# Boliden Summary Report

Resources and Reserves | 2022

# Kevitsa Mine

Prepared by Loraine Berthet

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## Abbreviations used in this document

**PGE** for platinum-group elements

**TSF** for Tailing Storage Facility

**EIA** for Environmental Impact Assessment

**NSR** for Net Smelter Return

**LOMP** Life Of Mine Plan

**RPEEE** for Reasonable Prospects for Eventual Economic Extraction

**PERC** for Pan-European Reserves and Resources Reporting Committee

**FQM** for First Quantum Minerals Limited

**CRIRSCO** for Committee for Mineral Reserves International Reporting Standards

**FRB** for Fennoscandian Review Board

**AusIMM** for Australasian Institute of Mining and Metallurgy

**FAMMP** for Fennoscandian Association for Metals and Minerals Professionals

**MRE** for Mineral Resource Estimation and **GC** for Grade Control

**GTK** for Geological Survey of Finland

**SGL** for Scandinavian Minerals

**BKMOY** for Boliden Kevitsa Mining Oy

**BFXOY** for Boliden FinnEx Oy

**TUKES** for Finnish Safety and Chemicals Agency

**CLGB** for Central Lapland Greenstone Belt

**DD** for Diamond Drilling and **DDH** for Diamond Drill Hole

**RC** for Reverse Circulation

**FINAS** for Finnish Accreditation Service

**XRF** for X-ray fluorescence

**ICPES** for Inductively Coupled Plasma Emission Spectrometry

**QAQC** for Quality Assurance and Quality Control

**ROM** for Run Of Mine

**CMC** for Carboxymethylcellulose

**NiEq** for Ni Equivalent

# 1 SUMMARY

The Mineral Resources and Mineral Reserves for Boliden Kevitsa Ni-Cu-PGE Mine are reported in Table 1. The Mineral Reserve figures have been depleted to account for mining up to the end-of-month December 2022.

Table 1. Mineral Resources and Mineral Reserves for Boliden Kevitsa Mine as of 31-12-2022 and 31-12-2021 for comparison.

| 2022 Classification | Mton | NiS (%) | Cu (%) | Au (g/t) | Pd (g/t) | Pt (g/t) | CoS (%) |
|---|---|---|---|---|---|---|---|
| **Mineral Reserves** | | | | | | | |
| Proved | **73** | **0.22** | **0.33** | **0.10** | **0.13** | **0.21** | **0.01** |
| Probable | **28** | **0.26** | **0.38** | **0.10** | **0.12** | **0.18** | **0.01** |
| **Total** | **101** | **0.23** | **0.34** | **0.10** | **0.13** | **0.20** | **0.01** |
| **Mineral Resources** | | | | | | | |
| Measured | **53** | **0.21** | **0.33** | **0.08** | **0.11** | **0.17** | **0.01** |
| Indicated | **89** | **0.23** | **0.36** | **0.07** | **0.07** | **0.11** | **0.01** |
| Total M&I | 142 | 0.22 | 0.35 | 0.07 | 0.08 | 0.13 | 0.01 |
| **Inferred** | **0.4** | **0.09** | **0.16** | **0.02** | **0.01** | **0.03** | **0.01** |
| **2021 Classification** | **Mton** | **NiS (%)** | **Cu (%)** | **Au (g/t)** | **Pd (g/t)** | **Pt (g/t)** | **CoS (%)** |
| **Mineral Reserves** | | | | | | | |
| Proved | **72** | **0.19** | **0.31** | **0.09** | **0.11** | **0.18** | **0.01** |
| Probable | **52** | **0.27** | **0.33** | **0.10** | **0.15** | **0.23** | **0.01** |
| **Total** | **124** | **0.22** | **0.32** | **0.10** | **0.13** | **0.20** | **0.01** |
| **Mineral Resources** | | | | | | | |
| Measured | **50** | **0.21** | **0.33** | **0.08** | **0.11** | **0.17** | **0.01** |
| Indicated | **88** | **0.23** | **0.36** | **0.07** | **0.07** | **0.11** | **0.01** |
| Total M&I | 138 | 0.23 | 0.35 | 0.08 | 0.08 | 0.13 | 0.01 |
| Inferred | **0.2** | **0.11** | **0.19** | **0.03** | **0.02** | **0.03** | **0.01** |

- *Mineral Resources are reported exclusive of Mineral Reserves.*
- *Mineral Resources and Mineral Reserves is a summary of Resource estimations and studies made over time adjusted to mining situation of December 31 2022.*
- *Mineral Resources are reported as undiluted, with no mining recovery applied in the Statement. Assumptions for mining factors (mining and selling costs, mining recovery and dilution, pit slope angles) and processing factors (metal recovery, processing costs), during the optimization process only.*
- *Boliden considers there to be reasonable prospects for economic extraction by constraining within an optimized open pit shell constructed using long term market forecast commodity prices.*
- *2023 LOMP production schedule along with mining factors (mining recovery and dilution), processing factors (Recovery and Processing costs) and revenue factors (metal prices, selling costs) were incorporated in a financial model and economic analysis by which Boliden determined the Mineral Reserves to be currently economic.*
- *Mineral Resources are reported above the optimized pit shell and above a NSR marginal cut-off of 10 EUR/t, which reflects the economic and technical parameters, and below the mine design pit shell used to report the Mineral Reserve.*
- *Mineral Reserves are reported within the pit design at a NSR operational cut-off of 15 EUR/t for 2023, and 13 EUR/t from 2024 onwards.*
- *Mineral Reserves include 40 Mt of ore to be mined at the last four years of the LOM (years 2030-2033) for which current TSFA capacity is insufficient. These Mineral Reserves are dependent on Kevitsa identifying a suitable location, designing and obtaining relevant permits for additional TSF capacity within the next 10 years - prior to the tailings deposition.*
- *Tonnes and grades are rounded which may result in apparent summation differences between tonnes, grade and contained metal content.*

Mineral Reserves were reported from the new 2021 Mineral Resource block model, using LOMP 2023 NSR cut-offs and the final pit design. No Inferred Mineral Resources are included in the Mineral Reserves. Kevitsa Mineral Resources are reported from the 2021 Mineral Resource model/estimation, work done by Sonja Pabst, fulltime employed Boliden Senior Resource Geologist, and Member of the AIG Australian Institute of Geoscientists, Membership No. 7473. Statement was performed using a constraining Whittle pit shell to demonstrate RPEEE.

2021 Mineral Resource estimation is detailed in PERC compliant Technical Report, Pabst (2021).

# 2 GENERAL INTRODUCTION

This report is issued annually to inform the public (shareholders and potential investors) of the mineral assets in the Kevitsa mining operation ("the Kevitsa Mine") held by Boliden Mineral AB ("Boliden"). The report is a summary of internal and Competent Persons' Reports for the Kevitsa Mine. Since 2018 Boliden is reporting following standard from the PERC "Pan-European Standard For Reporting Of Exploration Results, Mineral Resources And Reserves" ("The 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 countries.

The Kevitsa Mine's Mineral Resources and Mineral Reserves were previously reported under the FRB's standard at the end of 2017 and 2018 has been a transitional year from FRB to PERC Reporting Standard. Prior to 2017, Mineral Resources and Mineral Reserves were reported according to National Instrument 43-101 under the previous owner FQM.

Boliden considers that Mineral Resource and Mineral Reserve figures released in previous years are accurate and reliable.

## 2.1 The PERC Reporting Standard

PERC is the organization 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 the CRIRSCO, and the PERC Reporting Standard is fully aligned with the CRIRSCO Reporting Template.

The PERC Reporting 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.

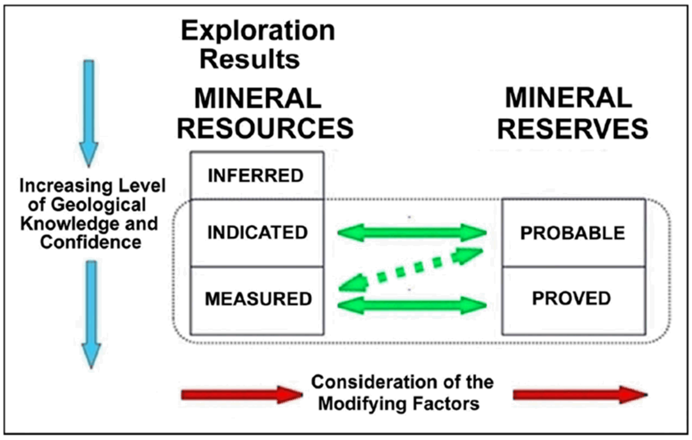



Figure 1. General relationship between Exploration Results, Mineral Resources and Mineral Reserves (PERC 2021).

### 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.

### 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

The compilation of this report has been completed by a team of professionals who work directly for Boliden Mineral AB. The report has been reviewed and approved by Gunnar Agmalm and Seth Mueller. Gunnar Agmalm is Boliden's Ore Reserves and Project Evaluation manager and a member of AusIMM and FAMMP. Seth Mueller is Boliden's Senior Development Engineer and a member of FAMMP, as such he can act as a Competent Person according to PERC.

Table 2. Contributors and responsible competent persons (CP) for this report

| Description | Contributors | Support to CP | Responsible CP |
|---|---|---|---|
| Compilation report | Loraine Berthet | | Gunnar Agmalm |
| Geology and Resource Estimation | Sonja Pabst | Sonja Pabst | |
| Mineral Processing | Tuula Roimaa | Janne Laukkanen | |
| Mining | Tuula Koivuniemi | Sami Ojanen | |
| Environmental and legal permits | Johanna Holm | | Seth Mueller |

# 3 KEVITSA MINE

The Kevitsa Mine is a Ni-Cu-PGE open pit mine located at Sodankylä, Finland.

The mined out ore tonnage for 2022 was 9.949 Mt, which is an increase from last year by 0.146 Mt. Total mined material (ore and waste) was 36.541 Mt at 2022.

Total milled material in 2022 was 10 287 kt. Nickel metal annual production was 11 798 t in Ni concentrate. Ni recovery decreased by 2.5 % units from 2021. Cu metal annual production was 22 922 t in Cu concentrate and 2 269 t in Ni concentrate. Cu recovery decreased by 1.4 % units to copper concentrate, and total copper recovery decreased by 2.0 % units.

