden owns 100% of surface rights covering the Laver deposit Mineral Resource. However, substantial areas of land needed for future development of the Laver deposit Mineral Resource (examples include future tailings facility, processing plant, etc.) are not currently owned by Boliden and may be subject to future acquisition.

Surface ownership within the greater area of the Laver project is distributed between a variety of private and public entities, and dominated by large land holdings by commercial forestry companies. The main land use activities in the project area are commercial forestry, reindeer husbandry, and recreation. Agricultural activity is present only locally within the project area.

All properties within the Laver project are subject a standard legally prescribed royalty of 0.2% of the annual value of metal recovered after mineral processing. Calculation and other details of this royalty is governed by the Swedish Mineral Law (Minerallag (1991:45)). According to this law the royalty payment is to be distributed at a rate of ¾ to the surface owner and ¼ to the Swedish state. No additional royalties currently apply to the Laver project.

3.5 Permits

The Laver project consists of three exploration licences totaling 4 281 ha (table 3). All licences are currently in good standing with the Swedish Mining Inspectorate Bergsstaten. It should be noted that the Laver deposit lies fully within the exploration licence Laver nr 1002.

The maximum allowable age of an exploration licence under the Swedish Mineral Law is 15 years, after which it is relinquished and the areal is allowed a one year "resting" period. Only after the one year resting period is complete can a new exploration licence covering the areal be established, with certain special exceptions.

Table 3. List of exploration licences comprising the Laver project.

Exploration licence (name)	Area (ha)	Valid through (date)	Age at expiration (yrs)
Laver nr 1002*	2 232	2023-10-26	15
Laver nr 1003	464	2022-02-14	10
Laver nr 1004	1 585	2022-05-14	10
Total	**4 281**		

No mining concession currently exists covering the Laver deposit. Boliden applied in 2014 for a mining concession covering the entirety of the deposit's Mineral Resource. However, in December 2016 Boliden's application for the mining concession at Laver was rejected by the Swedish Mining Inspectorate. Boliden subsequently appealed this decision to the Swedish Government. In December, 2020, the Swedish Government rejected Boliden's appeal. Boliden is currently considering appealing the matter further to the Supreme Administrative Court (*Högsta Förvaltningsdomstolen*). Boliden plans to make a decision on whether or not to appeal the matter to the Supreme Administrative court in early 2021.

According to the Swedish Mineral Law a mining concession is valid for 25 years from the date of issuance.

Additionally, multiple additional environmental permits will be required prior to future production startup from the Laver deposit. Boliden has no plans to apply for these required environmental permits until after a valid mining concession in place, if at all.

3.6 Geology

3.6.1 Regional

The Laver project is located within a widespread geologic region of Northern Europe dominated by exposed Precambrian crystalline bedrock, known as the Fennoscandian shield (figure 3). Rocks of the Fennoscandian shield range in age from greater than 2.5 billion years (Archean) to about 0.9 billion years (Late Proterozoic), generally growing younger from northeast to southwest across the region. A large proportion of base and precious metal deposits of Sweden, Finland, northern Norway, and northwestern Russia are hosted by Fennoscandian shield rocks. In Sweden, currently producing metal mining districts of the Fennoscandian shield include the prolific Bergslagen, Skellefte, Aitik, and Kiruna fields.

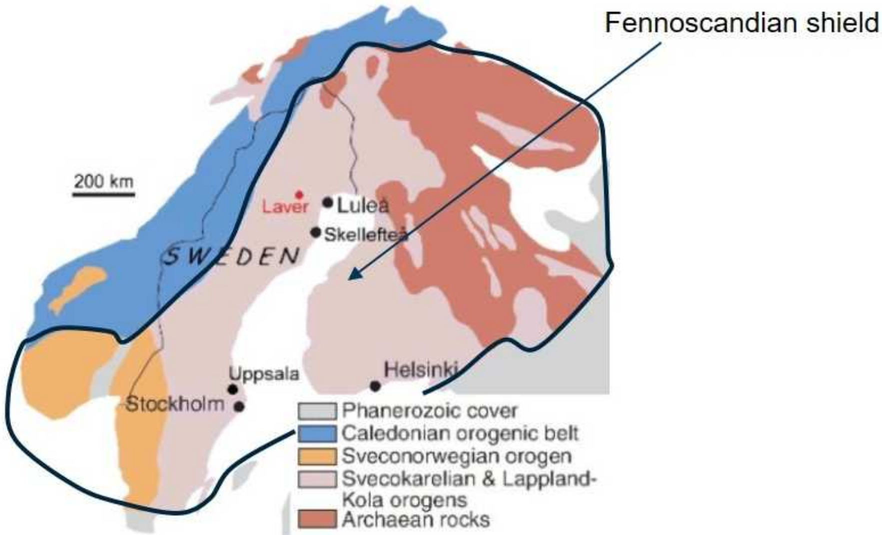

Figure 3. Regional geologic map of northern Europe showing location of the Laver project on the Fennoscandian shield.

3.6.2 Local

On a local level, the Laver project is located within a tectonic sub-region of the Fennoscandian shield known as the Svecokarelian orogen. Supracrustal rocks in the project area are dominated by a diverse variety of 1.88-1.86 billion year old Svecofennian division meta- volcanic, volcanoclastic, and sedimentary rocks, known locally as the Arvidsjaur group (Kathol et. al, 2012). Igneous rocks within Arvidsjaur group tend to be dominated by felsic to intermediate compositions (rhyolite to dacite), with observed rock textures indicating a predominantly sub-aerial to shallow sub-marine depositional environment. Mafic volcanic rock compositions (basalt) are rare within the Arvidsjaur group.

