Boliden Summary Report

Resources and Reserves | 2021

Aitik

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1 SUMMARY

Between 2020-12-31 and 2021-12-31 the mineral reserves (Table 1) has decreased by 3.4% to 1 307 Mt (million metric tonnes). The mineral resources increased by 0.8%. The main reason for the increase in the reserve and resource was production and drilling at Liikavaara. A large portion of the reserve has been downgraded from Proved to Probable as part of a standardization across Boliden assets to only consider mineral reserves proved if all permits/facilities are in place or there is a high degree of confidence in achieving them in time.

Table 1. Summation of total Aitik operational area mineral reserves and resources per 2021-12-31. Reserves and resources from 2020-12-31 as comparison to the right

Classification	2021				2020			
	kton 12/31/2020	Au (g/t)	Ag (g/t)	Cu (%)	kton 12/31/2019	Au (g/t)	Ag (g/t)	Cu (%)
Proved Mineral Reserve	154 000	0.08	1.1	0.19	702 000	0.14	1.2	0.22
Probable Mineral Reserve	1 153 000	0.16	1.2	0.22	651 000	0.16	1.2	0.22
Total Mineral Reserve	*1 307 000*	*0.15*	*1.2*	*0.22*	*1 353 000*	*0.15*	*1.2*	*0.22*
Measured Mineral Resource	281 000	0.06	0.7	0.15	272 000	0.06	0.6	0.15
Indicated Mineral Resource	621 000	0.09	0.8	0.17	623 000	0.09	0.8	0.17
Inferred Mineral Resource	15 000	0.14	0.7	0.19	16 000	0.13	0.7	0.19
Total Mineral Resource	*917 000*	*0.08*	*0.7*	*0.16*	*910 000*	*0.08*	*0.7*	*0.16*

1.1 Competence

The compilation of this report has been completed by a team of professionals who work directly for Boliden Mineral AB and are listed as contributors in Table 2 below, along with responsible competent persons.

Table 2. Contributors and responsible competent persons for this report

Description	Contributors	Responsible CP
Compilation of this report	Peter Karlsson/ Ian McGimpsey/Anil Chatterji	Ian McGimpsey
Geology	Peter Karlsson/Anil Chatterji	Ian McGimpsey
Mineral Resource	Ian McGimpsey	Ian McGimpsey
Mineral Reserve	Peter Karlsson	Ian McGimpsey
Mineral processing	Matti Linna	Andreas Berggren
Mining	Anders Melén	Hilmi Pehriz
Environmental and legal permits	Åsa Sjöblom	Nils Eriksson

The report has been verified and approved by Ian McGimpsey who is employed by Boliden as a Senior Resource Geologist and is a member of FAMMP[1] . Ian McGimpsey has over 10 years of experience in the Exploration and Mining Industry.

Hilmi Pehriz works for Boliden as Mine Planning Manager and is a member of FAMMP. Hilmi Pehriz has over 10 years' experience in Mining Industry.

[1] Fennoscandian Association for Metals and Minerals Professionals

Andreas Berggren works for Boliden as a Manager for the Process Technology Department and is a member of FAMMP. Andreas has more than 20 years of experience from the Mining industry.

Nils Eriksson works for Boliden as Head of Section for Permitting and Environmental support. Nils is a member of FAMMP and has more than 25 years of experience from the mining industry.

2 GENERAL INTRODUCTION

This report is issued annually to inform the public (shareholders and potential investors) of the mineral assets in Aitik held by Boliden. The report is a summary of internal reports / Competent Persons' Reports for Aitik. Boliden's method of reporting Mineral Resources and Mineral Reserves intends to comply with 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.

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.

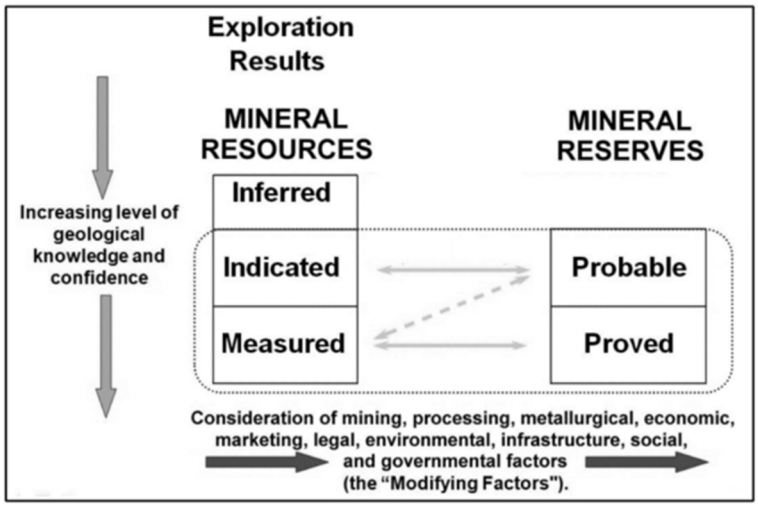


Figure 1. General relationship between Exploration Results, Mineral Resources and Mineral Reserves (PERC 2017).

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.

The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.

Boliden reports Mineral Resources additional to or exclusive of the Mineral Reserves.

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.

3 AITIK

Aitik is a Palaeoproterozoic porphyry Cu-Au-Ag deposit, mined as open pit mine consisting of two active pits; Salmijärvi and Aitik. There are also plans to start a third open pit operation in Liikavaara, a satellite, Palaeoproterozoic Cu-(W-Au) deposit, situated 3 km east of Aitik. The mining in Aitik is commenced at three pushbacks designated S3, N6 and N7. Salmijärvi has one active pushback called SA2. The mined out ore tonnage in 2021 totaled 40 100 kt. Copper is the most valuable commodity in Aitik, accounting for about 80 % of the revenue. The second most valuable commodity is Gold at 15%, followed by Silver at 5%.

3.1 Major changes

In 2021 the total mineral reserves in Aitik decreased by 46 Mt (million metric tonnes) to 1 307 Mt, primarily from annual production. Measured and Indicated resource in Aitik increased by 7 Mt to 902 Mt. Inferred resource increased by 3 Mt to 15 Mt. A large portion of the reserve has been downgraded from Proved to Probable as part of a standardization across Boliden assets to only consider mineral reserves proved if all permits/facilities are in place or there is a high degree of confidence in achieving them in time.

3.2 Location

The Aitik mine is located in Gällivare municipality, Norrbotten county, northern Sweden about 60 km north of the Arctic Circle and 15 km east of Gällivare town center (Figure 2). The Liikavaara deposit is located 3 km east of Aitik. The mining area consists of two open pits (Aitik and Salmijärvi), waste rock and overburden dumps, an industrial area hosting maintenance and office facilities, a concentrator plant, a tailings magazine, and a rail transport terminal.

Sulphide concentrate, containing payable copper, gold, and silver, is transported by rail to Boliden Mineral AB's Rönnskär smelter located about 350 km to the south of Aitik in Skelleftehamn.

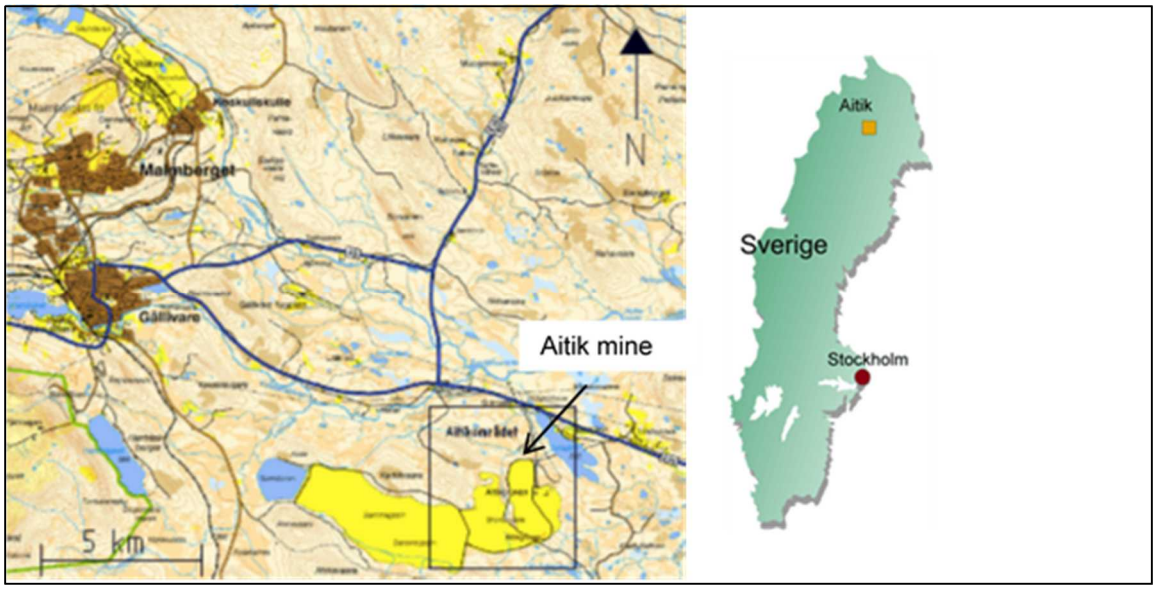


Figure 2. Location of the Aitik mine

3.3 History

The following is a short summary describing the discovery and development of the Aitik deposit:

- 1930: several boulders with significant amounts of chalcopyrite were discovered in the vicinity of Liikavaara and Aitikvaara by local prospectors.
- 1948-1964: Geochemical and geophysical surveys are carried out. Definition drilling of the Aitik and Liikavaara deposits takes place.
- 1965: Feasibility study completed.
- 1966: Construction of the Aitik mine and concentrator is begun.
- 1968: First production at Aitik. Initial production rate is 2 Mt/yr at a head grade of 0.51% Cu.
- 1972 –2000: Continuous expansions from 2Mt/yr to 18Mt/yr: Operating grade head during this period fluctuates in the vicinity of 0.40% Cu, 0.25 g/t Au, and 4 g/t Ag.
- 2010: Construction phase of Aitik 36 expansion project complete.
- 2021: Year-end ore processing achieves 40.1 Mt at a head grade of 0.22% Cu, 0.11 g/t Au, and 0.9 g/t Ag.

Table 3. Annual production numbers for 2000-2021. Between 1968 and 2000 the processed ore tonnage and grades are presented with 5-year intervals.

Year	Ore	Cu	Au	Ag	Recovery (%)		
	kton	%	g/t	g/t	Cu	Au	Ag
1968	435	0.39	-	-	90.1	-	-
1970	2285	0.50	-	-	89.4	-	-
1975	6711	0.40	0.24	3.7	90.2	46.9	68.1
1980	6436	0.39	0.24	3.6	88.5	44.0	69.7
1985	10 713	0.40	0.28	3.7	90.4	56.0	64.0
1990	12 015	0.38	0.24	3.8	89.1	56.3	69.0
1995	17 465	0.38	0.22	3.2	90.5	50.7	75.2
2000	18 219	0.42	0.17	4.1	89.3	49.5	74.9
2001	17 723	0.40	0.19	3.6	89.4	50.1	75.3
2002	18 601	0.35	0.17	3.6	88.4	48.2	70.4
2003	18 022	0.37	0.16	4.2	88.7	48.5	72.5
2004	17 663	0.41	0.23	3.8	89.0	50.6	67.6
2005	16 674	0.44	0.22	3.6	89.4	50.7	69.1
2006	18 481	0.40	0.25	2.7	89.6	50.7	70.3
2007	18 178	0.32	0.14	3.7	86.9	45.4	63.2
2008	17 813	0.30	0.14	2.8	87.9	48.5	64.9
2009	18 791	0.27	0.13	2.0	89.7	55.1	66.8
2010	27 596	0.27	0.15	2.1	90.0	53.5	64.4
2011	31 541	0.24	0.14	2.2	89.8	54.7	64.4
2012	34 321	0.22	0.11	2.5	89.9	50.7	61.0
2013	37 070	0.21	0.10	2.3	89.6	49.4	65.1
2014	39 090	0.20	0.09	2.1	88.4	49.3	66.3
2015	36 361	0.21	0.11	2.4	87.2	50.2	69.1
2016	36 051	0.22	0.11	2.1	88.3	51.2	74.3
2017	39 045	0.28	0.13	2.0	89.5	55.7	80.2
2018	38 472	0.29	0.14	1.8	90.4	57.6	78.6
2019	40 661	0.25	0.13	1.2	89.2	56.8	80.2
2020	41 661	0.24	0.13	1.1	90.1	57.1	78.2
2021	40 100	0.22	0.11	0.9	90.2	57.0	75.6

3.4 Ownership and Royalties

Boliden Mineral AB owns 100 % of the Aitik mine. In Aitik there is a mineral charge for the processing concessions Aitik K nr 4 (the Salmijärvi pit) and Aitik K nr 5 (towards Aitik East). The mineral charge is 2% of the value of mined and raised ore after concentration (yield losses are subtracted). 1.5% goes to the landowner (Boliden) and 0.5% goes to the state. In Liikavaara, all estates where mining of ore is planned today have been bought by Boliden.

3.5 Environment, Social and Governance (ESG) and Permits

3.5.1 Permits

Current processing concessions (Aitik K nr 1-5) encompass the entire area where mining in the Aitik and Salmijärvi pits is planned according to the present LOMP. Additional mining concessions over the Aitik East area will be required in the future to be able to extract the complete mineral reserves.

According to the current environmental permit for the Aitik operations (partial verdict from the land- and environmental court October 3rd 2014 in case M3092-12, in all material respects established by the supreme land- and environmental court January 22nd 2016 in case M10031-14) Boliden Mineral AB is allowed to mine and concentrate up to 45 Mton ore/year. The permit is limited in time, in that the permitted amount of deposited waste rock has been calculated to be reached during year 2024. An application to extend the amount of waste rock that can be stored is planned to be filed to the land and environmental court at the end of March 2022. This will extend the validity of the current permit until 2026, when the permitted tailings pond will be filled with tailings. An application for a new permit for the entire Aitik operations is planned to be filed to the land and environmental court at the end of the year. This application will also include raising the existing TMF in order to allow tailings disposal for the permittable 10 year period. This has been considered in the reserve classification.

In relation to the recent developments regarding how to assess and evaluate the risk of static liquefaction, comprehensive studies of the tailings characteristics and the foundation characteristics, are being performed at Aitik. Based on initial results of these investigations Boliden has come to the conclusion that additional buttressing material is necessary to guarantee dam stability if the tailings would liquefy. Boliden has submitted an application regarding additional dam safety measures within already permitted dam heights in February 2021. Boliden is currently performing studies regarding the best dam construction method to use in order to optimize the future use of the existing TMF. Regardless of which dam construction method that will be used, parts of existing infrastructure will be affected by the increased footprint of the dams and will therefore need to be replaced.

Future development of Aitik according to LOMP will require the Municipality of Gällivare to up-date the local planning conditions. This work is ongoing.

Table 4. Current processing concessions for Boliden Aitik; please see Figure 3 for the locations

Name	Comprises	Ref	Decision date	Valid until
Aitik K nr 1	Cu, Ag, Au	320-669-98	1999-12-16	2024-12-31
Aitik K nr 2	Cu, Ag, Au	22-1367-2000	2001-07-12	2026-07-11
Aitik K nr 3	Cu, Ag, Au	22-122-2003	2003-05-14	2028-05-13
Aitik K nr 4	Cu, Ag, Au, Mo	22-88-2005	2007-08-29	2032-08-28
Aitik K nr 5	Cu, Ag, Au, Mo	22-36-2015	2015-08-12	2040-08-11
Fridhem K nr 1	Cu, Ag, Au	22-53-2000	2000-05-04	2025-05-03
Liikavaara K nr 1	Cu, Ag, Au	320-665-98	1999-12-28	2024-12-31
Liikavaara K nr 2	Cu, Ag, Au	applied		

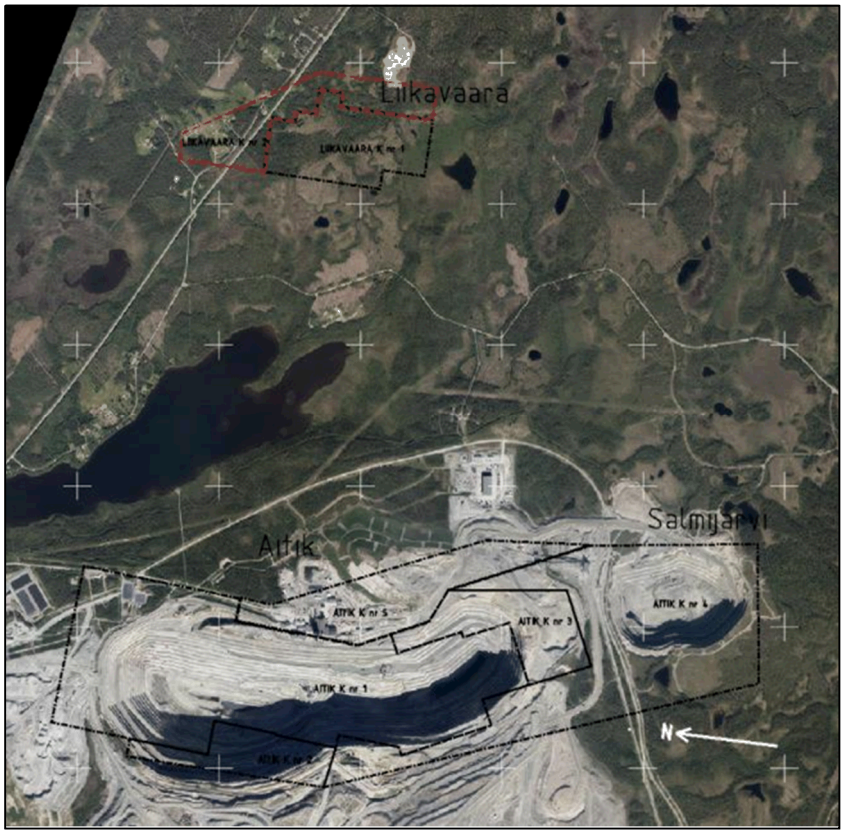


Figure 3. Map showing mining concessions at Aitik and Liikavaara. Aerial photo from summer 2018