Ni is the most valuable commodity in the Kevitsa Mine. Revenue from Ni was 44.2 % and 38.2 % from Cu. Other valuable commodities are Au, Pd and Pt, which are payable in Cu concentrates and Co in Ni concentrate (in addition to Pt and Pd). Table 3 presents the revenue per commodity at Kevitsa.

Table 3. Percentage of 2022 total revenue per element at Mineral Reserve average grades.

| Commodity | Revenue (%) |
|---|---|
| Cu | 38.2 |
| Ni | 44.2 |
| Co | 2.0 |
| Au | 3.7 |
| Pd | 7.1 |
| Pt | 4.8 |

## 3.1 Major changes

- NSR formula and cut-offs used during 2022 for grade control are presented in Table 4.

Table 4: NSR revenue factors by commodity and cut-off applied for grade control in 2022

| | **LoMP 2022** | **January 2022** |
|---|---|---|
| **Commodity** | **Factor** | |
| Cu | **63.89** | |
| NiS | **77.60** | |
| CoS | **71.12** | |
| Au | **13.52** | |
| Pd | **20.12** | |
| Pt | **8.16** | |
| **NSR cut-off EUR** | **18** | **19 with a marginal cut-off of 16 conditional to mineralogical composition** |

Note: Marginal NSR cut-off of 16 € for low grade ore was implemented in January 2022 in order to improve the metallurgical quality of the concentrate. Only the material meeting specific mineralogical requirements was considered as low grade ore.

- Estimation parameters from MRE 2021 from December 2021 have been implemented in production from May 2022.
- Modifications on pit designs for LOMP and Budget 2023 were used for reserve calculation.
- MRE 2021 from December 2021 was used for 2022 Mineral Resource calculation.
- Infill drilling campaign was completed during 2021 (data cut-off 3rd September 2021) and was taken into account for the 2021 MRE preparation.
- No new Whittle pit optimization was produced to define RPEEE (same as for 2021).

### 3.1.1 Technical studies

Technical studies conducted during the year:

- Pit photogrammetry has been performed in order to support structural model update and acoustic borehole imaging has been tested during the infill drilling campaign.
- MSc thesis on the characterization of phases causing Fe and MgO variations in Kevitsa Ni and Cu concentrates has been successfully defended at Freiberg University, Guiang (2022).
- Updated mineralization shells to inform the Resource Model.
- Mineral Resource Estimate/Resource model update is ongoing.
- Studies on the seasonal impact of water quality on the flotation process were conducted in 2022.

## 3.2 Location

The Kevitsa Mine is located some 142 km north-northeast of Rovaniemi, the capital of Finnish Lapland, and approximately 140 km north of the Arctic Circle in the Municipality of Sodankylä. Sodankylä is located approximately 40 km south by road and the nearest village Petkula is located 8 km west of the property. A location map is presented in Figure 2. More detailed description in Pabst (2021).

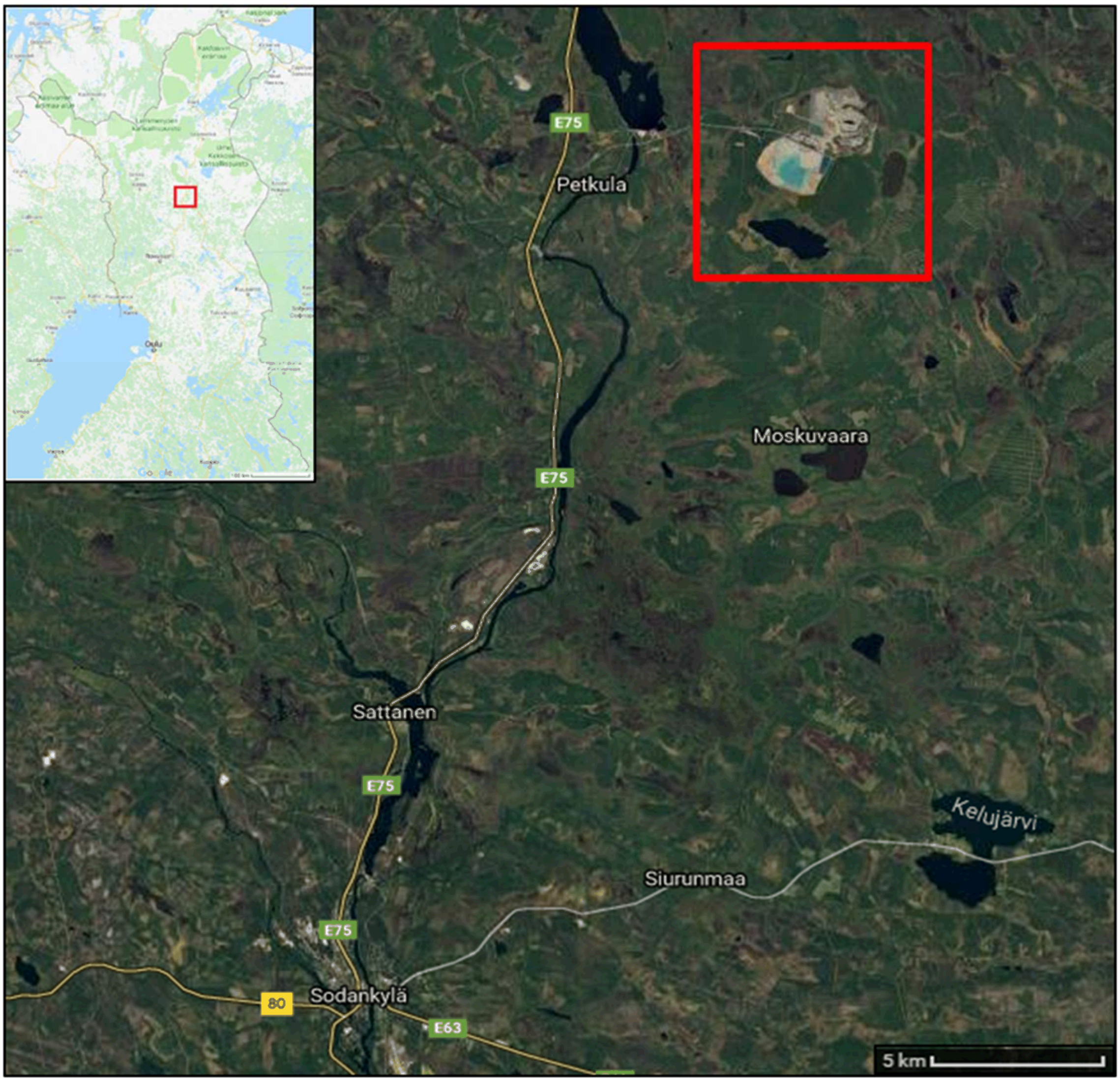



Figure 2. Map of the Kevitsa Mine property (red square) in relation to Sodankylä

## 3.3 History

A historical summary of the Kevitsa Mine is summarized in Table 5, production history is in Table 6 and process history in Table 7. A more detailed description of the project history from exploration to production can be found in Gregory et al. (2010) and Gray et al. (2016).

Table 5. Kevitsa Project History

| **Kevitsa Project History** | |
|---|---|
| 1960s | Mapping of outcrops and river boulders |
| 1970s | Outokumpu reconnaissance exploration work |
| 1984 | Initial diamond drilling (GTK) |
| 1984-1987 | Ground geophysical surveys (magnetic, gravity, electromagnetic) and basal till sampling |
| 1987 | **Diamond drilling and discovery of Ni-Cu mineralization** |
| 1990 | Diamond drilling |
| 1992-1995 | Main diamond drilling and trenching program |
| 1994 | Airborne Survey GTK |
| 1996-1998 | Till geochemistry and drilling and processing test work undertaken by Outokumpu Metals & Resources |
| 2000 | Project owned by SGL |
| 2008 | Project owned by FQM |
| 2010 | Construction commenced |
| 2012 | Commercial production |
| 2016 | **FQM sells the Kevitsa Mine to Boliden AB** |
| 2020 | Commissioning of 9.5 Mtpa expansion project, with design capacity of 9.9 Mtpa |
| 2022 | All exploration permits in NATURA 2000 areas relinquished |

Table 6.Waste and ore production history of the Kevitsa Mine in million tonnes (Mt)

| **Production** | | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** | **2022** | **Total to date** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ore | [Mt] | 3.37 | 5.81 | 6.93 | 6.63 | 7.67 | 8.28 | 7.93 | 7.68 | 9.49 | 9.80 | 9.95 | 83.54 |
| Waste | [Mt] | 4.23 | 16.01 | 21.21 | 30.39 | 31.9 | 34.2 | 33.5 | 32.23 | 29.96 | 23.96 | 26.46 | 284.05 |
| Total | [Mt] | 7.6 | 21.82 | 28.14 | 37.02 | 39.57 | 42.48 | 41.4 | 39.91 | 39.45 | 33.76 | 36.41 | 367.59 |

Table 7. Processed metals history of the Kevitsa plant

| Production | | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | Total to date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Milled, tonnes | [kt] | 3 137.7 | 6 313.6 | 6 711.2 | 6 665.5 | 7 391.7 | 7 911.2 | 7 582.1 | 7 536.3 | 9 185.9 | 9 468.7 | 10 287.0 | 82 191 |
| Cu metal in concentrates | [t] | 8 093 | 14 775 | 17 535 | 17 204 | 20 571 | 29 957 | 27 498 | 19 763 | 27 402 | 28 725 | 25 191 | 236 714 |
| Ni metal in Ni concentrate | [t] | 3 874 | 8 963 | 9 434 | 8 805 | 11 100 | 13 777 | 13 948 | 9 021 | 11 074 | 12 876 | 11 798 | 11 4669 |
| Co metal in Ni concentrate | [t] | 167 | 401 | 422 | 369 | 501 | 587 | 591 | 445 | 495 | 592 | 624 | 5 194 |
| Au in concentrates | [oz] | 6 914 | 12 875 | 14 110 | 14 110 | 17 143 | 22 822 | 22 223 | 14 368 | 20 591 | 22 473 | 17 274 | 184 903 |
| Pt in concentrates | [oz] | 15 097 | 33 369 | 37 390 | 35 133 | 41 553 | 50 019 | 55 592 | 33 629 | 45 027 | 51 030 | 39 975 | 437 814 |
| Pd in concentrates | [oz] | 13 298 | 27 020 | 28 501 | 27 761 | 31 782 | 36 015 | 40 812 | 24 654 | 30 251 | 36 546 | 30 875 | 327 515 |

## 3.4 Ownership

In accordance with Finnish regulations, BKMOY owns the land within the mining concession (758-412-35-1, 1 413 ha). The land was previously under the control of the Finnish State Forestry Commission, Metsähallitus, who are the principal landowner of the surrounding property of the region. Kevitsa Mine does not pay any royalties because in Finland the mining concession holder pays annual compensation (excavation fee) to the landowner.