Intrusive rocks in the Laver project area are dominated by granites and granodiorites, ranging in age from syn-orogenic/volcanic (Perthite monzonite suite, 1.88-1.86 billion years) to late-to post-orogenic/volcanic (Edefors suite, 1.81-1.78 billion years). Mafic intrusive rocks, mainly of Perthite monzonite suite association, are most common in the Storsund area in the southeastern part of the project.

Deformation of the Avidsjaur group and Perthite monzonite suite rocks is thought to have occurred in two main phases (D2 and D3) during the Svecokarelian orogen, between about 1.88 and 1.80 billion years (Bergman Weihed, 1997, Bark and Weihed, 2005, Lahtinen et. al, 2008). Early, generally broad northwest to southeast oriented fold axes in the Laver area (D2) are thought to have been formed during 1.88-1.85 billion year old regional compression and accretion from the southwest (Lahtinen et. al, 2008, Kathol et. al, 2012). However, regional compressional stress is thought to have changed to a more east-west dominated orientation at around 1.83 billion years, resulting in the formation of overprinting north-south to northeast-southwest oriented (D3) regional foliation fabrics and deformation zones (Bergman Weihed, 1997, Lahtinen et. al, 2008). Orientations of many of the late- to post-orogenic Edefors suite intrusives in the Laver area seem to roughly parallel to these overprinting D3 structures.

Peak regional metamorphism in the Laver project area is generally greenschist facies, and is thought to have occurred at around 1.85 billion years (Bergman Weihed, 1997).

3.6.3 Deposit

Mineralization of the Laver deposit is hosted within Arvidsjaur group rocks dominated by complexly interbedded volcaniclastics including tuffs, lapilli tuffs, and agglomerates (figure 4). Massive flow units are present in the deposit host sequence, but these are volumetrically subordinate. Igneous compositions are dominated by dacite, with lesser volumes of rhyolite and andesite-basalt. Observed rock textures indicate that most stratigraphic units in the host sequence were likely deposited in a sub-aerial to shallow sub-aqueous environment.