In order to utilize the mineralization in the planned Liikavaara open pit in the best way possible, Boliden has, as of March 16th 2018, applied for an extension (Liikavaara K nr 2) of the existing procession concession (Liikavaara K nr 1). The company has also applied for an environmental permit for the planned operations in Liikavaara (2018-09-28). Since the deposition of potentially acid forming waste rock and tailings, as well as handling of affected water, will take place in Aitik, the company judges that this issue can be handled as a minor change to the current permit. However, Boliden also judges that there is a risk of a delay in the process, due to e.g. relocation of public road E10, Natura 2000 considerations and potential appeals of permits. This has been considered in the reserve classification. A positive verdict for Liikavaara was given by the Land and Environmental Court in April 2021. The verdict was appealed and the Supreme Environmental court decided not to grant

leave to appeal. This verdict has been appealed to the supreme court which has not yet ruled on if it will give grant to appeal. The handling of the Liikavaara K nr 2 processing concession has been paused until the Land and Environmental Court has reached a verdict regarding Natura 2000 issues.

3.5.2 Environmental, Social and Governance Commitments

Boliden is a member of the International Council on Mining and Metals and the national mining associations in the countries where Boliden Mines operates. These commitments imply implementing relevant international and national EMS standards and guidelines, such as, e.g., the Global Industry Standard on Tailings Management on an international level and Mining RIDAS on a national level. In addition to this, Boliden Mines is certified according to a series of standards, such as:

- ISO 14001:2015 - Environmental management systems.
- ISO 45001:2018 - Occupational health and safety management systems.
- ISO 50001:2018 - Energy management systems.

Boliden has implemented an integrated management system (Boliden Management System, BMS) which sets a common base for all activities developed within the company.
Boliden strive to run a responsible business and expect it´s business partners to do the same. Good business ethics is essential for sustainable and successful business. Boliden has an ethics and compliance department to boost its compliance work. The department is responsible for the strategic development and coordination of Boliden's work regarding anti-money laundering, anti-corruption, competition law, sanctions, human rights, data protection, whistleblowing and Boliden's employees and management work together to create a compliance culture in which everyone knows what is expected of them - Boliden's codes of conduct. Regular risk assessments, trainings, audits and effective controls are important parts of Boliden's compliance efforts. The Group's whistleblower channel enables all employees and external stakeholders to report suspected and actual misconduct confidentially and anonymously. If misconduct is proven, disciplinary actions must be taken. Reprisals against anyone reporting misconduct in good faith will not be tolerated. Group management and the Board of Directors receive regular reports on risks, non-compliance and the status of initiatives in progress.

Boliden's Code of Conduct provides a framework for corporate responsibility based on the company's values and ethical principles. All employees and members of the Board are subject to the Code, which is based on international standards and relevant legislation. As a complement to the Code, there are internal policies that all employees are expected to comply with. Boliden strives for a sustainable value chain and therefore applies an overarching business ethics and risk management strategy when selecting business partners. The Business Partner Code of Conduct reflects the requirements placed on Boliden's own organization and sets the lowest standard of ethical conduct required of all parties in the value chain, whether Boliden is the buyer or seller. As with the internal Code of Conduct, this code is based on international standards such as the UN's Global Compact, the ILO's standard core conventions and guidance from the OECD. Compliance and sustainability risks are assessed when selecting business partners. If there is a risk of non-compliance by a business partner, a more detailed review is made. Depending on the outcome, an action plan may be developed and agreed upon, or the business relation may be terminated or rejected.

Boliden is a member of the United Nations Global Compact and works constantly to implement its ten principles, including preventing and limiting negative impact in the own operations and those of its external business partners. Boliden runs operations in countries where the risk of human rights violations is considered low. No operations are conducted anywhere in UNESCO's World Heritage List. Boliden supports the right of indigenous peoples to consultations under Svemin's interpretation of FPIC. Other important aspects are fair working conditions and the position Boliden has adopted against any form of harassment, discrimination and other behavior that may be considered as victimization by colleagues or related parties. In addition to this, aspects such as child and forced labor as well as the freedom to form and join trade unions are taken into account when evaluating business partners.

Anti-corruption forms a central part of the ethics and compliance work, and Boliden has a zero tolerance policy regarding all types of bribery and corruption. Boliden has an anti-money laundering policy for identifying and managing risks in various parts of the business and to strengthen its anti-money laundering efforts.

3.5.2.1 Socio-economical impact

Aitik is located in the municipality of Gällivare. Typically inland municipalities in northern Sweden are characterized by high average age, shrinking population, low education level and high unemployment. Gällivare has, since the 1960-ties, had a similar trend with regard to average age, shrinking population and low education level. However, Gällivare has one of the lowest unemployment rates and highest employment rates in Sweden. The average income is also amongst the highest in Sweden.

The mining industry is the likely reason for the low unemployment rate, the high employment ratio and the high average income in the municipality. Mining industry, with Boliden Aitik and LKAB Malmberget mines within the municipality, generates not only direct employment, but also serves as an engine for the local economy.

The Aitik mine has approximately 830 employees, of which 99% are local residents within Gällivare municipality. Aitik is the biggest private employer in the municipality and employs 9.5% of the total workforce in the municipality. In addition, it is assessed that Aitik generates 1450 indirect jobs (entrepreneurs and providers of services and goods) and additional induced jobs as a direct consequence of the activities at Aitik. At Aitik, women constitute more than 30% of the employees, contributing to the strengthening women's position on the job market in Gällivare.

Aitik is assessed to have a significant positive impact on the socio-economical situation in Gällivare municipality.

In addition to jobs and taxes, Aitik contributes to the social sustainability and the socio-economical situation in many other ways. As an example Boliden Aitik is engaged in, and contributes to, many local activities and organisations. The effects of this engagement is difficult to quantify but is assessed to positively contribute to the development of the area. Northern Sweden has a long tradition of mining and extractive industry which has resulted in an acceptance and tolerance even for the negative impacts caused by the industry. Examples of this are the re-location of the town of Kiruna due to the expanding subsidence area

around the LKAB mine, and the re-location of large parts of the town of Malmberget due to the same reason at LKAB's Malmberget mine. This is also the case at Aitik where Boliden has re-located 22 households in the villages of Sakajärvi and Liikavaara as the living conditions in these two villages were assessed to become poor when Liikavaara open pit opens.

3.5.2.2 Communities and land-owners

The area surrounding Aitik is mainly forest, often with high natural conservation values. The surface waters surrounding Aitik are to a large extent declared as Natura 2000 areas due to their high conservation values.

Apart from forestry and reindeer farming the most common land-use is hunting, fishing, berry picking and recreation. Aitik has a significant impact on land-use in the local area as the mining area is surrounded by a fence for security reasons. This limits access and cuts off original access routes and implies additional work for the active reindeer farmers. Boliden tries to compensate for this inconvenience by providing alternative access roads as well as economical compensation to the reindeer farmers.

3.5.2.3 Indigenous people

Aitik is located within the reindeer management area for Gällivare forest-Sami community. This Sami community conduct their activities within an area stretching from the town of Gällivare down to the coast north of the Lule-river. Within the community there are approximately 20 active reindeer herders, 270 reindeer owners and the maximum number of reindeers is 7 000 in the winter. The community is divided into 8 groups.

Gällivare forest-Sami community keep their reindeers in a traditional way in close contact to the environment where a fundamental aspect is access to continuous and functional grazing lands with undisturbed grazing for the reindeers. Within the lands used by the community there are 8 areas declared to be of national interest for the reindeer management. One of these areas, Leipojärvi, is located north of Aitik and is affected by the Liikavaara expansion. In general, for the reindeer management a single project, as for e.g. Liikavaara is not the main problem, but rather the accumulated pressure on their lands. Gällivare forest-sámi community in general, and in particular the Rattuka-group within the community, which is active around Aitik, is affected by the mining activities at Aitik. Mining affects reindeer management in various ways, such as its land requirements, noise, dust and transports which results in the reindeers avoiding the areas around Aitik. The fence surrounding Aitik complicates the movements of the reindeer herds and the Liikavaara expansion affects 4% of the Leipojärvi area during the operational time of Liikavaara.