## 3.5 Permits

The site operating entity is BKMOY. The Ministry of Economic Affairs and Employment of Finland originally granted mining concession No. 7140 to FQM Kevitsa Mining Oy (owned by FQM) on 28th September 2009.

Until end of 2020, all the Boliden's exploration activities in Finland were carried out by own legal entity BFXOY. From the beginning of 2021, BFXOY was merged to BKMOY. With the change, all the exploration permits have been now transformed under BKMOY.

In addition to mine concessions, BKMOY has nine valid exploration permits, plus several permit applications in the vicinity of Kevitsa and wider in Sodankylä area. Current exploration permits situation is quite good. The close future targets are well permitted and even though TUKES still has very long lead times for processing the exploration applications, several exploration permits are expected to be granted within the next two years. In the longer term, accessing fully new areas in Sodankylä and in Central Lapland is challenging due to high exploration activity which can be seen by huge amount of permit applications by other companies.

In 2022, BKMOY decide to relinquish all the permit applications which were located within NATURA 2000 protected areas. Because of this decision, BKMOY does not have any activity in protected areas.

The valid and applied mining concessions and the surrounding exploration permits are presented in Table 8 and shown in Figure 3.

Table 8: Table of tenements

| Tenement type | Owner | Area (km2) | No. of blocks | Permit ID |
|---|---|---|---|---|
| Valid Mining Concession | BKMOY | 14.13 | 1 | 7140 |
| Applied - Mining Concession, Extension (2018) | BKMOY | 4.01 | 3 | 7140 |
| Applied - Mining Concession, Extension (2022) | BKMOY | 2.90 | 1 | 7140 |
| Valid Ore Prospecting Permits | BKMOY | 88.89 | 9 | ML2022:0018<br>ML2016:0055<br>ML2016:0051<br>8890/2-8890/4<br>ML2015:0068<br>ML2015:0037<br>ML2015:0038<br>ML2015:0056<br>ML2013:0094 |
| Applied Ore Prospecting Permits<br>(Includes the extended permits) | BKMOY | 128.15 | 18 | ML2013:0078<br>ML2013:0079<br>ML2014:0111<br>ML2014:0113<br>ML2015:0027<br>ML2015:0039<br>ML2015:0065<br>ML2016:0027<br>ML2017:0002<br>ML2018:0027<br>ML2019:0066<br>ML2020:0004<br>ML2011:0055<br>ML2020:0060<br>ML2020:0061<br>ML2021:0082<br>ML2017:0003<br>ML2016:0054 |

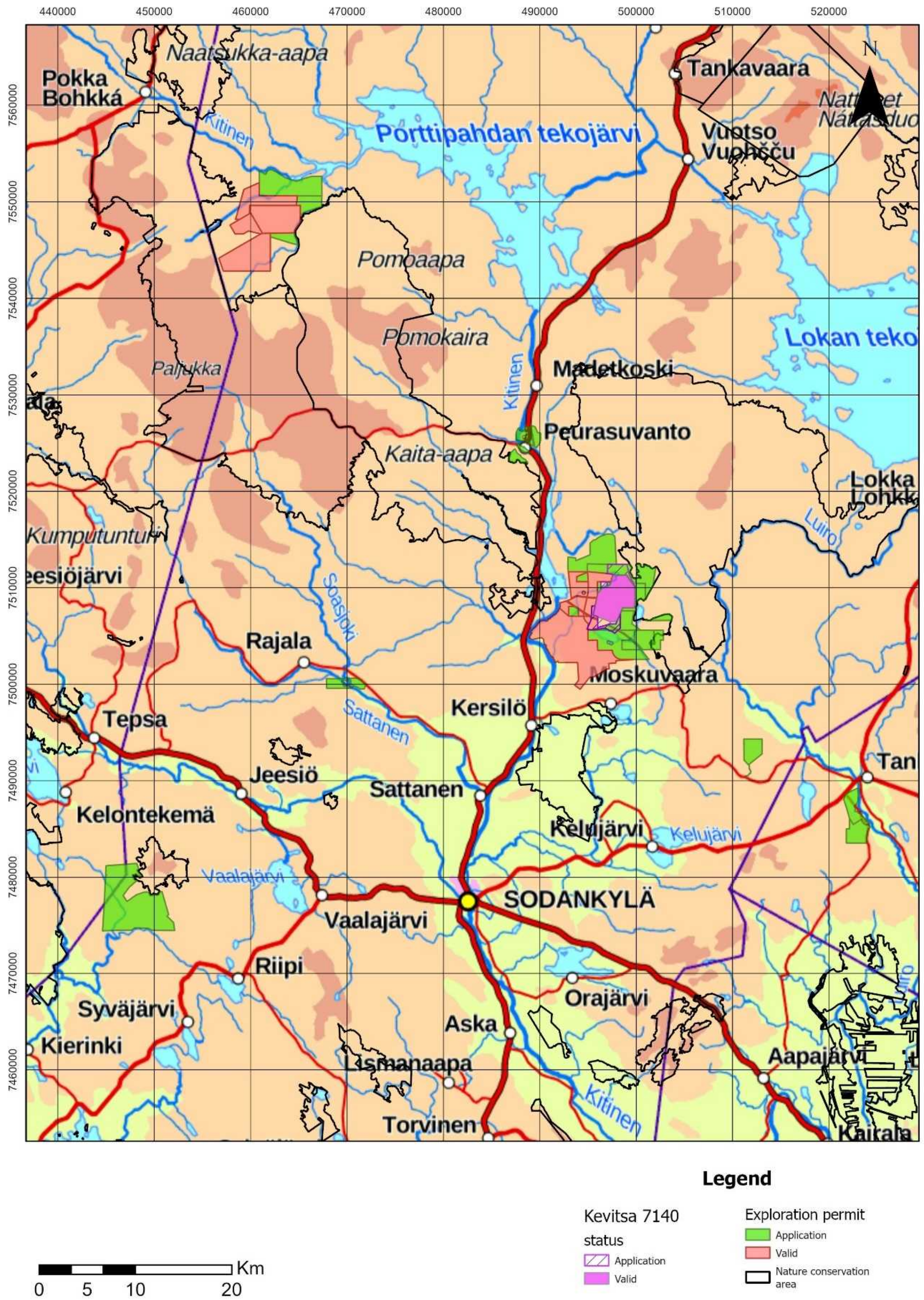



Figure 3: BKMOY tenements

## 3.6 Environmental, Social and Governance (ESG)

### 3.6.1 Existing Permits

BKMOY who has land ownership for the existing mining concession (758-412-35-1, 1 413 ha) has also applied for an expansion of the mining concession for the potential requirement of building new infrastructure around the mine area. Expansion has been applied in two phases, first in 2018 (401.19 ha towards North and South) and later in 2022 (290.86 ha towards South). External land owners in 2018 were real estate association Metsähallitus (758-893-11-1; 343.03 ha) and Harju (758-412-7-12; 5.76 ha). Boliden also owns land (Eräloivonen: 758-412-7-15; 2.00 ha and 50.39 ha in 758-412-35-1 outside of mining concession). In 2022 Metsähallitus (758-893-11-1; 277.72 ha) was the only external land owner concerned by the application.

The original environmental permit was granted in July 2009. In 2014, new environmental permit was granted for mining 10 Mt of ore per annum.

There was a potential social issue, the contract from 2009 with the reindeer herders to compensate their losses was to be updated before 2026. Expansions of the mining concession required two reindeer herder's compensation negotiations before June 2024. Moraine permitting needed compensation negotiations to be ready in March 2023. Negotiations started already in September 2022 and ended in December 2022 with a contract for the upcoming TSFA2, moraine areas and possible Stage 5.

### 3.6.2 Necessary Permits

Expansion of the mining concession is ongoing towards South. There was a need to apply for extra permit according to the TSFA2 conceptual model at the same direction. Application of mining lease extension (290.86 ha) was submitted to the authority in November 2022 and is ongoing. External land ownership is Metsähallitus (758-893-11-1; 277.72 ha). A small part belongs to Boliden (758-412-35-1; 13.13 ha).

Environmental permitting process is ongoing. BKMOY submitted a new environmental permit application to the authority in May 2022. Some of the permit clauses were necessary to review, especially the seepage impacts of the TSFA.

The existing capacity of TSFA is not sufficient. Boliden is in the process of conducting the required investigations for TSFA2 according to GISTM standards. Additional environmental permit will be applied for TSFA2. EIA is done for five different alternative locations and for 203 Mt tailings. Up-to-datedness assessment will be done in the permitting process 2022-2024. Plan is to start construction TSFA2 in summer 2025.

A new closure plan for Kevitsa mine has been submitted to the authorities in autumn 2019 and the permitting process is proceeding until 2023. Moraine permitting will be submitted to the local municipality in 2023, to which EIA was done in 2021-2022. Update for closure plan shall be submitted to the authorities already in 2024.

### 3.6.3 Environmental, Social and Governance considerations

#### 3.6.3.1 ESG Commitments

BKMOY is a member of FinMin and therefore committed to the Finnish sustainability standard for mining (TSM) built by The Finnish sustainable mining network. Compliance with the TSM-system is long-term and systematic work. The system gives a guarantee that the mining company that complies with it takes responsibility issues seriously. The system helps mining companies to operate in a comprehensively sustainable manner. Mining companies can evaluate, monitor and develop their own operations. The system consists of common operating principles and eight evaluation tools that cover the entire life cycle of mining operations from exploration to mine closure and post-closure monitoring. The guiding principles are sustainable in terms of environmental, social and economic performance. Development has been reported yearly in public web page including self assessment and verification results.