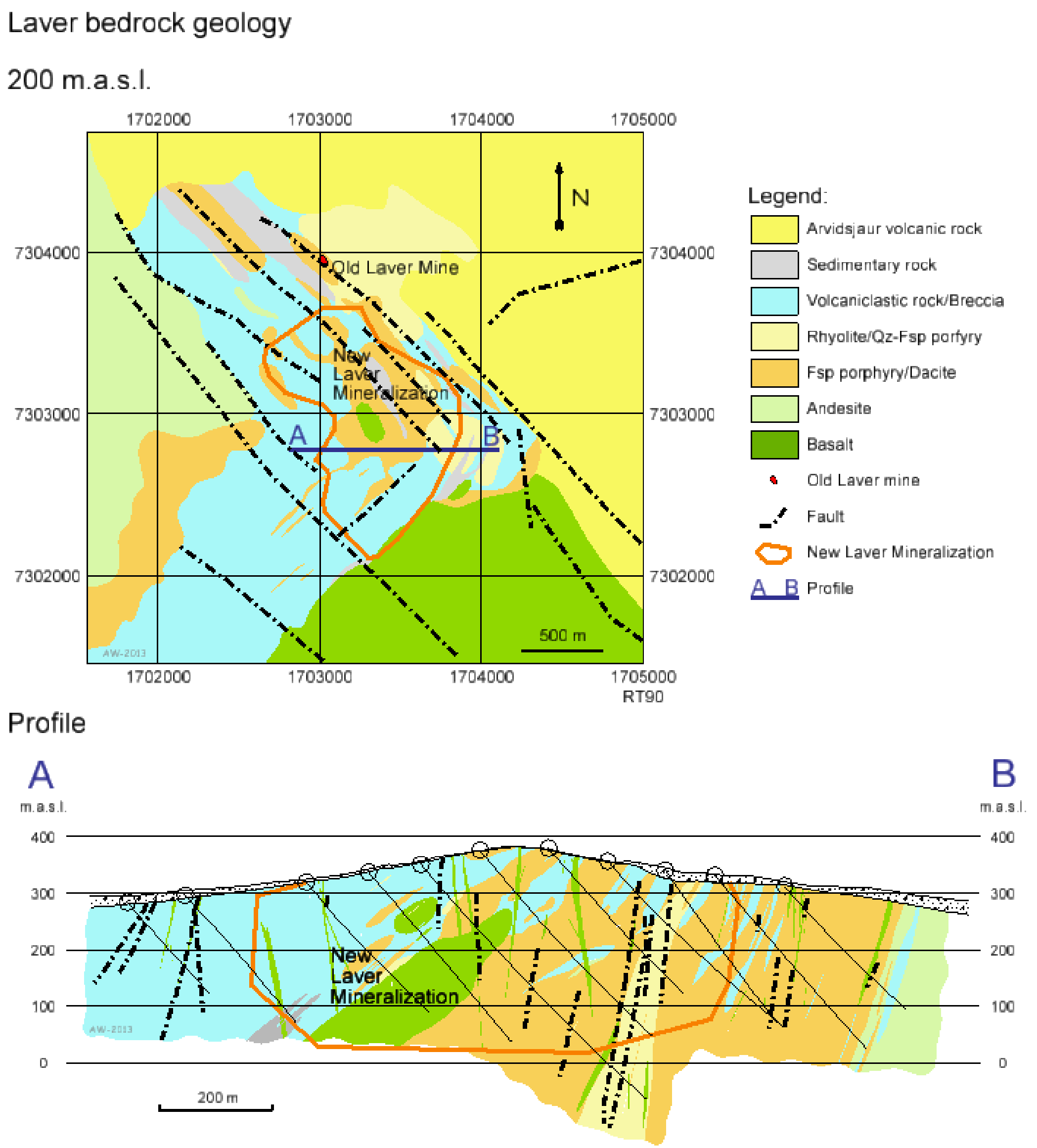

Figure 4. Deposit scale geology of the Laver deposit. Coordinate system is Swedish RT90

Copper in the Laver deposit occurs primarily within the mineral chalcopyrite, with only rare bornite observed. No other mineral is known to be a significant carrier of copper in the deposit. Copper sulfides at Laver are generally fine to very-fine grained in texture and found in close association with the iron sulfides pyrrhotite and pyrite. Other sulfide minerals observed in minor quantities include molybdenite, sphalerite, galena, and arsenopyrite

Silicate alteration minerals commonly observed in the deposit include quartz, muscovite, biotite, amphibole, garnet, and epidote.

The highest grade copper-gold-silver zones within the Laver deposit seem to be spatially centered around dike-like, steeply dipping, crystal tight porphyritic dioritic intrusives of Perthite monzonite suite association known informally within the project as “Feldspar porphyry type-III”. Quartz alteration (i.e. “silicification”) also seems to be most intense within and around these intrusions. On a broad scale, sulfide mineralization in the deposit is zoned outwards from a chalcopyrite dominated core to more iron sulfide dominated (pyrite+pyrrhotite) distal halo. Steeply dipping post-mineralization barren dikes of aplite, andesite, and basalt locally cross-cut and dilute the mineralized zone.

Based on the above described regional geological context, deposit-scale geological and mineralogical relationships, and large size of the mineralization, Boliden has interpreted the Laver deposit as a member of the porphyry copper class of mineralization systems.

3.7 Drilling procedures and data

3.7.1 Drilling techniques

Diamond core drilling was the sole source of all analysis data used in modeling the Laver deposit. Drilling was completed in three distinct campaigns (i.e. "Phases") between June 2009 and November 2013. The three drill phases consisted of reconnaissance exploration ("Phase I") totaling 9 037 m, infill for maiden Mineral Resource ("Phase II") totaling 20 363 m, and expansion plus Mineral Resource upgrading ("Phase III") totaling 16 387 m. Thus, the combined total of Phase I – III drilling used in modeling the Laver deposit sums to 45 787 m.

Core diameter for Phase I and Phase II diamond drill campaigns was 39 to 42 mm (i.e. "BQ" size bit). Core diameter for Phase III diamond drilling was mainly 60 mm (i.e. "NQ" size bit). However, some drill holes in the Phase III program telescoped down to 39 mm cores in the deeper portion of the hole.

Based on the mineralogy and geological texture of the copper-gold-silver mineralization at Laver, BQ rod size or larger was considered sufficient and appropriate for grade estimation. NQ holes were mainly drilled with the idea of achieving more predictable hole traces, as well as obtaining larger samples that could be used in metallurgical testing.

3.7.2 Downhole surveying

All drill holes from Phase I – III drilling on the Laver deposit were deviation surveyed with Boliden's borehole mag ("BH_MAG") system. The system uses an inclinometer to measure dip and magnetic measurement to use direction.

3.7.3 Sampling

All metal grade input data for the Laver deposit model is derived from sampling of ½ sawed diamond drill core, where core diameter varied between BQ and NQ size as described in the drilling section above. Sample intervals were marked by Boliden geologists in conjunction with geological and core recovery logging in Boliden. Standard maximum sample interval length was 5 meters, assuming consistent geology and mineralization intensity within the interval. Shorter sample intervals were commonly taken in areas of variable geology and mineralization. Sawing and sampling of drill cores was done either "in house" at the Boliden core shed or by ALS Chemex at their prep lab in Öjebyn, Sweden.

The total number of samples used in the Laver deposit model sums to 10 549, giving an average sample interval length of 4.34 meters. The maximum sample interval length of 5 meters was deemed appropriate based both on the style of mineralization and anticipated eventual bulk mining method of the deposit.

Sample preparation was conducted by ALS Minerals in Öjebyn, Sweden using the Prep-31 method. Prep-31 consists of several stages including logging, weighing, drying, and crushing to 70% passing a screen of 2 millimeters. A split of 250 grams is then taken and ground to 85% passing a 75 microns to form the final sample pulp.

All sample pulps were delivered to ALS Chemex in Vancouver, Canada for analysis of copper, gold, silver, molybdenum, and sulfur. Analysis codes used for these elements incuded AA46 (copper), ICP-21 (gold less than or equal to 5 parts per million), GRA-22 (gold greater than or equal to 5 parts per million), AA45 (silver and molybdenum), and S-IR08 (sulfur). Many, but not all, samples were additionally analyzed for a broad suite of major and trace elements using various other ALS analysis codes including ME-MS81 and others. Detailed method descriptions of ALS analysis codes can be found at www.alsglobal.com.