Boliden Aitik is well aware of the consequences and the problems the mining at Aitik causes for Gällivare forest-Sami community and in particular for the Rattuka-group. In order to minimize and to compensate for the impacts a well established dialogue is maintained between Aitik and the same community. Within this dialogue the mutual understanding of the two businesses is favored and measures to minimize and compensate for impact are developed. There is also an agreement between Boliden and the Sami community in place regulating amongst other aspects the economical compensation to be paid to Gällivare forest-Sami community.

In addition to this, Boliden is engaged in a series of research projects and compensation measures to, e.g., improve forestry management to enhance lichen growth or facilitate the movements of the reindeer herds.

3.6 Geology

The Aitik, Salmijärvi, and Aitik East deposits occur along a largely continuous elongate mineralized trend (the Aitik-Salmijärvi mineralization) stretching approximately 5 km along strike from north to south averaging about 500 m in width.

Host rocks of the mineralization at the Aitik deposit consist mainly of paleo-proterozoic (ca. 1.89 billion years) muscovite schists, biotite gneisses, and amphibole-biotite gneisses of volcanic and volcanoclastic origin, crosscut locally by diorite intrusive units. In places the diorite intrusive make up a significant proportion of the mineralized volume, but typically at lower than average grade. Foliation is well developed in the host rocks, dipping at about 50 degrees to the west. The mineralization is mainly structurally controlled and the main mineralisation; Aitik is delineated by a hangingwall thrust and a footwall shear, Figure 4 and Figure 5. Main sulfide minerals in the deposit are chalcopyrite, pyrite and pyrrhotite, with significant accessory minerals including magnetite, molybdenite and sulfates. The entire package has been metamorphosed to amphibolite grade resulting in significant re-crystallization and coarsening of both sulfide and silicate minerals. Late granite pegmatite dikes crosscut the mineralized host rocks and are generally weakly mineralized to barren.

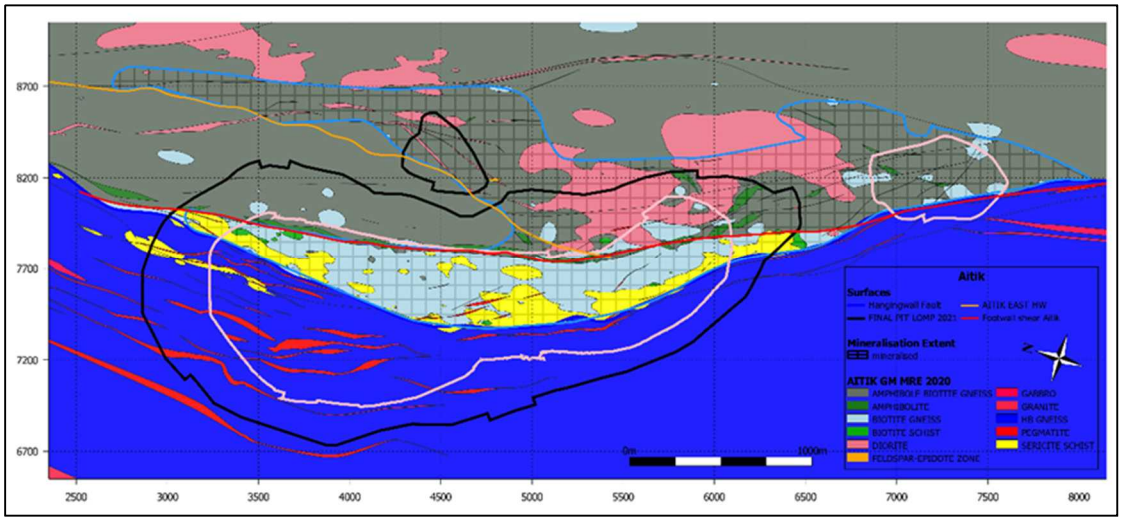


Figure 4. Plan view at -100z, showing the geology of Aitik and the planned pushbacks. The dashed Area shows the mineralization shell for > 0.06% Cu. The north arrow shows geographic north

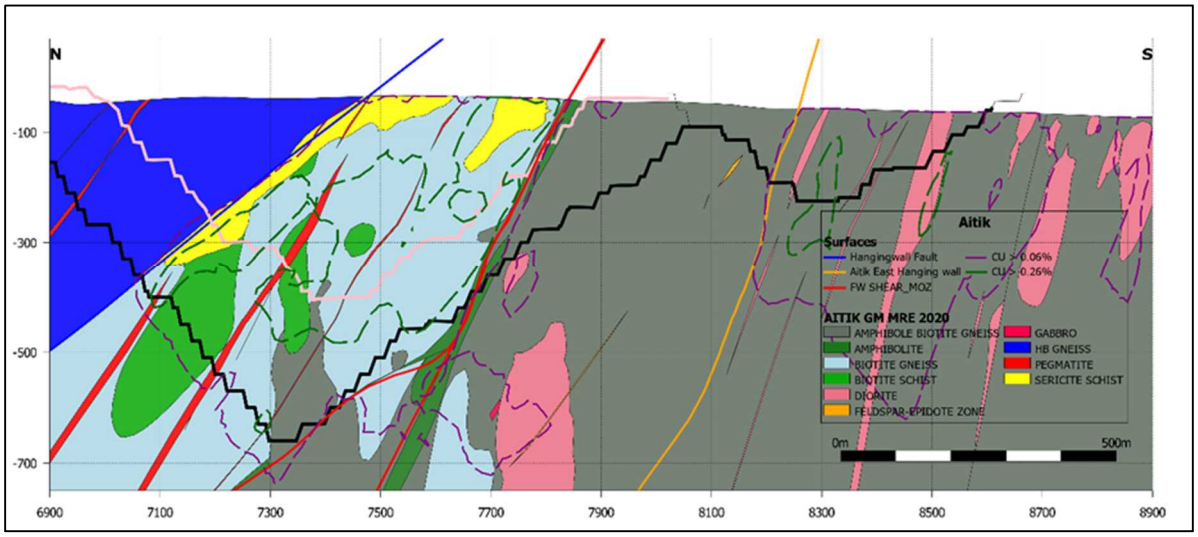


Figure 5. Crossection A-A'

Mineralization at the Salmijärvi and Aitik East deposits is very similar in nature to the Aitik deposit, with the exception that host rocks are strongly dominated by amphibole-biotite gneisses and local diorite. Sulphide mineralization in these deposits is dominated by chalcopyrite, pyrite and pyrrhotite, although at typically lower grade than in the Aitik deposit.

About 3 km to the east, on separate and volumetrically smaller mineralized trend, sits the paleoproterozoic Liikavaara Cu-(W-Au) deposit (Figure 6). At Liikavaara the mineralisation is hosted by quartz±tourmaline-calcite veins, calcite veins and aplite dykes that cross-cut biotite-amphibole schists and gneisses, steeply dipping to the west. The mineralisation is mainly chalcopyrite, pyrrhotite and pyrite, accessory minerals are sphalerite, galena, scheelite, molybdenite and magnetite. Liikavaara shows slight enrichments in Au, Ag and Bi.

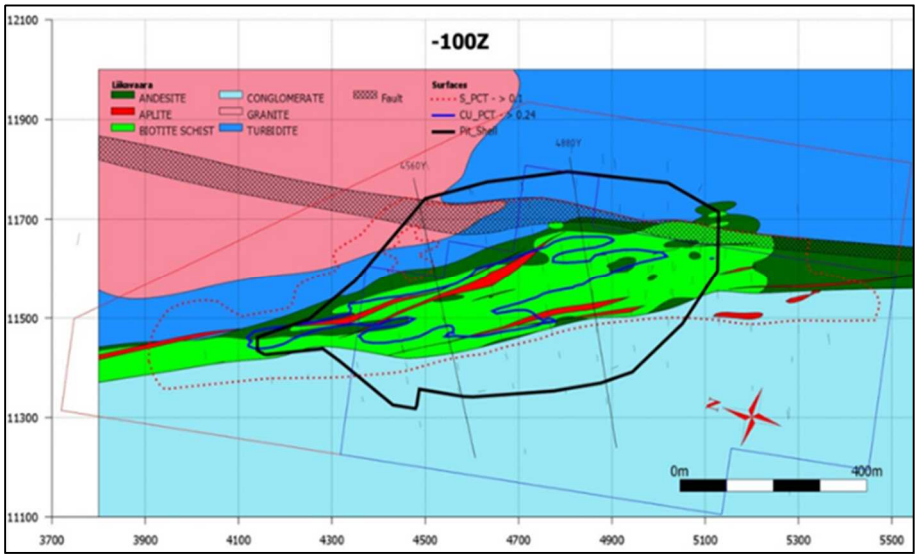


Figure 6. Plan view over Liikavaara geology at 100m depth The current concession (Liikavaara K nr1) is highlighted by the blue line and the applied (Liikavaara K nr 2) by a red line.