Kevitsa business model set ESG priorities, and take into consideration the risks and opportunities identified by business intelligence and risk mapping, as well as applicable requirements and expectations such as:

- Stakeholder expectations
- Current and potential legislative trends
- ISO 9001, 45001, 14001 and 50001 standards and Forest Stewardship Council (FSC® COC-000122)
- OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-affected and High-risk Areas
- GRI Standards (Global Reporting Initiative)
- UN Sustainable Development Goals (SDGs)
- UN Global Compact
- ICMM Mining principles

Kevitsa regularly consult prioritized stakeholder groups on sustainability performance from a broader perspective. These stakeholders are asked to comment on Boliden's performance to drive further improvement.

Boliden is a member of ICMM and the national mining associations in the countries where Boliden Mines operates. These commitments imply implementing relevant international and national Environmental Management System (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 its 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 Free, Prior and Informed Consent (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.

#### 3.6.3.2 Socio-Economic Impact

Socioeconomic sectors affected by Kevitsa are local economy, service sector, reindeer husbandry and living environment. Associated criteria's are employment and number of enterprises, local amenities and commercial services, number of reindeer, profitability and image, population, standard of living and self-sufficiency. Potential changes caused by Kevitsa are:

- Employment rates and the number of enterprises,
- Supply and availability of local amenities, in supply and availability of private-sector commercial services,
- Number of reindeer, effects in pastures and calving areas and the rotational grazing system on profitability across the reindeer herding district, the image of reindeer products relative to market demand,
- Number or structure of population, the social characteristics of the nearby areas and the local authority, the recreational use of the nearby areas, such as hunting, fishing, trekking, berry and mushroom picking.

Changes in the nearby areas will affect reindeer husbandry, the comfort of residents, the natural characteristics of the area, the recreational use of the area (for berry picking and mushroom picking, for example), as well as hunting (namely elk), fishing, and trekking. Negative impacts will be attributable to increased traffic, wastewater, noise, dust emissions, flue gas emissions, and vibration, for example.

Currently Sodankylä employment rate is the lowest in Finland. The local purchases by Kevitsa has been over 10 million euros (2021). Sodankylä is considered as lively, cozy and developing municipality. Today Sodankylä offers city-level services to the residents and tourists, as well as great opportunities for business activities. The number of reindeer has been the same, but the behavior has been changed due to dust, noise and light according to reindeer herders. Profitability losses has been compensated accordingly (incl. supplementary feeding) and services of the reindeer herders has been used in other additional works. Income per reindeer has been increased and markets are doing well. According to the monitoring fishes are doing well. Yearly compensation of fisheries fee

(3 000 euro) is to prevent damage to fisheries and fishing in the river Kitinen. The impacts on receiving water bodies have been lower than the estimates. Dust suppression still needs to be developed.

#### 3.6.3.3 Communities and Landowners

A relatively good relationship and an interactive network was established between the various interested parties in the course of project planning and as a result of the EIA procedure. Continued interaction was considered vital and beneficial by all those involved. Interactions has been developed; Open Door Days, Family Days, Near Village Events, site visits for schools and organizations, summer jobs, trainings, final thesis assignments have been offered. Financial support for education, youth work, sport and hobbies, environmental and cultural activities has been given. Research and co-operation projects have actively been noted, supported and participated. Environmental monitoring results have been published monthly in internet. Sustainability report is introduced in kaivosvastuu.fi.

In 2020 started stakeholder co-operation group was developed. Municipality, reindeer herders, neighbors, employees, associations and nature conservation are being represent in the group and they were allowed to nominate their own presentative to the group, one from each stakeholder group. The aim is to increase interaction and to exchange information between different stakeholders themselves, mine and stakeholders. Mine gives information about plans and operation 2-4 times per year. Stakeholders has an opportunity to proactively discuss about plans, possible concerns, mitigation measures and issues to be considered in the operating environment. Action log and minutes have been produced and published in internal intranet.

Interaction with stakeholders is illustrated by calm or neutral attitude towards mining in Sodankylä. Questionnaires has been developed to follow the climate in addition to permitting processes. In recent study 2022 local people response strongly in favor of mining production in Sodankylä. People are interested in studying or working in mining more than Finnish average. Mining industry has a positive effect on the vitality of the municipality.

#### 3.6.3.4 Indigenous People

Kevitsa has been in co-operation with the Reindeer association (Oraniemi) in yearly meetings since 2009. Disadvantages caused by Kevitsa to reindeer herders have been compensated financially annually according to written agreement (from 2009). In addition to that minimization of any harm has been discussed and additional compensations agreed in yearly meetings. Reindeer fence around entire mining was built and maintenance is ordered by local reindeer herders. Kevitsa has been participating on reindeer GPS-following with Tracker bands. In 2020 those were updated. More (20 bands) was ordered in 2021 from Ranniot. Information can be used in permitting and they help the reindeer herders in their work.

The contract from 2009 with the reindeer herders to compensate their losses is to be updated before 2026. Expansions of the mining concession require two reindeer herder's compensation negotiations before June 2024. Moraine permitting needs compensation negotiations to be ready in March 2023. All these contract negotiations started in September 2022 and ended in December 2022 with a contract for the upcoming TSFA2, moraine areas and possible Stage 5.

#### 3.6.3.5 Historical Legacy

In the beginning of the operations there was only a swamp and forests. There is no historical legacy of mining operations in the area.

## 3.7 Geology

The description of the geological setting and mineralization are largely reproduced from Lappalainen and White (2010).

### 3.7.1 Regional

The Kevitsa igneous complex lies within the CLGB located within the Precambrian Fennoscandian Shield (Figure 4). CLGB is a large area that consists of volcano-sedimentary rocks of Paleoproterozoic age and it is divided to seven stratigraphical groups (Räsänen et al. 1996). Which are from oldest to youngest: Salla, Onkamo, Sodankylä, Savukoski, Kittilä, Lainio, and Kumpu Groups Savukoski group supracrustal rocks that are enveloping Kevitsa intrusion. It is representing a major marine transgression dominated by dominated by black schists, phyllites, tuffites, mafic metavolcanics and the uppermost unit of ultramafic metavolcanics. According to Räsänen et al. (1996) these rocks are polyfolded, and thrusted resulting in overturning and structural repetition of the stratigraphy. There are three major ductile deformational events (D1-D3), simultaneous and later shear zones that are related to regional structures of the CLGB and are described in detail by Hölttä et al. (2007).

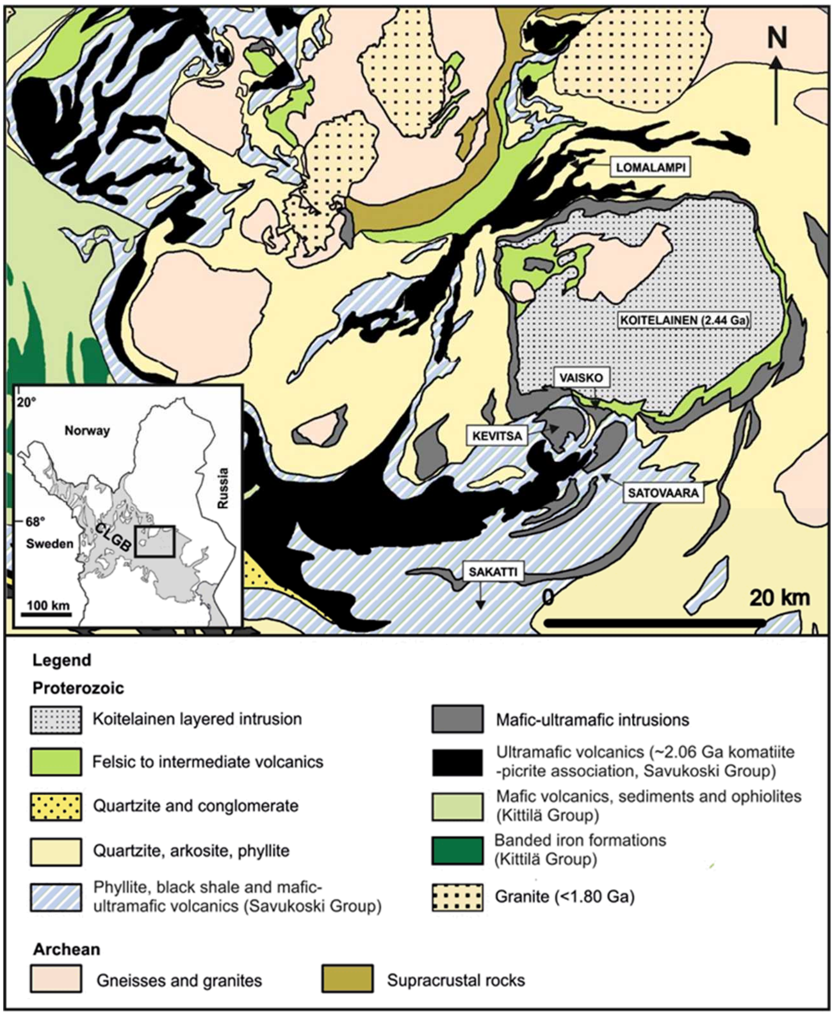



Figure 4. Regional geological map from Luolavirta et al. (2017)

### 3.7.2 Local

Kevitsa igneous complex layered ultramafic-mafic intrusive rocks dated at 2058 ± 4 Ma (Mutanen & Huhma, 2001). The body of the intrusion extents to 2 km. The Kevitsa intrusions ultramafic units are on lower parts of the intrusion, which is overlain by the gabbroic rocks that are located on the South-West side of the ultramafics. There is a dunite unit in the middle of the deposit, which is disconcordant to magmatic layering as well in the bottom of the intrusion. Xenoliths are common in the ultramafics and within the ore body. They are variable in sizes and by composition; they typically are sedimentary, mafic or ultramafic. There are also several mafic dykes, in the intrusion, ranging in different ages but they are not very voluminous. Geological map of Kevitsa igneous complex is presented in the Figure 5.

The Kevitsa area has undergone several tectonic and metamorphic events which are evident in the intrusion and in the country rocks (Hölttä et al. 2007). The NNE-SSW trending Satovaara fault, and other structures which are associated with it, are a structurally significant feature of the area. The Satovaara fault has deformed the eastern margin of the Kevitsa intrusion and within the deposit, there are smaller scale structures in similar trend.