All relevant drill hole data including location, downhole surveying, geology, sample intervals, and analysis results were digitally archived in a secure relational database system at the Boliden exploration office in Boliden, Sweden.

3.7.4 Density

A constant in-situ density of 2.8 t/m3 was applied to all bedrock blocks the Laver deposit model. This constant figure applies to both ore and waste blocks, regardless of rock type or grade. Bedrock density statistics for the Laver deposit can be seen in table 4.

Table 4. : Statistics of bedrock density measurments for the Laver deposit

Specific Gravity (t/m3)	
Mean	2.78
Median	2.75
Minimum	2.51
Maximum	3.88
Count	324

An examination of the distribution of density analyses in the deposit shows some degree of spatial clustering, with bias towards areas with more recent drilling. It is thus recommended that future effort be made to create a more even spatial distribution of density analysis coverage within the deposit. Additionally, effort should be made to better understand the influence of variation in rock type and grade on density.

A constant density of 2.1 t/m3 was used for in-situ unconsolidated overburden (mainly glacial moraine) for the Laver deposit model. This figure is assumed to be correct, based on observed similarities between glacial moraines at the Laver deposit and those at Boliden's Aitik operation. No independent density sampling of unconsolidated overburden has been performed at the Laver deposit.

3.7.5 QAQC

Throughout the 2009-2013 drilling phases a quality assurance / quality control ("QAQC") program employing standards, blanks, and pulp duplicates was carried out for the Laver drill core analyses. Focus was placed primarily on monitoring the reliability of results for copper, gold, and silver, as these are the main payable metals of the deposit.

The largest emphasis in the Laver QAQC program was placed on the use of standards for copper, gold, and silver. These metals were afforded the majority of focus due to their dominant influence over NSR value in the deposit. Standards were placed into the sample stream at a frequency of about 1 standard per 20 primary samples. Primary sample analysis results were approved or rejected on a batch by batch basis, based mainly on the analysis results of these standards. Accepted batches of primary samples were approved for immediate upload into the database, while rejected batches required re-analysis prior to approval for uploading. Thus, all metal analyses that were used for modeling the Laver deposit have passed QAQC scrutiny.

A list of standards used can be seen in table 5.

Minimal QAQC effort was placed on molybdenum due to its minor influence on NSR value in the deposit. Only pulp duplicate results were monitored for QAQC of molybdenum.

Table 5. Standards used for QAQC monitoring of drill core analyses used in the Laver deposit model

Standard	Analysis method tested	Expected Au	Expected Ag	Expected Cu
BS-AU2	AA46, 45, ICP22	0.499	2.28	0.0168
BS-AU1	AA46, 45, ICP22	1.936	7.6	0.0663
BS-BM5	AA46, 45, ICP22	0.058	1.4	0.2020

3.8 Exploration activities

Since completion of the latest Mineral Resource estimate for the Laver deposit the 31st of December, 2013, exploration in the Laver project has focused mainly on the location and evaluation of satellite deposits in the regional area. Only a few holes have been drilled into the Laver deposit proper after 2013, and these have not yet been incorporated into an updated Mineral Resource estimate. However, an internal audit of the project completed in 2017 indicated positive exploration potential still exits at the Laver deposit. Both infill and expansion drilling are recommended.

Very little exploration was carried out at the Laver deposit during 2020 due to postponements caused by the Corona virus pandemic. Boliden has the intention to restart infill drilling at the deposit during 2021.

3.9 Mining methods, mineral processing and infrastructure

3.9.1 Mining methods

The Laver deposit Mineral Resource assumes a high ore-processing rate, low stripping ratio open pit mining and processing operation. Volumes of mineralized material and waste, as well as mining style and equipment, are estimated to be similar to Boliden's Aitik copper-gold-silver operation located outside the town of Gällivare in Norrbotten County, Sweden. Scoping study level investigations indicate that mining related technical risks at the Laver deposit are minimal and likely to be of similar nature and magnitude to those encountered at the Aitik operation.

3.9.2 Mineral processing

Mineral processing of the Laver deposit mineral Resource is envisioned to produce separate floatation concentrates of copper (main mineral: chalcopyrite) and molybdenum (main mineral: molybdenite) for sale to smelter. Recoverable gold and silver will report mainly to the copper concentrate, with some extra gold recovery possible if post-floatation leaching of tailings is employed. A high ore processing rate is assumed, similar in layout and magnitude to that of Boliden's Aitik Cu-Au-Ag operation. However, scoping level investigations indicate that grind ability of the Laver mineralization is significantly lower (i.e. harder to grind) than that experienced for Aitik mineralization. Additionally, investigations indicate that the Laver mineralization requires a finer grind size than Aitik in order to achieve an acceptable metallurgical recovery. Taken together these factors indicate that an eventual Laver operation will likely have a somewhat higher material processing cost than the existing Aitik operation.

Expected average metallurgical recoveries from the Laver deposit are listed in table 6.

Table 6. Expected average metallurgical recoveries from an eventual operation at the Laver mineral resource. Values are based on limited scoping study level investigations and thus contain a degree of uncertainty. Operating processes for post-floatation leaching of tailings (increased gold recovery) and molybdenum concentrate separation are assumed.