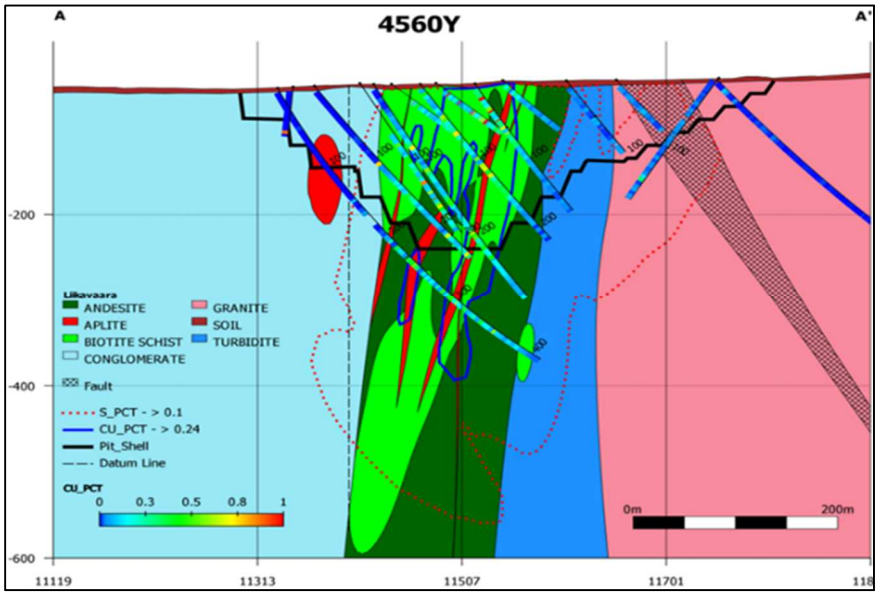


Figure 7. Oblique cross section, along 4560Y (Figure 6), looking north. Including the planned pit shell and diamond drill holes.

3.7 Exploration procedures and data

3.7.1 Drilling techniques

Diamond drilling assay data is used for mineral resource estimation. Drilling is performed by drilling contractor OY KATI AB and supervised by Boliden personnel. The current practice is to measure all diamond drillholes for deviation with Gyro. during 2021 has SPT Gyromaster been used by the drilling contractor.

3.7.2 Sampling, analyses, and QAQC

The drill core is logged and sampled by Boliden geologists. Standard samples, blanks and duplicates are inserted into every sample batch to ensure that the quality of the assay results is satisfactory. Sample assaying is carried out by ALS Minerals laboratories and duplicate check assays performed by BVM, both of which are independent actors. QAQC (Quality Assurance Quality Control) protocol is implemented all the way through from drilling to assaying.

Calculation of the reserves and resources estimated herein is based on the modeling of data from a total of over 1 100 drill holes in the operational area, totaling over 400000 m of drilling and dating from the late 1950's to present. From this a total of 75 000 composites have been taken and analyzed, the majority of which for Au, Ag, Cu, Mo, and S.

For the non-legacy assay data utilized in these reserve and resource estimates (that dating from year 2008 and later), half core samples were prepared at ALS Minerals laboratory in Öjebyn, Sweden and then shipped to analytical facilities in either Vancouver, Canada or Ireland. Samples were analyzed for Au using a 50 g fire assay with and ICP-AES finish. Ag, Cu and Mo were analyzed using aqua regia digestion and AAS finish, and S using the Total Sulphur (LECO) technique. A system of blanks, standards, (system introduced 2011) and pulp duplicates were added to the sample stream by Boliden to verify accuracy and precision of assay results, supplementing and verifying a variety of internal QAQC tests performed by ALS Minerals

For legacy data (that dating pre-2008) verification has been carried out mainly by using drill hole twinning as well as grade and tonnage reconciliation from producing operational areas. Not all legacy data is considered fit for purpose and is excluded from mineral resource estimations when that is the case.

3.8 Exploration activities

In 2021, diamond drilling was conducted by Boliden Near Mine Exploration at the northern part of the Aitik deposit, the Salmijärvi deposit, and the Liikavaara deposit totaling 14 500m.

3.9 Mining methods, mineral processing and infrastructure

3.9.1 Mining methods

The ore is mined in two open pits along the same mineral deposit. The main pit is called Aitik and measures roughly 4 km by 1.1 km at surface, with the deepest point currently at 480 meters from surface (Figure 8). In 2010, mining commenced in a second pit called Salmijärvi which has currently reached a depth of 225 meters below surface, with a surface foot print of roughly 0.9 by 0.6 km. The main pit will be expanded in all directions with five new pushbacks. Mining of pushback S3 in the southern part of the main pit started in 2016. Prestripping of pushback N7 commenced in 2019 to allow mining to start during 2020, No further expansions are planned for the Salmijärvi pit after the current pushback.

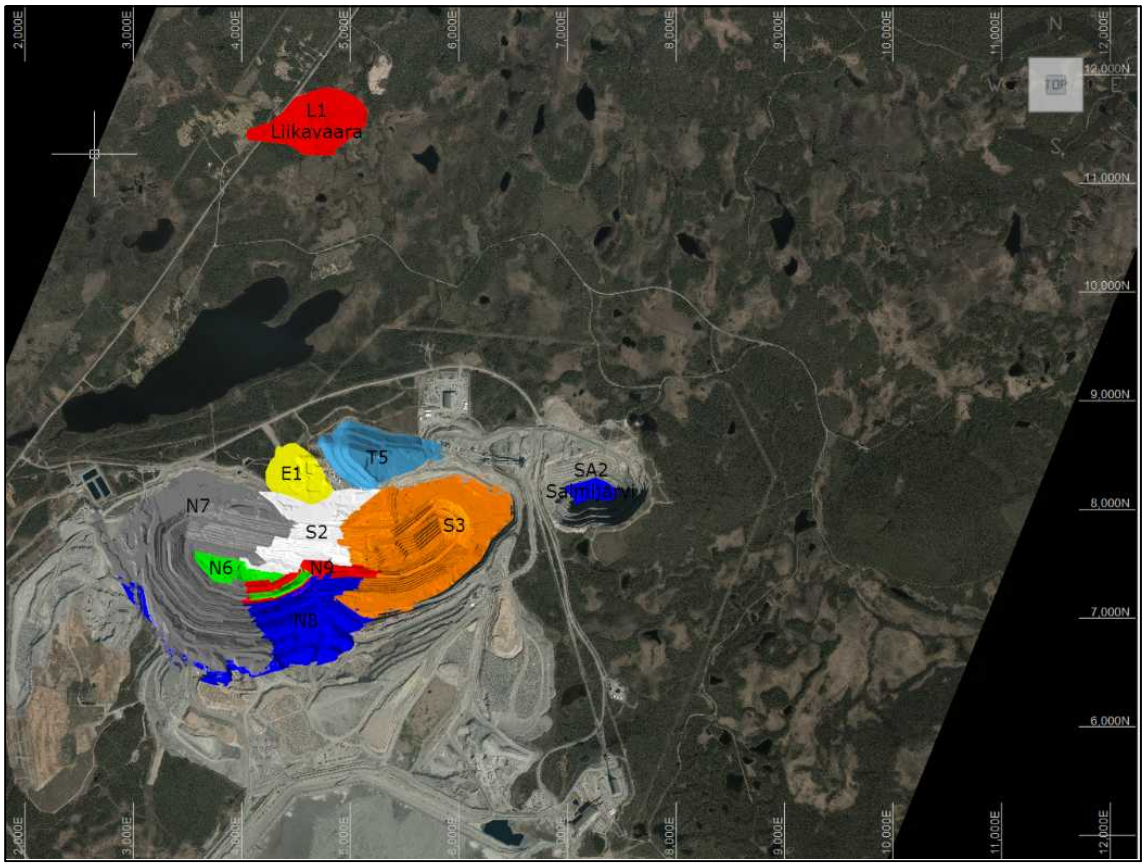


Figure 8. Overview of planned and active pushbacks at Aitik.

The ore and waste rock is blasted in 15 meter high benches and is loaded on 300 tons capacity size trucks by large rope shovels or hydraulic excavators. Ore from the deeper parts of the main pit is fed to one of two in-pit-crushers, while ore from pushbacks near surface and from the Salmijärvi pit is transported to a surface crusher situated between the two pits. Waste rock is separated in the loading process and hauled by trucks to dumps at the surface, where potentially acid forming waste is dumped separately from non-acid forming waste.

Ore handled by the crushers in pit is transported on conveyor belts to an intermediate storage on surface, where it is mixed with ore from the surface crusher fed in by a separate conveyor line. From the intermediate storage another conveyor belt transports the ore up to the main ore storage beside the processing plant. The main ore storage has a storage capacity corresponding to about one day's production, providing buffer for the production.