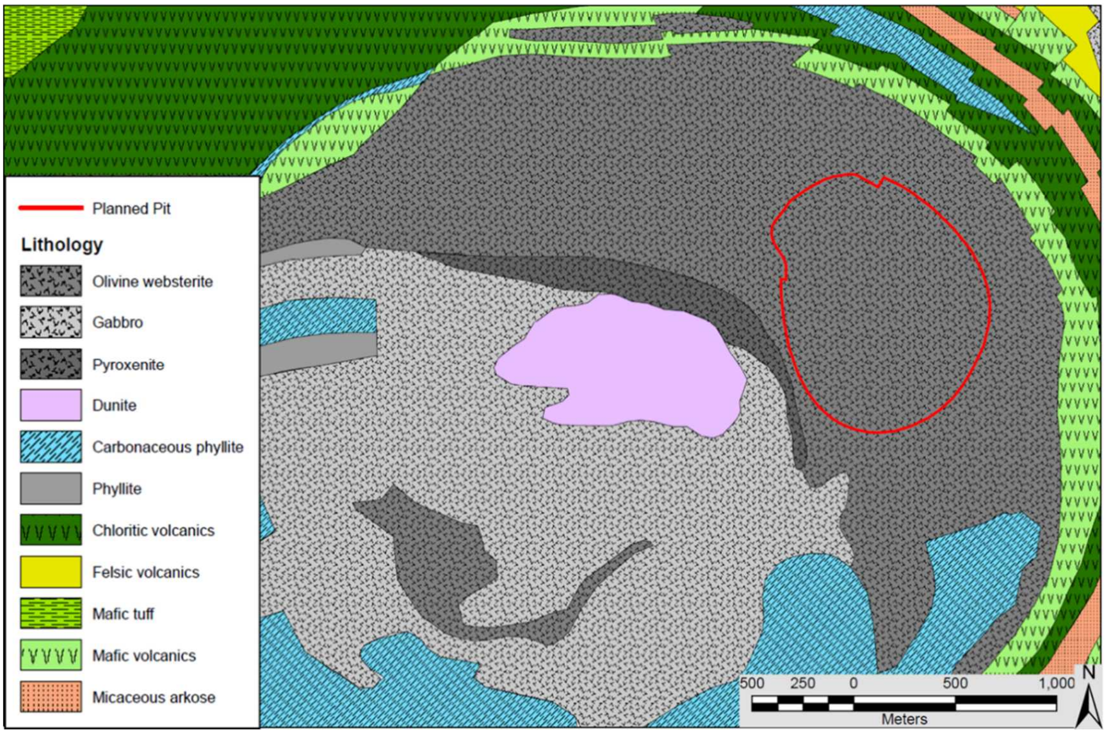



Figure 5.Geological map of the Kevitsa igneous ultramafic complex

### 3.7.3 Property

The Ni-Cu-(PGE) mineralization is located in the center of the intrusions ultramafic rocks, and it is hosted typically by olivine websterite and its variants. In the broad sense, they can be described as clinopyroxene-dominated rocks with 0-30 % orthopyroxene, 5-25 % olivine and 0-10 % plagioclase. These rocks have very subtle visual and geochemical differences. The distribution and form of observed mineralogical and geochemical patterns are interpreted to represent multiple magmatic phases. There are no internal contacts to these pulses, but in many instances the base of one pulse (olivine websterite) will grade relatively sharply into the upper part of another pulse (plagioclase bearing olivine websterite). These layers are irregular in shape. Geochemically, differentiation within these pulses is most clearly demonstrated by $Al_2O_3$. It is proposed by Luolavirta et al. (2017), that the Kevitsa magma chamber was initially filled by stable continuous flow ("single" input) of basaltic magma followed by differentiation in an at least nearly closed system. In the following Stage, new magma pulses were repeatedly emplaced into the interior of the intrusion in a dynamic (open) system forming the sulfide ore bodies. This model would explain the contrasting intrusive stratigraphy in the different parts of the intrusion, which likely is reflecting different emplacement histories. A schematic stratigraphy column after Luolavirta (2017) is given in Figure 6.

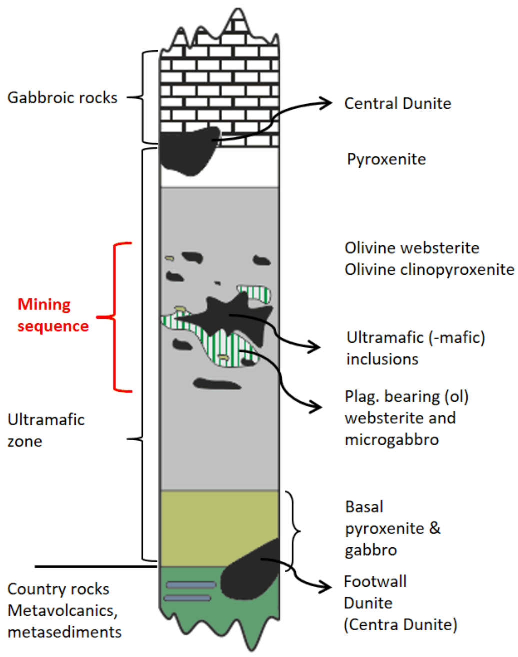



Figure 6. Schematic stratigraphy column of Kevitsa intrusion by Luolavirta, 2017

The most widespread alteration in Kevitsa resource area is amphibole alteration of ferromagnesian minerals. The alteration is typically pervasive in style and has generally "”sharp boundaries" i.e. it does not grade out. Pervasively amphibole altered rocks are often accompanied by carbonate alteration: there can be millimeter- to meter-scale carbonate or carbonate-quartz veining. The first alteration phenomenon in Kevitsa, being also common, is the serpentine alteration where the olivine is replaced by dark serpentine. Magnetite was initially primary mineral but it is also associated with other alteration styles as veins like serpentine and carbonate alteration. Epidote alteration is associated with the rodingite dykes. Actinolite-chlorite alteration seem to be associated with the structures. Narrow actinolite selvedges are also common on carbonate ± quartz vein margins, but these wider, green actinolite features are a distinctive vein set. Talc-carbonate alteration is strongly associated with the shear zones, late fractures and veins representing CO2 bearing fluids. The style can range from selective replacement of ferromagnesian species to pervasive alteration of the rock.

### 3.7.4 Mineralization

The known economic Ni-Cu-PGE mineralization is disseminated in style. While having some minor semi massive sulfide veins. Overall mineralization volume is irregular in shape, and it is cut by several faults which locally are offsetting the mineralization. The predominant mineralization type is Ni-Cu, comprising 95 % of the deposit. Within it, are mineralization domains, which can be separated by the distribution of Cu and NiS grades, and as well with the amount of PGE's. The so-called Ni-PGE mineralization is in relatively small in volume.

The main economical minerals are chalcopyrite and pentlandite, but mineralogically speaking pyrrhotite is the most common sulfide. Typically, the sulfide grain size varies from fine to medium, and the grain aggregates are in the interstitial spaces of the silicates. In unaltered rocks the sulfide silicate grains are smooth and plain but in amphibole altered rocks the boundaries are irregular and serrated. Chalcopyrite generally occur as large anhedral grains, sometimes with cubanite and talnakhite, and as fine intergrowths within the gangue silicates. Pentlandite can be coarse-grained sub-euhedral, smaller intergranular grain bands between silicates and pyrrhotite, and "exolution flame" inclusions within pyrrhotite or pyrite of very fine grain size. In addition to pentlandite the nickel occurs in crystal lattice of some silicate minerals such as olivine, clinopyroxene and tremolite. The nickel in silicates is not recoverable in metallurgical process and therefore sulfide nickel is analyzed by selective leach method. Pd and Pt typically occur as sulfosalts, such as arsenides and tellurides. According to Kojonen et al. (2008), over half of the PGE carrying minerals are as inclusions in amphibole, serpentine and chlorite. PGE carrying minerals which are related to sulfide occur mostly on sulfide grain boundaries, inclusions in sulfide or in late fracture fillings in pentlandite.

## 3.8 Drilling procedures and data

More detailed information of drilling procedures and data, as well information from previous campaigns at Kevitsa can be found in Gregory et al. (2010), Gray et al. (2016) and in Kevitsa MRE Reports from Pabst (2020) and Pabst (2021).

### 3.8.1 Drilling techniques

Mineral Resource definition, infill and exploration drilling has been done by DD. The 2021 Kevitsa MRE from Pabst (2021) includes data from 639 diamond drill holes, which incorporates 23 new infill holes compared to 2020 Kevitsa MRE (Pabst, 2020), including one drillhole from 2018 which now received validated assays. BKMOY logged, assayed, verified and loaded data into the database before September 2$^{nd}$, 2021. The 2021 MRE includes grade control RC drilling, totaling 6 745 RC holes.

### 3.8.2 Downhole surveying

The collar positions have been surveyed by the Mine Survey Department and by independent contractor, Rovamitta Oy, in previous years. All drill collar locations are referenced to Finnish National Grid Coordinate System Zone 3 coordinates. The drilling contractors have conducted the downhole surveying at the Kevitsa Mine; hence, the surveying tool has changed depending on the contractor and the year. There are drill holes, which are missing deviation survey and have been used in Mineral Resource estimates (Pabst, 2021). 126 historic GTK drill holes which are relatively short (average 40.5 m), and nine holes with an average depth of 136 m drilled in 2011, are missing deviation surveys. Several grade control RC holes have no method information (N/A) and were drilled prior to the 2016 MRE; between 18 and 100 m short vertical holes. These holes were used for MRE update as the expected deviation was not considered to be material.

### 3.8.3 Sampling

Sample preparation and analysis has good evidence of being managed in a secure manner at both on and off site preparation and laboratory facilities. Drilling, logging and sampling data were collected from diamond core and RC cuttings by reputable companies and suitably trained persons. All geological data held by the Kevitsa Mine is loaded to SQL database with a Maxwell's DataShed front end.

All of the DDH were logged and then marked for the sampling intervals, sample numbers and QC samples. Then the core was photographed as dry and wet and cut according the sample list and marks in the core by the Kevitsa Mine sample technicians. GTK and SGL were systematically sampling in two meters intervals. FQM, BFXOY and BKMOY were also sampling in two meters intervals, however were honoring lithological contacts - sample intervals do not cross the contacts.

The cut core was packed in sample bags with sample tags and numbers and sent to an external and independent laboratory for sample preparation and analyses. BKMOY uses Labtium Oy ("Labtium") laboratory based at Sodankylä. Chain of custody forms were sent with the samples to Labtium and a copy retained on site for reference. Samples were prepared and analyzed at Labtium and results are then electronically uploaded into a secure database system DataShed. Labtium is a FINAS-accredited testing laboratory T025 meeting the requirements of international standard SFS-EN ISO/IEC 17025:2005. Regular laboratory visits and audits were completed by the geological team from Kevitsa since 2009. All the analyses methods per drilling campaign and the primary laboratory are described in Table 9.