Metal	**Expected average metallurgical recovery (%)**
Copper	87
Gold	62
Silver	70
Molybdenum	40

In summary, scoping level studies indicate that mineral processing related technical risks are significant at the Laver deposit. Besides the grindability issues mentioned above, identified mineral processing risks include metal recovery, concentrate grade and quality, and cost effective production and handling of high sulfur process waste (i.e. a separate sulfide-rich tailings sand). Work is ongoing in order to reduce these mineral processing technical risks.

3.9.3 Infrastructure

Good base infrastructure is present in the Laver project area including well-maintained power generation, rail, road, and airline transport systems. Abundant supplies of power, water, and skilled workers are also available. However, development of the Laver deposit will still require significant pre-production capital investment in new infrastructure.

Scoping study level investigations completed to date indicate major pre-production investment areas for the Laver deposit include property acquisition, mine pit development, crushing and conveying systems, and processing and tailings facilities Additionally, development of the deposit will require major investments in road and bridge upgrades, connection to the local power grid, water catchment-diversion-pumping and treatment systems, concentrate re-handling facilities, fencing, and maintenance and other industrial site buildings.

3.10 Prices, terms and costs

The following section lists prices, terms, and costs used in estimating the Laver deposit Mineral Resource, per 31st December, 2013. Note: the Laver deposit mineral Resource estimate remains unchanged since that time.

Table 7. Long term planning prices, which are an expression of the anticipated future average prices for approximately 10 years, used in estimating the Laver deposit Mineral Resource. Note: these figures date from 31st December, 2013.

	Net smelter return factor SEK/ton/grade	**Planning prices**
Copper	340	USD 6,600/tonne
Gold	140	USD 1,200/tr.oz
Silver	2.6	USD 20/tr.oz
Molybdemum	0.07	USD 15/lb
Currency exchange rate: USD/SEK		6.7
TC/RC copper concentrate		70/7.0 USD/tonne / USD/lb

Table 8. Costs used in estimating the Laver deposit Mineral Resource. Note: these figures date from 31st December, 2013.

Mining cost mineralized	15	SEK/tonne
Mining cost waste	15	SEK/tonne
Stripping cost soil	12	SEK/tonne
Processing cost*	33	SEK/tonne

* Includes costs for mineral processing, envrironmental monitoring, site reclamation, overhead, Molybdenum concentrate, and gold dore

Net Smelter Return Factor have been calculated for each metal based on assumed planning prices, metallurgical recovery, and TC/RC costs per tables 6, 7, and 8.

The formula for calculating Net Smelter Return value for a block in the Laver deposit can thus be calculated according to the following formula:

Net Smelter Return (SEK/ton) = (340*% copper) + (140*g/t gold) + (2.6*g/t silver) + (0.07 * g/t molybdenum)

The cost of transporting copper concentrate from mine to smelter has not been taken into account in calculating Net Smelter Return Factors for the Laver deposit. However, this cost is not considered to have material effect on the deposit's Reasonable Prospects for Eventual Economic Extraction.

Additonally, Net Smelter Return Factors for the Laver deposit assume no penalty metal charges for concentrate sold to smelter.

3.11 Mineral resources

Grade models are estimated with ordinary kriging. In 2013 with a fixed composite length of Estimation of the Laver deposit mineral resource is based on evaluations of a three dimensional (“3D”) block model representing bedrock hosted Cu-Au-Ag-Mo mineralization. It should be noted that the mineral resource represents only a portion of the total known mass of mineralization in the Laver deposit, wherein the portion of the deposit comprising the Mineral Resource is constrained by an undiscounted Whittle optimized pit shell.

Boliden considers the Mineral Resource to fulfill the criteria for “Reasonable Prospects for Eventual Economic Extraction”.

Details of the Laver deposit block model, pit optimization, and Mineral Resource summation are described in the sub-sections below.

3.11.1 3D block model

The volume for the Laver deposit 3D block model was defined by a 3D wireframe created from a compilation of 2D vertical drilling cross sections of geology and mineralization. In this method, limits of mineralization were first interpreted along the 2D profiles using a Net Smelter Return cutoff value of 20 SEK/ton (figure 5). The 2D mineralization limits were then connected together to form a 3D wireframe volume of the mineralization (figure 6).

It should be noted that the Net Smelter Return value of 20 SEK/ton is roughly equivalent to an in-situ grade of 0.04% Cu in the Laver deposit, and includes credits for gold, silver, and molybdenum. A Net Smelter Return value of 20 SEK/ton was somewhat lower than marginal processing cost cutoff employed at Boliden’s Aitik mine operation during 2013. However, for the sole purposes of defining the outer boundaries of the deposit model wireframe a Net Smelter Return cutoff of 20 SEK/ton was deemed appropriate.