3.9.2 Mineral processing

The Aitik mine has been mined for almost 50 years and the mineralogical variations impacting the metallurgical behavior is well known. In the process of adding new resources, the mineralogy is evaluated and decisions taken on how to assess the metallurgical performance of the resource. There is also an ongoing project to improve the grindability prediction in the whole reserve.

In the processing plant the ore is ground in two stages, with autogenous grinding in the primary stage and pebble mill grinding in the second. The milled ore is classified using a spiral classifier. Mineral separation is done by flotation and a copper concentrate is produced. The copper concentrate is dewatered using thickeners and air pressure filters. The precious metals are reported in the copper concentrate. The copper concentrate is trucked to on-site railway terminal and reloaded for further transport by rail to the Boliden Rönnskär smelter in Skelleftehamn.

3.10 Prices, terms and costs

Future income assumptions are based on Boliden's planning prices, which are an expression of the anticipated future average prices for approximately 10 years (Table 5).

Table 5. Boliden long term planning prices used in current Aitik Life of Mine pit optimization

	Planning prices
Copper	USD 6,600/tonne
Gold	USD 1,300/tr.oz
Silver	USD 17/tr.oz
USD/SEK	8.00

The Life of Mine Plan is used to determine the Mineral Reserve. The ultimate pit of Aitik main pit (as well as Salmijärvi and Aitik East) is based on the annual pit optimisation, while the Liikavaara pit was optimised in the Liikavaara Feasibility Study 2017. During the Liikavaara Feasibility Study 2017, the Boliden planning prices were 6200 USD/t for Cu, 1200 USD/tr.oz Au and 18 USD/tr.oz for Ag, while the exchange rate used was USD/SEK = 7.50. Unit costs used in the pit optimisations are shown in Table 6, together with reserve and resource cut-offs. To determine the Mineral Resource, simplified costs for pit optimisations, to determine reasonable prospects for eventual economic extraction (RPEEE), have been

derived from the outcome of the above mentioned studies, without discounting or mining schedule.

Table 6. Unit costs used within pit optimisations that determine Mineral Reserves and Mineral Resources.

Unit costs		Aitik	Liikavaara
Mineral Reserve			
Mining rock (fixed)	SEK/t	11.7	11.4
Mining rock (variable)	SEK/t/km	1.5	1.4
Mining free dig (fixed)	SEK/t	7.3	15.0
Mining free dig (variable)	SEK/t/km	1.5	-
Sustaining capex mining	SEK/t	1.8	-
Processing & Overhead	SEK/t	35.1	27.3
Sustaining capex processing & overhead	SEK/t	2.6	-
Cut-off		0.06% Cu	0.08% Cu
Mineral Resource			
Mining	SEK/t	20	20
Processing & overhead	SEK/t	30	30
Cut-off		0.06% Cu	0.08% Cu

3.11 Mineral resources

Two separate block models are used for the Aitik Mineral Resources and Reserves. One model covers the areas of the Aitik mine: Aitik, Aitik East, and Salmijärvi; and the other model covers the "Liikavaara" satellite deposit which is approximately 3 km from the active pit and as of yet unmined. The Aitik mineral estimation was carried out in Datamine Studio RM, and Liikavaara in Leapfrog Edge, in both cases after first domaining in Leapfrog Geo.

All reported elements are estimated using Ordinary Kriging. Drill holes are composited to 5m sections for both models. In the Aitik model, Cu is capped at 2.0%, Au at 2 ppm, and Ag at 20 ppm. Capping effects 0.07% of Cu assays, 0.12% of Au, and 0.10% of Ag. In the Liikavaara model grade clamping is used instead of grade capping. Grade clamping is a method of limiting the distance from a high grade sample that the sample is available to inform block estimations. In Liikavaara Au is clamped at 0.75 ppm, Ag at 17 ppm and Cu at 0.8%. This clamp is limited to half the normal search distance (table 7).

All lithologies in the models have been assigned a density based on specific gravity measurements. Blocks in both models are 20m (x), 20m (y), 15m (z), with sub-blocking to 10m (x), 10m (y), 15m (z). Block sizes are summarized in Table 8 below.

Table 7 Top capping in Liikavaara and Aitik block models.

	Liikavaara	Aitik
	Clamping	Top cap
Cu	0.8%	2%
Au	0.75 ppm	2 ppm
Ag	17 ppm	20 ppm

Table 8 Block size in Liikavaara and Aitik Resource models.

	Parent block	Sub-block
x	20 m	10 m
y	20 m	10 m
z	15 m	15 m

Resource classification is based on quality of data, geological continuity and knowledge of the deposit. Support for determining the Resource class comes from geostatistics such as kriging efficiency and slope of regression, as well as drill hole spacing. As a general rule drill hole spacing for a Measured Resource is 90m x 90m at Aitik, 50m (E) x 40m (N) at Liikavaara, and for an Indicated Resource 180m x 180m for Aitik and 100m (E) x 80m (N) for Liikavaara. Inferred Resource generally have no more than 200m to the nearest drill hole. The general drill hole patterns per Resource category are shown in Table 9 below.

Table 9 General drill hole spacing per Resource category.

	Liikavaara	Aitik
Measured	50E m * 40N m	90 m * 90 m
Indicated	100E m * 80N m	180 m * 180 m
Inferred	< 200m * 200 m	< 200m * 200 m

An initial classification is done on all blocks of the block model and then a pit optimization using Whittle software is completed for a Resource pit. All blocks within the Resource pit are then reported as the Resource as per their classification exclusive the Reserve.

3.12 Mineral reserves

A Life of Mine Plan is created on an annual basis and the final results of this plan are used to determine the Reserves. Due to the permitting situation and technical uncertainties regarding the dam build (see chapter 3.5), material after 2026 which otherwise would have been classed as a Proved Mineral Reserve, has been classed as a Probable Mineral Reserve. All blocks initially classed as Inferred in the Reserve pit are reported as Inferred Resource.

The same process was followed for the Reserve classification in the Liikavaara pit, except that all material that would otherwise have been classed as a Proved Mineral Reserve have been classed as a Probable Mineral Reserve due to not all permits being in place as of yet (see 3.5 Permits). Mineral Resources and Reserves for the entire mining area are shown in Table 10.

During the annual LoMP update performed in 2021, problems meeting planned productivity targets were identified. When factoring in actual achieved production rates, it was no longer possible to hit total mined ore tonnage goals in all years of the plan. Several projects have now been initiated to optimize the identified problem areas and a new LoMP will be developed in early 2022 which aims to optimize value throughout the mine life as opposed to a set ore feed tonnage.

The current reported Reserve is based on the LoMP work carried out in the 2020, as problems with actual vs. planned production levels are not yet fully examined. The ongoing

improvement projects and problems identified with the current LoMP, could result in changes in next year's Mineral Reserve.

Table 10. Mineral Resources and Mineral Reserves Aitik 2021-12-31

Classification	2021 kton 12/31/2020	Au (g/t)	Ag (g/t)	Cu (%)	2020 kton 12/31/2019	Au (g/t)	Ag (g/t)	Cu (%)
Proved Mineral Reserve	**154 000**	**0.08**	**1.1**	**0.19**	**702 000**	**0.14**	**1.2**	**0.22**
Probable Mineral Reserve	**1 153 000**	**0.16**	**1.2**	**0.22**	**651 000**	**0.16**	**1.2**	**0.22**
Total Mineral Reserve	*1 307 000*	*0.15*	*1.2*	*0.22*	*1 353 000*	*0.15*	*1.2*	*0.22*
Measured Mineral Resource	**281 000**	**0.06**	**0.7**	**0.15**	**272 000**	**0.06**	**0.6**	**0.15**
Indicated Mineral Resource	**621 000**	**0.09**	**0.8**	**0.17**	**623 000**	**0.09**	**0.8**	**0.17**
Inferred Mineral Resource	**15 000**	**0.14**	**0.7**	**0.19**	**16 000**	**0.13**	**0.7**	**0.19**
Total Mineral Resource	*917 000*	*0.08*	*0.7*	*0.16*	*910 000*	*0.08*	*0.7*	*0.16*

3.13 Comparison with previous year

Aitik's total ore reserve per 2021-12-31 (Table 11), has decreased by 46 000 kt from the previous year's estimate.. In total, 40 100 kt ore has been mined, mainly from pushbacks N6, Sa2 and S3. The additional 5 000 kt reduction resulted from infill drilling and redesign of a portion of a ramp.