Table 9. Summary of analytical methods used by different drilling campaigns and the primary laboratory used.

| Campaign | Primary laboratory | Aqua Regia[1] | Selective Leach | Multi element | Fire Assay[2] |
|---|---|---|---|---|---|
| | | Total Ni, Cu, S etc | Sulfidic Ni, Cu, Co | Ni, Cu etc | Au, Pt, Pd |
| **GTK** | GTK | X | | | X |
| **SGL** | GTK, Labtium[3] | X | X | | X |
| **FQM KMOY** | Labtium Rovaniemi | X | X | | X |
| **FQM FinnEX** | ALS Loughrea | | | X | X |
| **BKMOY and BFXOY** | Labtium Sodankylä | X | X | | X |

[1] Full set of elements analysed; Ag, As, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Sb, S
[2] The majority of samples were analysed using lead collection fire assay
[3] SGL switched from using GTK Rovaniemi to using Labtium Rovaniemi Laboratory in September 2007. Some of the drill holes were submitted for analysis by FQM after acquiring SGL in 2008.

RC samples have used EDXRF Labtium analysis method 195X since 2012 for total nickel (Ni), total copper (Cu) and cobalt (Co). Despite the method change from Aqua Regia ICPES to EDXRF in 2012, all RC results for total Ni and total Cu have been used for 2021 MRE. Based on the validation, these two methods are comparable when analyzing Ni and Cu. However, in the future, additional data for validation would be preferred.

#### 3.8.4 Density

A total of 417 DDH within the resource area have density data collected by a conventional gravimetric (Archimedes) method. Data was collected weighting core in air and in water. Density was calculated by dividing the weight in air by the difference between weight in air and weight in water. The different density sampling approach over time resulting in density measurements representing core intervals of different lengths make it difficult to assume the same statistical support during estimation, further details can be found in Pabst (2021). All density measurements were completed without drying due to the very low moisture content. A SOP is in place (Vierelä et al., 2019). Specific gravity (SG) is approximated to density (SG values are reported in the database).

#### 3.8.5 QAQC

BKMOY has practiced QAQC for the duration of DD campaigns. There has been QAQC programs carried out through the project history. BKMOY inserts blanks, commercial standards, quarter core duplicates per sample batch sent out. This program is also applied to RC samples.

## 3.9 Exploration activities

Boliden's general goal in all mine areas is to secure a minimum of 15 years' production time for each mine. For Kevitsa Near Mine Exploration, the goal is pursued through focusing on deep exploration of Kevitsa intrusion and on near mine targets, located within trucking distance from mill (maximum about 80 km).

Before 2021, all exploration activities in Finland were carried out by own legal entity BFXOY. In January 2021, BFXOY was merged to BKMOY. Kevitsa exploration section reports to Boliden's Near Mine Exploration department.

In previous years, the Kevitsa resource project has played a significant role in exploration. Since 2021, the Kevitsa resources have been well delimited, thus 2022 was the first year without any drilling conducted for Kevitsa resource project. As it is, the nature of exploration has now, at the latest, changed, aiming to discover a new deposit rather than expanding known resources.

In 2022, Kevitsa NME section conducted 6 364m of exploration drilling. Actual drilling was much lower compared to the initial budget, only 58 % of planned meters were conducted. Low production was mainly due to a lack of drill rigs. In 2022, Kevitsa NME shared a one rig with Boliden's Central Finland exploration section. Originally, the drilling was allocated on a project basis, 2 000m to Kitinen, 5 000m to NME-targets and 4 000m for deep drilling at Kevitsa. Kitinen represents the most remote site located about 80 km from the Kevitsa mine, while other sites are more traditional NME -targets in vicinity of, or inside mine concession. NME and Kitinen campaigns were carried out almost as planned, but very few deep drillings were done. The most significant of the other exploration projects was a 2D-seismic survey implemented on the southern side of the Kevitsa mine. The survey aimed to provide information about the southern and deep extension of the Kevitsa intrusion. The survey was carried out successfully and results will be utilized while generating future exploration targets. Kevitsa exploration activities and results in 2022 are described in more detail in Boliden's Exploration Annual Report.

In future, exploration will focus heavily on Kevitsa deep exploration, as the intrusion is still sparsely tested and seen highly potential to host high grade massive ore body. Any new discovery within current mine concessions could be brought into production quite effortlessly.

## 3.10 Mining methods, processing and infrastructure

This chapter is largely reproduced from Gray et al. (2016). More detailed description of mining methods, processing and infrastructure can be found from Gregory et al. (2010) and Gray et al. (2016).

All infrastructure required by the Mine is in place including sealed roads, power lines and substations, process plant, site offices, workshops, tailings dam, and waste storage facilities. Building of a new tunnel pumping station is currently on going.

In 2021 a pilot track for e-Trolley was built and testing is ongoing. Building the trolley line on West ramp is ongoing. The plan is to electrify a total number of 13 trucks of the fleet of 17 and install pantographs in 2023.

### 3.10.1 Mining methods

The Kevitsa Mine is an open pit mine operation using conventional truck and shovel operations. BKMOY owns a mining fleet and uses contractor to assist ore re-handling on the ROM pad for primary crusher feed. The onsite technical group supervises the contractor. Levelling of the SE-Wedge has been conducted by contractor.

The Kevitsa Mine commenced mining operations in autumn 2011, Hartikainen was then contracted to mine waste from Stage 1. Mining has proceeded from initial excavation: Stage 1 and Stage 2 have been mined out and Stage 4 mining has started in 2019. A strategic project has been started during 2022 in order to revise the life of mine with the feasibility of a possible expansion to an additional pushback, Stage 5.

The mining sequence broadly follows the sequence of events as follows:

- Grade control RC holes delineate the ore zones
- Blast patterns designed to reduce material throw and ore dilution - and a Blast Master planning process controls sequence of operation
- When possible, ore and waste blasted and mined separately as fragmentation requirements vary significantly. Blast movement monitoring is in place to minimize dilution and ore loss for mixed blasts
- Waste removed on each 12 m bench prior to the mining of ore, removal of waste in the successive cut-backs utilizes planned bulk systems of operation
- Trim blasts and perimeter blasting utilized to ensure pit wall profiles are cut to the correct angle and wall damage minimized
- Face shovels load rock into 225 t class trucks and ore hauled from the pit to the finger stockpiles which are integral part of the feed sequence to ensure ore blending can be achieved, haulage efficiencies can be maximized and operational flexibility enhanced at all times

In 2022 blast movement monitoring was performed only with OrePro 3D (Orica product). Comparing to previous Blast Movement Technology product, OrePro 3D allowed:

- Reduction in human intervention thanks to digitalization
- Improved safety thanks to the collaboration with Survey team
- More sustainable use of resources and increase in productivity
- Improved monitoring on environmental footprint

OrePro 3D implementation at Kevitsa has been presented at Mining 4.0 Roadmap For The Future conference in November 2022, Spain.

### 3.10.2 Mineral processing

The mineral processing facilities at Kevitsa have undergone several modifications and an expansion since commissioning in 2012. In 2020, 9.5 Mtpa expansion project was commissioned, with a design capacity of 9.9 Mtpa. Carboxymethylcellulose or CMC new dosing system was commissioned end of 2021 and run full capacity in 2022.

The following unit processes comprise the Kevitsa Metallurgical facility (Figure 7):

- Primary crushing of ROM ore from the open pit (delivered by dump truck).
- Screening of the primary crushed ore to produce three products -coarse lumps and fines as feed to the AG mills, and a mid-size product for the pebble mill.
- Pebble storage bin 750 t live capacity.
- Crushing of excess pebbles.
- A single stockpile of the mixed coarse and fine ore, with 15,000 t live capacity (16.7 h).
- Two 7 MW AG mills operating in parallel on material fed from the stockpile.
- The two AG mills operate in partial closed circuit with hydrocyclones, and with transfer of AG mill discharge slurry to the pebble mill by pump. Cyclone overflow is final product to flotation.
- One 14 MW AG mill operating on material feed from stockpile and in complete closed circuit with hydrocyclones.
- A single pebble mill in closed circuit with cyclones to produce a final product (P80) size of 95 µm.
- Sequential flotation of copper and nickel concentrates.
- Copper flotation cleaning in four stages with regrind of scavenger concentrates product.
- Nickel flotation cleaning in four stages with regrind of the $2^{nd}$ cleaner concentrate product.
- Flotation of sulfide rich concentrate from the nickel scavenger flotation tails to produce a low Sulphur content tailings with low acid forming capacity.
- Dewatering of Cu and Ni concentrates by thickening and filtration.
- Deposition of primary tailings into conventional (unlined) TSF.
- Deposition of sulfide rich concentrate into a dedicated lined tailings storage facility.