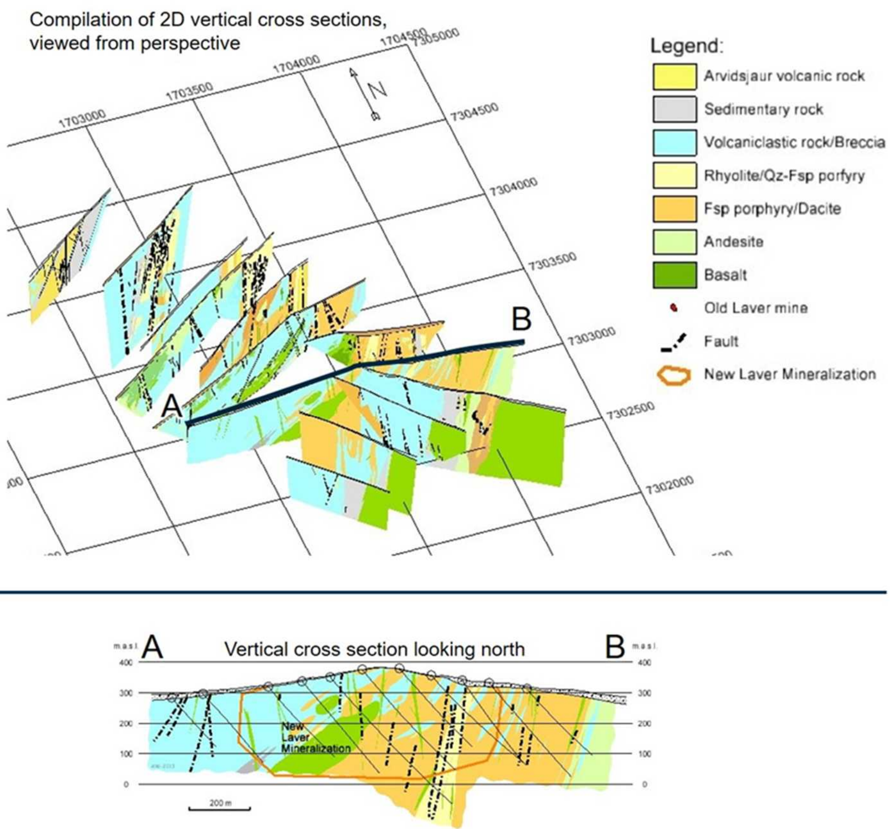

Figure 5. Compilation of 2D vertical cross sections of geology and mineralization used to create the 3D mineralization wireframe at the Laver deposit. Coordinate system is Swedish RT90. Size of grid squares is 500 x 500 meters.

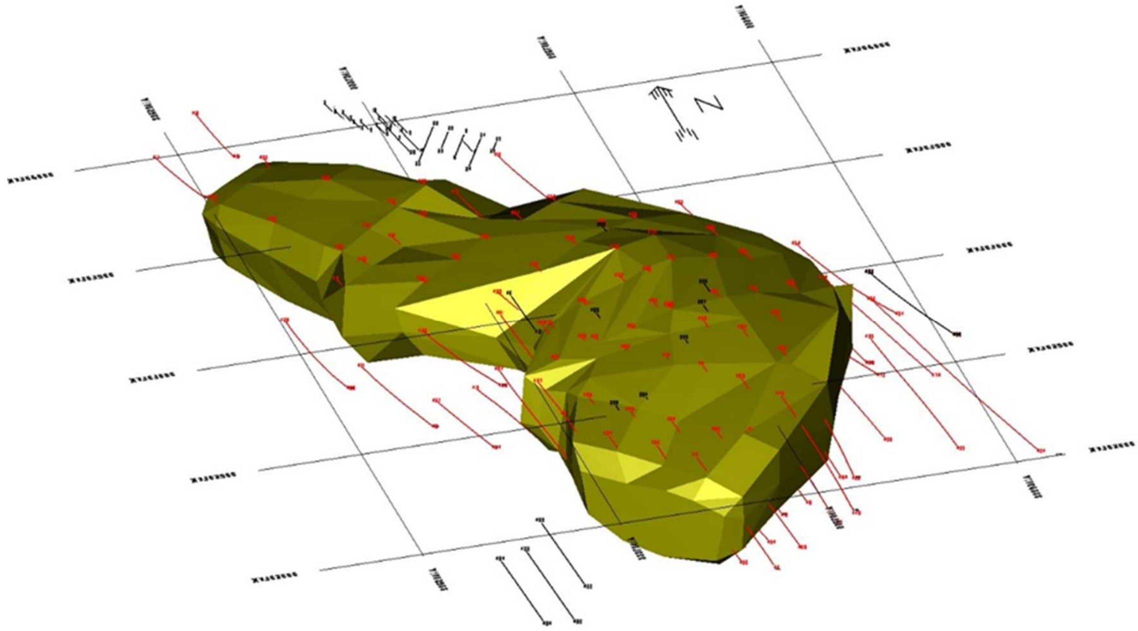

Figure 6. Image of 3D wireframe and drill holes (viewed from perspective) used for defining the volume limits of the Laver deposit block model. Coordinate system is Swedish RT90. Size of grid squares is 500 x 500 meters.

Within the deposit wireframe a block model was created (figure 8). Input data for the block model came exclusively from validated drill core analyses as described in section 3.7. A three dimensional block size of 20 x 20 x 15 meters (X-length x Y-width x Z-height) was selected for the model. This block size was considered appropriate based on the density of geologic and metal analysis information available. The selected block size also took consideration of the large scale open pit mining method deemed most appropriate for the deposit.