Table 11. Explanation of changes to mineral reserve from 2020-2021

	Aitik kton	Salmijärvi kton	Aitik East kton	Liikavaara kton	T5 kton	T2 kton	Mine kTon
Mineral Reserve 20201231	**1 231 000**	**11 000**	**35 000**	**58 000**	**18 000**		**1353000**
Mined (total)	-34 000	-5 000			-1 000		-40000
Mined outside reserve							
Converted from resource							
Exploration							
Economic Assumptions							
Technical	-3 000				1 000		-2000
Geological, infill	-4 000						-4000
Position changed							
Written off							
Adjusting	1 000		-1 000				
Mineral Reserve 20211231	**1 191 000**	**6 000**	**34 000**	**58 000**	**18 000**		**1307000**
Change	-40 000	-5 000	-1 000				-46000
Change %	-3%	-45%	-3%				-3%

3.14 Reconciliation

In order to confirm the precision of the geological interpretation, modelling, grade interpolation etc. the block model grades are checked against the actual measured results from the processing plant. Reconciliation is carried out every month. For the annual report of reserves and resources the reconciliation is compiled from an aggregation of 12 months.

Production reconciliation is a useful tool for checking the quality of the block model used in calculating the ore reserve and mineral resource at Aitik. Reconciliation over the period 2011-2021 is presented in Table 12.

Table 12. Reconciliation figures over eleven years for Aitik

Reconciliation	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
kton concentrated Minestar (1)	30 975	35 048	38 540	37 005	35 972	35738	39404	38715	39337	39832	38971
kton concentrated Concentrator (2)	31 541	34 321	37 070	39 090	36 361	36051	39045	38472	40661	41661	40099
g/t Au Resource block model (3)	0.15	0.12	0.11	0.11	0.13	0.12	0.14	0.15	0.13	0.12	0.11
g/t Au Production block model (4)	0.15	0.12	0.11	0.11	0.13	0.12	0.14	0.14	0.13	0.12	0.11
g/t Au concentrator (5)	0.14	0.11	0.10	0.09	0.11	0.11	0.13	0.14	0.13	0.13	0.11
g/t Ag Resource block model (3)	1.9	2.1	1.9	1.8	2.1	2.0	2.1	1.8	1.2	1.0	0.9
g/t Ag Production block model (4)	2.0	2.1	1.9	1.8	2.1	2.0	2.1	1.7	1.2	1.0	0.9
g/t Ag concentrator (5)	2.2	2.5	2.3	2.1	2.5	2.1	1.9	1.8	1.2	1.1	0.9
%Cu Resource block model (3)	0.24	0.21	0.20	0.19	0.20	0.23	0.29	0.29	0.25	0.24	0.22
%Cu Production block model (4)	0.23	0.21	0.20	0.20	0.22	0.23	0.29	0.29	0.26	0.24	0.22
%Cu concentrator (5)	0.24	0.22	0.21	0.20	0.21	0.22	0.28	0.29	0.25	0.24	0.22
%S Resource block model (3)	1.2	1.2	1.2	1.0	1.5	1.5	1.4	1.2	0.9	0.8	0.6
%S Production block model (4)	1.2	1.2	1.2	1.0	1.5	1.5	1.4	1.1	0.9	0.8	0.6
%S concentrator (5)	1.1	1.3	1.3	1.1	1.5	1.4	1.2	1.1	1.0	1.0	0.8

Notes:

[1] Summation of ore tonnage from Minestar using data from shovel positions and truck scales, from May 2016 Minestar replaced the bespoken Prodadmin software

[2] official processed ore tonnange from Aitik concentrator plant based on data from belt scales

[3] summation of modeled head grade from resource block model using polygons created from shovel scoop position and blast field material type boundaries.

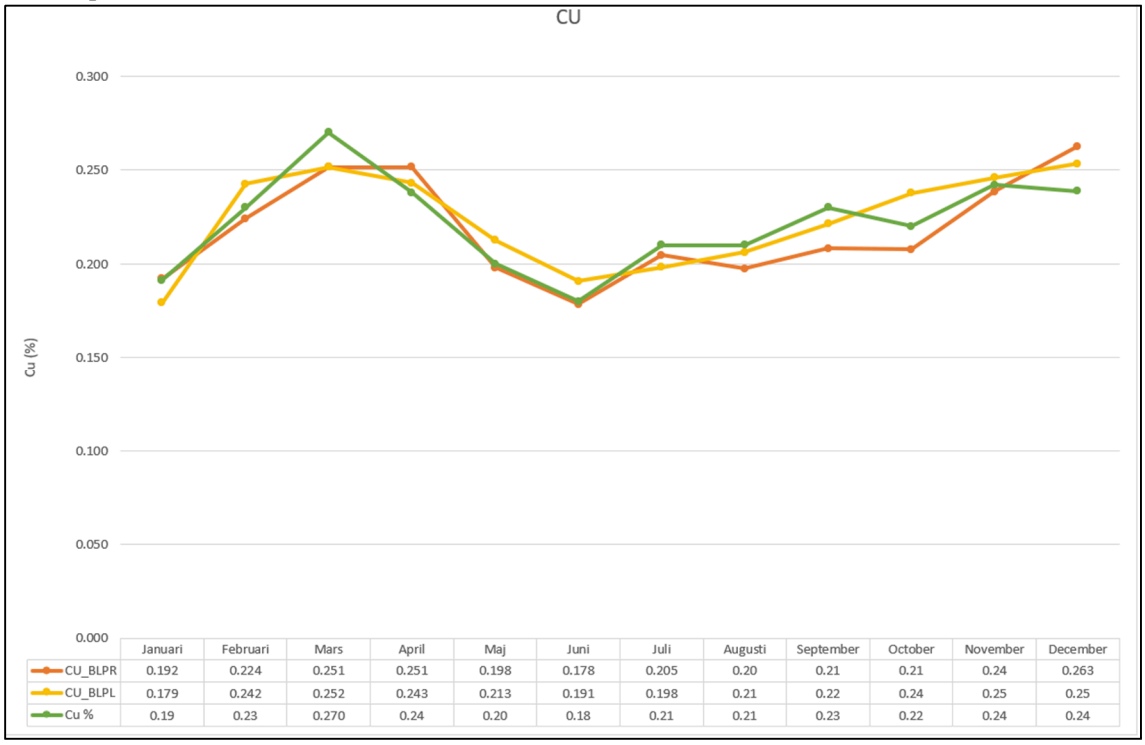
4 summation of modeled head grade from production block model using polygons created from shovel scoop position and blast field material type boundaries.

5 official summation of head grade based on concentrator plant analyses.

The realized/predicted values for Cu consistent with recent years of production and indicate a high-level reliability to the block model for the elements (0.1%). Cu, Au and Ag grade deviations for 2021 are within an acceptable relative precision. The realized values for S are significantly higher than the predicted it's, most probably, due to inadequate sulphur assaying of diamond drill core, more work to address the issue is recommended

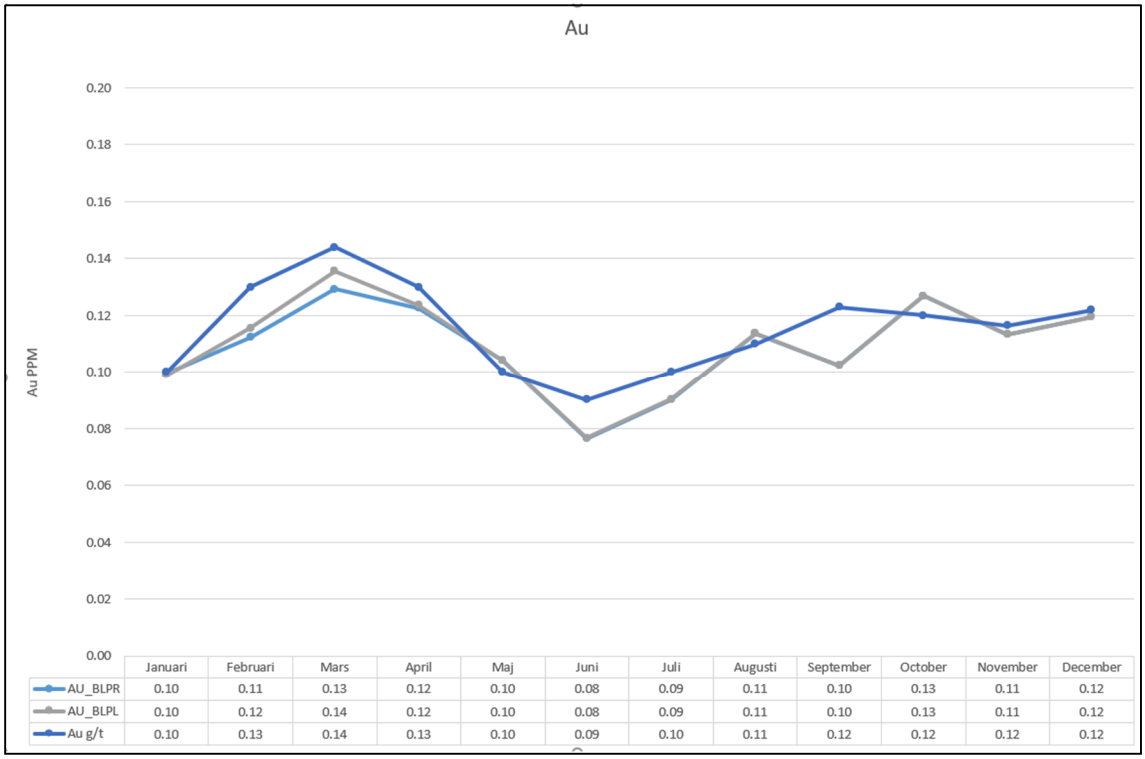
For grade control, samples are taken from virtually all blast holes within the ore zone to update the production block model (BLPR). The grades of the mined out ore are calculated from the production block model using the tonnage reported and surveyed monthly volumes of the pit. For long term planning and resource estimation the resource block model (BLPL) is used. During reconciliation the result from the plant is compared to both the BLPL and