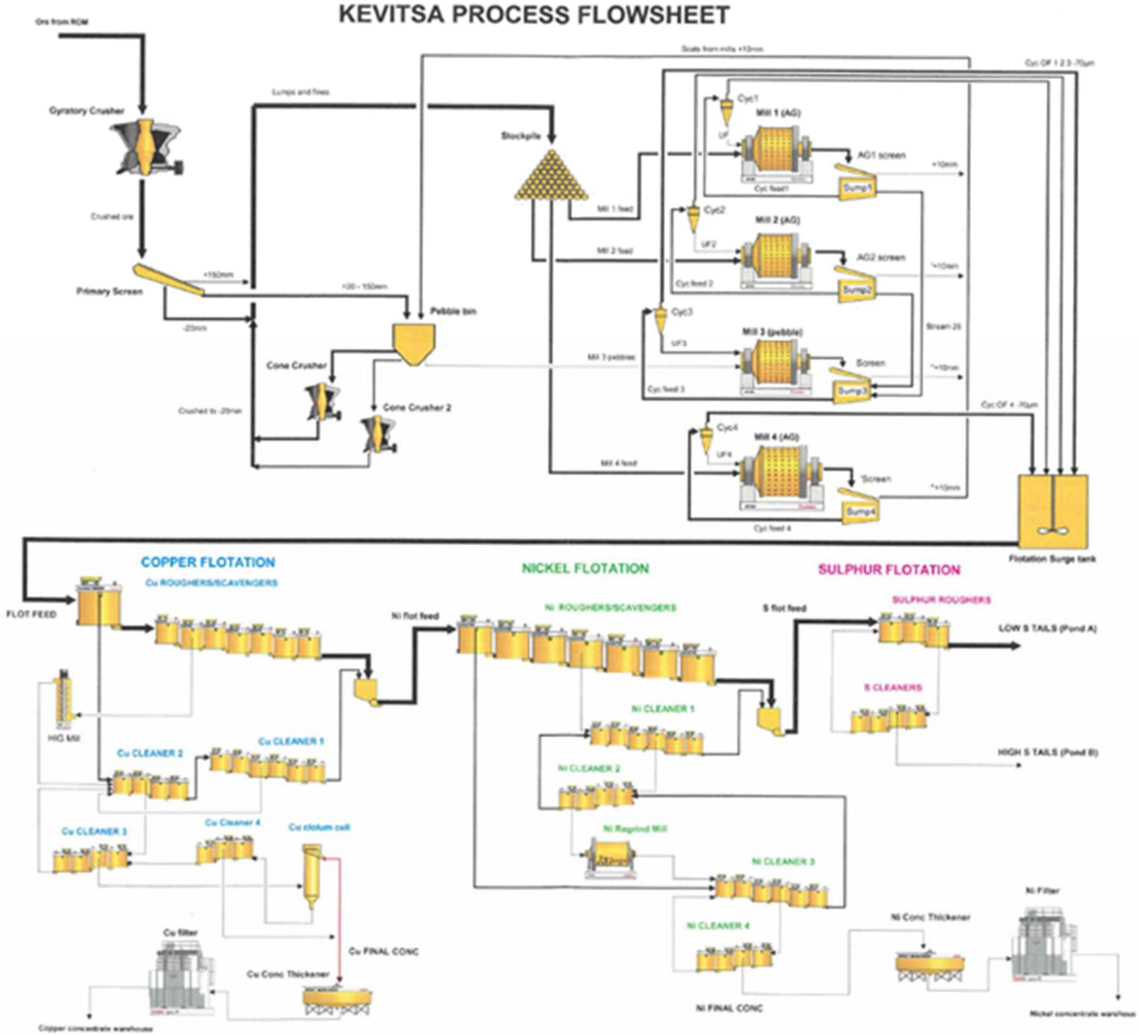



Figure 7. Simplified flowchart of the Kevitsa Mine process

Historical test work in the 1990's and early 2000's indicated that by flotation a bulk sulfide concentrate containing Cu and Ni could be produced successfully. The grades of the bulk concentrate produced during these metallurgical studies did not meet the requirements for downstream processing and the test work for producing separate saleable concentrates of copper and nickel was not successful. From 2004 to 2009 metallurgical testing was carried out at the laboratories of GTK (formerly VTT) in Outokumpu, Finland, with the focus being on developing a flotation process to produce separate smelter-grade copper and nickel concentrates. This work was carried out at bench scale and in a pilot plant campaigns. Numerous operational test work programs have been run in the site laboratories. Results have indicated unsuccessful separation of copper and nickel in the bulk concentrate to produce separate saleable concentrates. The flotation type implemented at Kevitsa process plant is a sequential circuit that allows to produce separate saleable concentrates.

### 3.11 Prices, terms and costs

Boliden's planning prices, which are an expression of the anticipated future average prices for approximately 10 years, are presented in Table 10. The maintenance, mining, processing and concentrate transporting costs are included in calculations for the cut-off at the Kevitsa Mine.

Table 10. Long term planning prices used in Kevitsa Mine Reserve and Resource reporting

| | | **Prices** | |
|---|---|---|---|
| | Mineral Resources | Mineral Reserves | Mineral Reserves |
| | Long Term 2024-> | Budget 2023 | Long Term 2024-> |
| Copper | 7 200 USD/t | 7 763 USD/t | 7 200 USD/t |
| Gold | 1 400 USD/oz | 1 778 USD/oz | 1 400 USD/oz |
| Nickel | 17 000 USD/t | 21 638 USD/t | 17 000 USD/t |
| Palladium | 1 300 USD/oz | 2 128 USD/oz | 1 300 USD/oz |
| Platinum | 900 USD/oz | 842 USD/oz | 900 USD/oz |
| Cobalt | 20 USD/lb | 24 USD/lb | 20 USD/lb |
| EUR/USD | 1.17 | 1.02 | 1.17 |

The NSR formula is based on process recovery figures from the process plant as well as general terms for payables and deleterious elements. It assumes the recoveries and prices, which are set from Boliden's Budget Prices respective Long-Term Prices (LTP).
NSR coefficients and cut-off used for grade control in 2022 are described in 3.1 Major changes.

## 3.12 Mineral Resources

The 2022 Kevitsa Mineral Resources are reported using the 2021 Mineral Resource model which was estimated in December 2021 by Sonja Pabst, fulltime employed Boliden Senior Resource Geologist, and Member of the AIG Australian Institute of Geoscientists, Membership No. 7473. Statement was performed using a constraining Whittle pit shell to demonstrate RPEEE. Eleven grade elements (Cu, Ni(S), Co(S), Au, Pt, Pd, Cu(S), Fe, Mg, Ni and S), twenty-six mineral concentrations[4] and density were estimated. The 2021 MRE includes a total of 639 DDH and 6 745 RC holes including the 2021 drilling campaign.

Mineral Resource (i.e. mineralization) grade shells were generated using Leapfrog Geo by Loraine Berthet and Sonja Pabst. The model consists of four mineralization domains defined by a combined cut-off of Cu and NiS and mineralogical characteristics; 'Normal ore', 'Ore', 'NiS ore', and 'NiS PGE ore' (Berthet, 2021; Pabst, 2021). An additional domain called 'False ore' is modeled since MRE 2020_2; it has previously been described by Mutanen (1997) and removes S-rich mineralization with un-economical NiS and Cu grades from the rest of the mineralization volumes. As 'False ore' is causing high volumes of waste that requires to be capsulated in order to avoid acid mine drainage (AMD), it is of great importance for Kevitsa LOMP to quantify the corresponding tonnages accurately.

Statistical analysis was undertaken using Snowden Supervisor and Leapfrog Geo EDGE. The model extent was defined to cover the Stage 5 pit design and all drilling. Grade estimation was completed using Ordinary Kriging (OK) in Leapfrog Geo EDGE. For a detailed description of the estimation methodology, including statistical data analysis, grade variography, estimation parameters and model validation, refer to Pabst (2021).

The 2022 Mineral Resources have been reported from the 2021 Mineral Resource block model by cut-off based on NSR long-term prices. Boliden long-term metal prices and smelter terms have only changed moderately since last year and from the year before, why the revenue model is unchanged from the previous RPEEE pit shell generation.

The undiscounted RPEEE pit shell was generated in Whittle in December 2021, using the following simplified formula for NSR:

NSR=Ni(S) % x 64.2 +Cu % x 45.44 +Pt ppm x 6.56 + Pd ppm x 9.16 +Au ppm x 8.79 +Co(S) % x 59.16

The 2022 Mineral Resource tabulation, depleted to 31 December 2022, is presented in Table 11. The Mineral Resources have been reported at a 10 €/t NSR cut-off using an updated NSR formula which is also used for parts of Reserve reporting:

NSR=Ni(S) % x 69.66 +Cu % x 48.59 +Pt ppm x 6.54 +Pd ppm x 9.03 +Au ppm x 9.61 +Co(S)% x 59.99

[4] albite, amphibole, anorthite, biotite, calcite, chalcopyrite, Fe chlorite, Mg chlorite, cubanite, diopside, dolomite, enstatite, hornblende, hypersthene, magnetite, marcasite, milerite, olivine, Fe pentlandite, Ni pentlandite, hexagonal pyrrhotite, monoclinic pyrrhotite, quartz, serpentine, talc, troilite

The Mineral Resources have been constrained below the Stage 4 final pit (LOMP 2023) and within the 2021 Resource Whittle shell, reflecting reasonable prospects for eventual economic extraction. All blocks outside the Whittle shell have been excluded. For more detail on the generation of the Whittle shell, refer to Baldwin (2021).

The Mineral Resources are reported exclusive of and additional to the Mineral Reserves.

Table 11. 2021 Kevitsa Mineral Resources, depleted to 31 December 2022, at a 10 €/t NSR cut-off

| | 2022 | | | | | | |
|---|---|---|---|---|---|---|---|
| **Classification** | Tonnes(Mt) | NiS (%) | Cu (%) | Au (g/t) | Pd (g/t) | Pt (g/t) | CoS (%) |
| Measured | 53 | 0.21 | 0.33 | 0.08 | 0.11 | 0.17 | 0.01 |
| Indicated | 89 | 0.23 | 0.36 | 0.07 | 0.07 | 0.11 | 0.01 |
| **Total M&I** | **142** | **0.22** | **0.35** | **0.07** | **0.08** | **0.13** | **0.01** |
| Inferred | 0.4 | 0.09 | 0.16 | 0.02 | 0.01 | 0.03 | 0.01 |
| **Total Mineral Resources** | **142** | **0.22** | **0.35** | **0.07** | **0.0** | **0.13** | **0.01** |

- *Mineral Resources are reported exclusive of Mineral Reserves.*
- *Mineral Resource is a summary of Resource estimations and studies made over time adjusted to mining situation of December 31 2022.*
- *Mineral Resources are reported as undiluted, with no mining recovery applied in the Statement. Assumptions for mining factors (mining and selling costs, mining recovery and dilution, pit slope angles) and processing factors (metal recovery, processing costs), during the optimization process only.*
- *Boliden considers there to be reasonable prospects for economic extraction by constraining within an optimized open pit shell constructed using long term market forecast commodity prices.*
- *Mineral Resources are reported above the optimized pit shell and above a NSR marginal cut-off of 10 EUR /t, which reflects the economic and technical parameters, and below the mine design pit shell used to report the Mineral Reserve.*
- *Tonnes and grades are rounded which may result in apparent summation differences between tonnes, grade and contained metal content.*

## 3.13 Mineral Reserves

The Mineral Reserve is based on the 2021 Mineral Resource performed by S. Pabst.