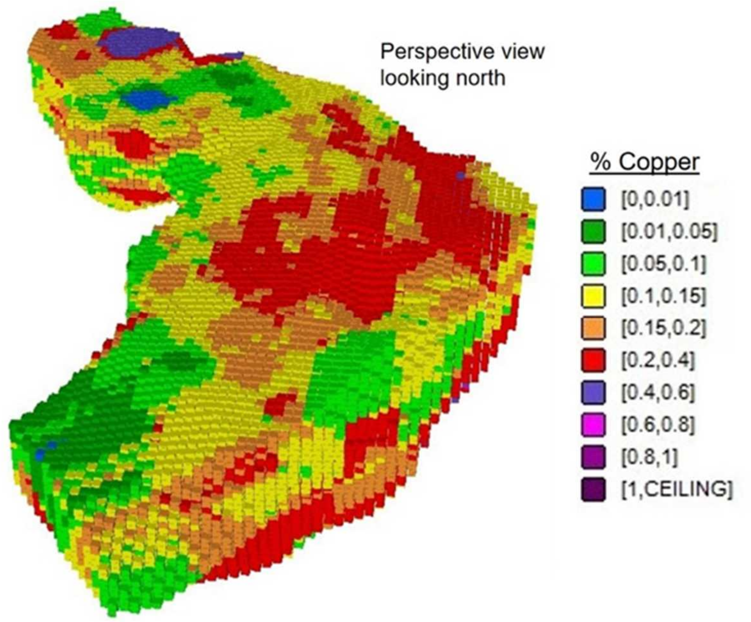

Figure 7. Block model (copper grade in percent) of the Laver deposit, viewed from perspective looking north. Blocks in image have dimensions of 20 x 20 x 15 meters (X-length x Y-width x Z-height).

Estimation of copper, gold, silver, and molybdenum grades into the block model was done using the "ordinary kriging" method. Search ellipsoid was varied using the dynamic anisotropy method. No geologic domaining other than the Net Smelter Return wireframe was employed in the estimation.

Validation of the block model was performed per standard Boliden routine and found to be satisfactory.

3.11.2 Classification

Blocks of the Laver deposit block model were classified based on primarily drill spacing, supported by knowledge of geologic and grade continuity. Generalized guidelines employed for block classification in the Laver deposit block model can be seen in table 9.

For the purpose of both block estimation and classification, direction of "strike" in the block model was varied according to the dynamic anisotropy method.

An overview image showing classification of the Laver deposit block model can be seen in figure 8.

Table 9. Generalized guidelines for block classification in the Laver mineralization block model.

Mineral resource class	Drill density along strike	Drill density across strike
Measured	2 drill holes within 70 meters	2 drill holes within 35 meters
Indicated	2 drill holes within 140 meters	2 drill holes within 70 meters
Inferred	2 drill holes within 210 meters	2 drill holes within 105 meters

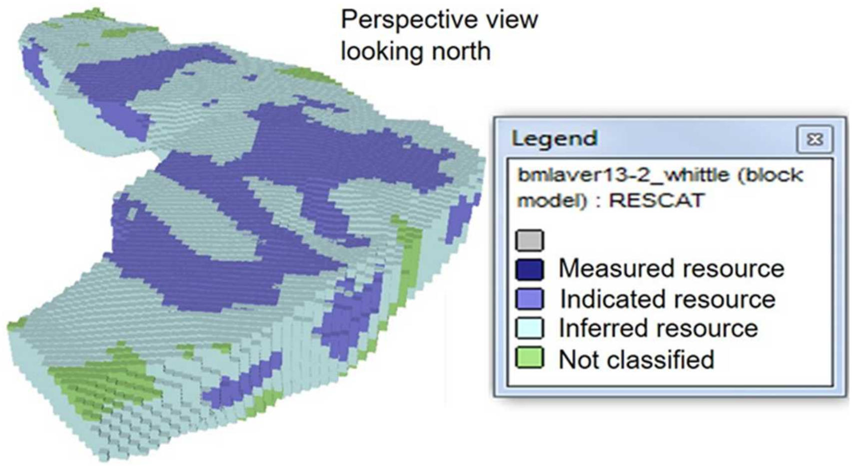

Figure 8. Overview image showing classification of the Laver mineralization block model

3.11.3 Pit optimization

Following completion and validation of the 3D deposit block model an open pit optimization was performed. The software program Whittle was used for the pit optimization and the undiscounted best case pit shell was selected to constrain the Mineral Resource. In other words, the selected Whittle pit shell constrains which portion of the deposit block model meets criteria for Reasonable Prospects for Eventual Economic Extraction.

Metallurgical recovery and price input parameters for the optimization can be seen in tables 6 and 7, respectively. Operating cost input parameters for the optimization can be seen in table 8. Mining technical and discount rate input parameters for the optimization can be seen in table 10.

Images of the resulting selected pit shell and how it relates to the Laver deposit model can be seen in figures 9 and 10.

Table 10. Mining technical and discount rate input parameters used in creating the selected optimized pit shell for the Laver mineral resource

Dilution	0	%
Ore recovery	100	%
Max ore production	54	Mt/yr
Slope angle soil	25	Degrees
Slope angle north-east	45	Degrees
Slope angle south-west	50	Degrees
Discount rate	0	%