BLPR, please see



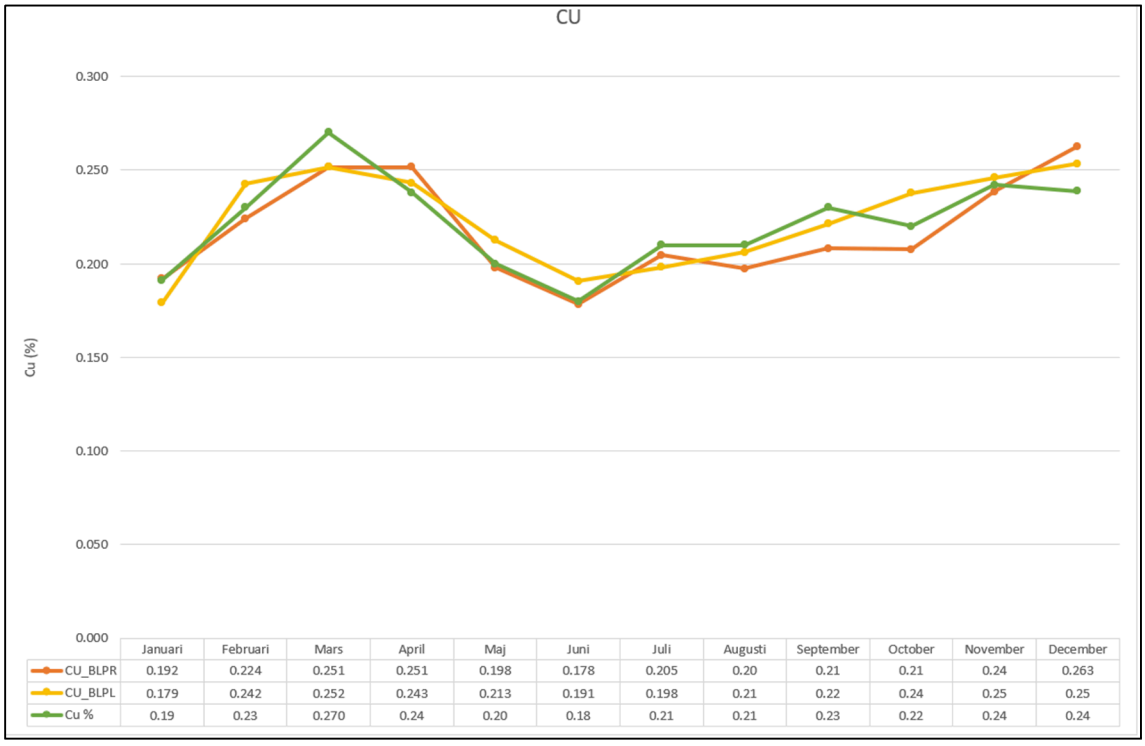
	Januari	Februari	Mars	April	Maj	Juni	Juli	Augusti	September	October	November	December
CU_BLPR	0.192	0.224	0.251	0.251	0.198	0.178	0.205	0.20	0.21	0.21	0.24	0.263
CU_BLPL	0.179	0.242	0.252	0.243	0.213	0.191	0.198	0.21	0.22	0.24	0.25	0.25
Cu %	0.19	0.23	0.270	0.24	0.20	0.18	0.21	0.21	0.23	0.22	0.24	0.24

Figure 9. Comparing measured results from the processing plant with calculated results from the block models for Cu.



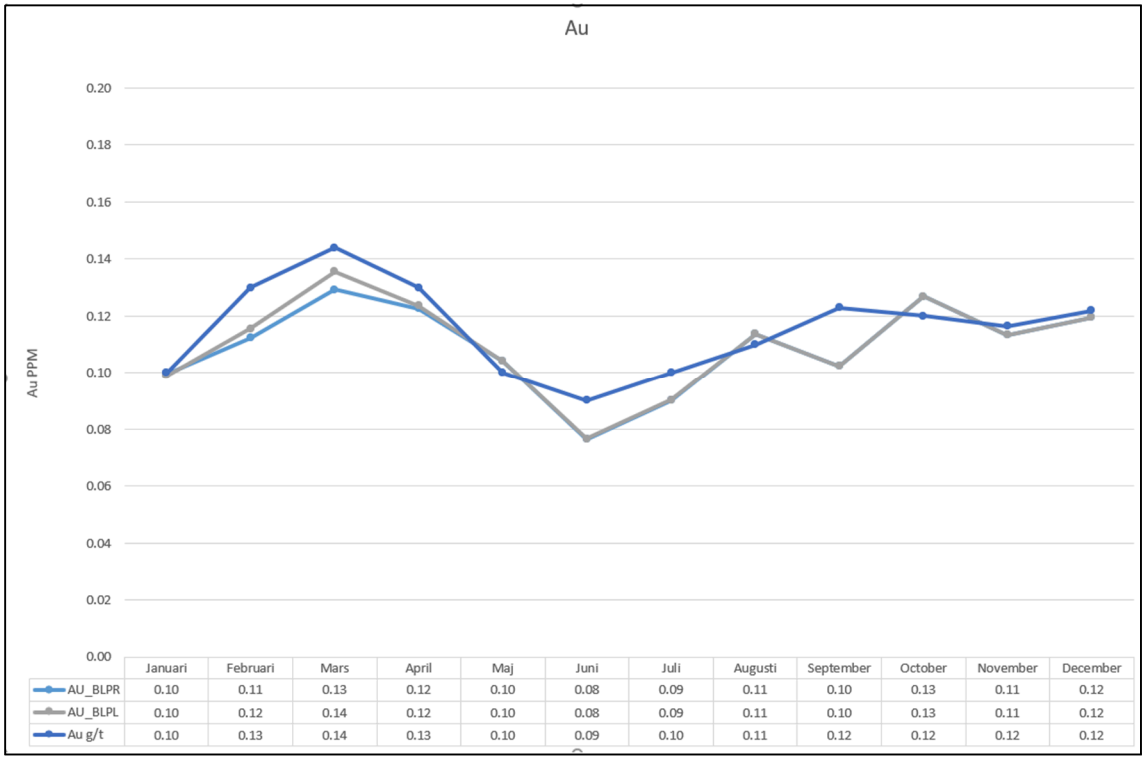
	Januari	Februari	Mars	April	Maj	Juni	Juli	Augusti	September	October	November	December
AU_BLPR	0.10	0.11	0.13	0.12	0.10	0.08	0.09	0.11	0.10	0.13	0.11	0.12
AU_BLPL	0.10	0.12	0.14	0.12	0.10	0.08	0.09	0.11	0.10	0.13	0.11	0.12
Au g/t	0.10	0.13	0.14	0.13	0.10	0.09	0.10	0.11	0.12	0.12	0.12	0.12

Figure 9 (Cu) and Figure 10 (Au), for last year's results.



	Januari	Februari	Mars	April	Maj	Juni	Juli	Augusti	September	October	November	December
CU_BLPR	0.192	0.224	0.251	0.251	0.198	0.178	0.205	0.20	0.21	0.21	0.24	0.263
CU_BLPL	0.179	0.242	0.252	0.243	0.213	0.191	0.198	0.21	0.22	0.24	0.25	0.25
Cu %	0.19	0.23	0.270	0.24	0.20	0.18	0.21	0.21	0.23	0.22	0.24	0.24

Figure 9. Comparing measured results from the processing plant with calculated results from the block models for Cu.



	Januari	Februari	Mars	April	Maj	Juni	Juli	Augusti	September	October	November	December
AU_BLPR	0.10	0.11	0.13	0.12	0.10	0.08	0.09	0.11	0.10	0.13	0.11	0.12
AU_BLPL	0.10	0.12	0.14	0.12	0.10	0.08	0.09	0.11	0.10	0.13	0.11	0.12
Au g/t	0.10	0.13	0.14	0.13	0.10	0.09	0.10	0.11	0.12	0.12	0.12	0.12

Figure 90. Comparing measured results from the processing plant with calculated results from the block models for Au.

4 REFERENCES

Pan-European Standard for reporting of Exploration results, Mineral Resources and Mineral Reserves (The PERC Reporting standard 2017). www.percstandard.eu