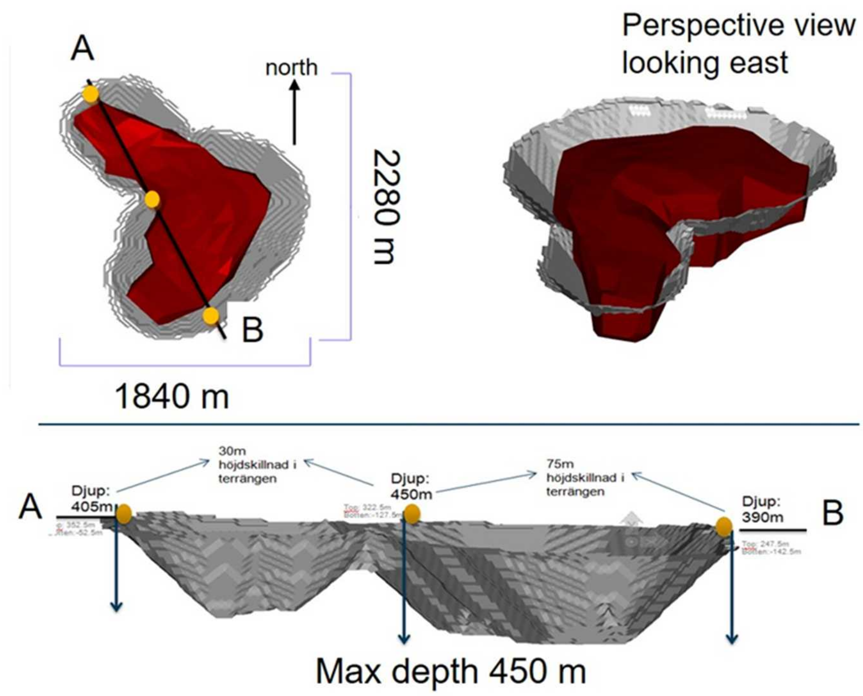

Figure 9. Images of the selected mineral resource pit shell and how it relates to the Laver deposit wire frame.

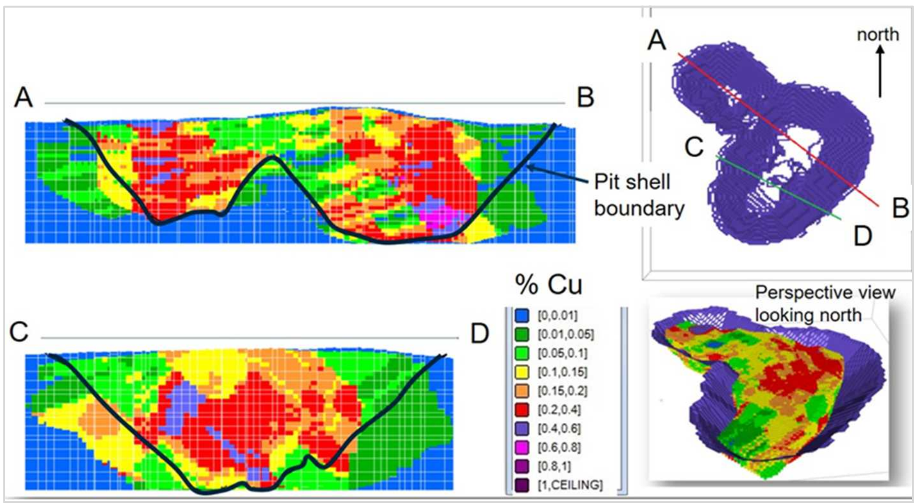

Figure 10. Images of the selected resource pit shell and how it relates to the Laver deposit block model.

3.11.4 Mineral resource summation

The Laver deposit Mineral Resource is a summation of blocks constrained within the selected Whittle pit shell, as described in section 3.11.3. Additionally, the Mineral Resource is summed using a Net Smelter Return internal waste cut-off value of 33 SEK/ton, based on the marginal processing cost of the mineralized material.

Results of the Mineral Resource estimate summation can be seen in table 11.

Table 11. Results of the Laver deposit Mineral Resource summation

Classification	2020 kton	Au (g/t)	Ag (g/t)	Cu (%)	Mo (g/t)	2019 kton	Au (g/t)	Ag (g/t)	Cu (%)	Mo (g/t)
Mineral Resources										
Measured	1 100	0.11	4.4	0.20	18	1 100	0.11	4.4	0.20	18
Indicated	512 400	0.13	3.1	0.22	36	512 400	0.13	3.1	0.22	36
Total M&I	513 500	0.13	3.1	0.22	36	513 500	0.13	3.1	0.22	36
Inferred	550 600	0.10	3.1	0.21	33	550 600	0.10	3.1	0.21	33

An NSR of 33 SEK/ton is roughly equivalent to an in-situ grade of 0.07% Cu for the Laver mineralization, and includes credits for gold, silver and molybdenum according to assumed metallurgical recoveries and prices outlined in tables 6 and 7, respectively. This value is slightly higher than the marginal processing cost cut-off of 0.06% Cu applied at Boliden's Aitik operation in 2013, and reflects the comparatively higher processing costs expected at Laver.

According to the optimization, below cut-off "waste" tonnage in the resource pit sums to 522 Mt, giving a stripping ratio (waste/mineral resources) of 0.47.

3.12 Mineral reserves

Technical and economic investigations regarding development of the Laver deposit have only progressed to scoping study level detail. Thus, there are currently no Mineral Reserves estimated for the Laver deposit.

3.13 Comparison with previous year

No changes have been made to Mineral Resources in the Laver deposit since 2013. However, work on the project is ongoing in the form of continued exploration, cost and CAPEX optimization, environmental monitoring, stakeholder relations, and permitting. An internal audit of the Laver project was completed in 2017, highlighting significant opportunity for improvement through continued work in these areas.

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