### 3.13.1 Model depletion

Tuula Koivuniemi fulltime employed Boliden Production Engineer, was in charge of depleting and reporting the Mineral Reserve to 31 December 2022. The same files as per the Budget 2023 were used to code the 2021 Mineral Reserve in Deswik CAD using the same resource category defined by S. Pabst:

- 2021 Mineral Resource block model, using LOMP 2023 NSR cut-offs updated with RC drilling data for grade control, database closed on August 23rd 2022.
- End December 2022 survey pickup
- LOMP 2023 Stage 4 final pit design

A long section along 3 499 000mN is presented in Figure 8, illustrating the remaining Mineral Reserves and Mineral Resources.

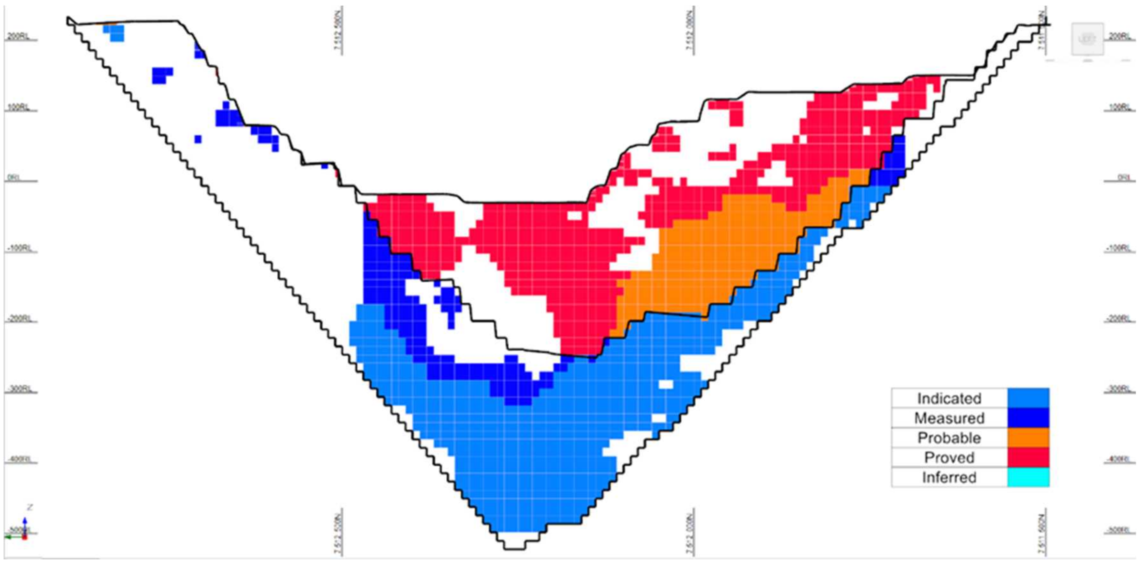



Figure 8. N-S long section along 3499000mN, illustrating the Mineral Reserves and Mineral Resources as of 31 December 2022 (below projected EOM December 2022 surface).

### 3.13.2 Mineral reserve reporting

The Mineral Reserve was constrained within the Stage 4 pit. Stage 4 pit design is based on the pit optimization done using 2018 MRE. The Stage 4 pit design has been updated during 2022. Based on SRK technical studies on 2021, where a geotechnical risk assessment flagged a potential risk for wedge failure and loosing of a mining position. These changes, together with changing of bench face angle from 90 to 85 degrees, have been implemented to the Stage 4 design.

Blocks within the scheduled 2023 production period were reported inside production geologist defined "geoblocks" or above a cut-off grade of NSR ≥ 15 €. Geoblocks are areas defined by a two Stage cut-off in 2022 described in 3.1 Major changes and changed for a single cut-off of NSR ≥ 15 € in 2023 due to the limited contribution of marginal ore in production in 2022. Blocks within scheduling period of 2023 were reported using the following NSR factors:

NSR=Ni(S) % x 103.17 +Cu % x 60.24 +Pt ppm x 8.00 +Pd ppm x 20.47 +Au ppm x 15.17 +Co(S) % x 85.95

Blocks within the scheduled 2024-2033 production period were reported above a cut-off grade of NSR ≥ 13 €. Blocks scheduled between 2024 and 2033 were reported using a second NSR formula:

NSR=Ni(S) % x 69.66 +Cu % x 48.59 +Pt ppm x 6.54 +Pd ppm x 9.03 +Au ppm x 9.61 +Co(S)% x 59.99

Only blocks above the respective cut-offs and classified as Measured within the 2023 Mineral Resource were classified as Proved Mineral Reserves. Indicated blocks above the NSR cut-offs were classified as Probable Mineral Reserves. No Inferred Mineral Resources have been included in the Mineral Reserves.

Mineral Reserves are factored before reporting to account for the recovery (ore loss) and dilution typically experienced with mining at the Kevitsa Mine. Mining recovery was set to 93 % and dilution was set to 7 %. No grade was attributed to the dilution.

The 2022 Kevitsa Mineral Reserve, depleted to 31 December 2022 projected surface (using the most up to date short term plan), is presented in Table 12. The Mineral Reserve has been reported within the Stage 4 pit design, using a two-Stage NSR cut-off approach (see above) and factored to account for dilution and recovery.

Table 12. 2021 Kevitsa Mineral Reserve, depleted to 31 December 2022

| | 2022 | | | | | | |
|---|---|---|---|---|---|---|---|
| **Classification** | **Tonnes (Mt)** | **NiS (%)** | **Cu (%)** | **Au (g/t)** | **Pd (g/t)** | **Pt (g/t)** | **CoS (%)** |
| **Proved** | **73** | **0.22** | **0.33** | **0.10** | **0.13** | **0.21** | **0.01** |
| **Probable** | **28** | **0.26** | **0.38** | **0.10** | **0.12** | **0.18** | **0.01** |
| **Total** | **101** | **0.23** | **0.34** | **0.10** | **0.13** | **0.20** | **0.01** |

- *Mineral Reserves is a summary of Resource estimations and studies made over time adjusted to mining situation of December 31 2022.*
- *Mineral Reserves are reported inclusive of mining modifying factors which are based historical reconciliation results, a 7 % dilution and a 93 % mining recovery are applied in the statement.*
- *2023 LOMP production schedule along with mining factors (mining recovery and dilution), processing factors (Recovery and Processing costs) and revenue factors (metal prices, selling costs) were incorporated in a financial model and economic analysis by which Boliden determined the Mineral Reserves to be currently economic.*
- *Mineral Reserves are reported within the pit design at a NSR operational cut-off of 15 EUR/t for 2023, and 13 EUR/t from 2024 onwards.*
- *Mineral Reserves include 40 Mt of ore to be mined at the last four years of the LOM (years 2030-2033) for which current TSFA capacity is insufficient. These Mineral Reserves are dependent on Kevitsa identifying a suitable location, designing and obtaining relevant permits for additional TSF capacity within the next 10 years - prior to the tailings deposition.*
- *Tonnes and grades are rounded which may result in apparent summation differences between tonnes, grade and contained metal content.*

## 3.14 Comparison of Mineral Resources and Mineral Reserves with previous year

### 3.14.1 Mineral resource changes

The main differences between the 2021 Mineral Resource and the 2022 Mineral Resource are explained by:

- Mining (minor reduction of 11 kt).
- Updated long term NSR factors (increase of 688 kt).
- Adjustments to the Reserve pit, such as updated blockmodel, wedge to reduce risks due to structures (2 583 kt moved from Reserve to Resource).

A waterfall chart, quantifying some of the major differences, is presented in Figure 9.

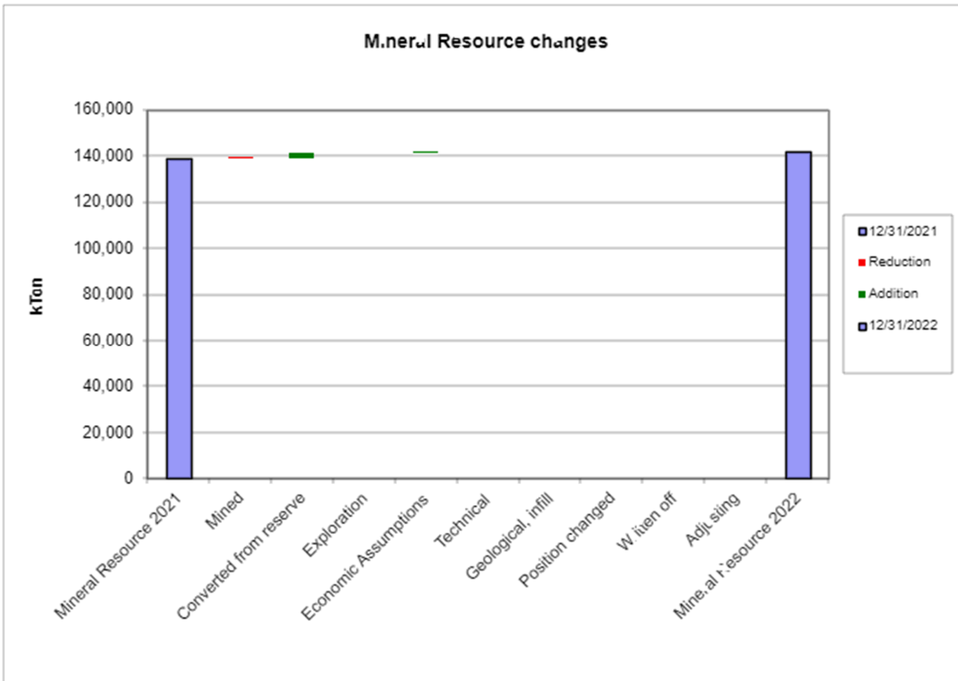



Figure 9. Mineral Resource changes with previous year

### 3.14.2 Mineral reserve changes

The 2022 Mineral Reserve is based on the 2021 Mineral Resource block model by S. Pabst (the same model as used in LOMP and Budget 2023). The 2021 Mineral Reserve was based on the 2020_2 Mineral Resource model. Main differences are explained by:

- Blockmodel change 2020_2-->2021 reduced Mineral Reserves of 11 736 kt
- Mining caused a reduction of 9 949 kt and a gain of 322 kt mined outside Mineral Reserves.
- Changes to the Stage 4 pit design (1 942 kt reduction)
- Economic assumptions increased Mineral Reserves of 904 kt: modification in the long term NSR cut-off from 15€ to 13€.

A waterfall chart, quantifying some of the major differences, is presented in Figure 10.

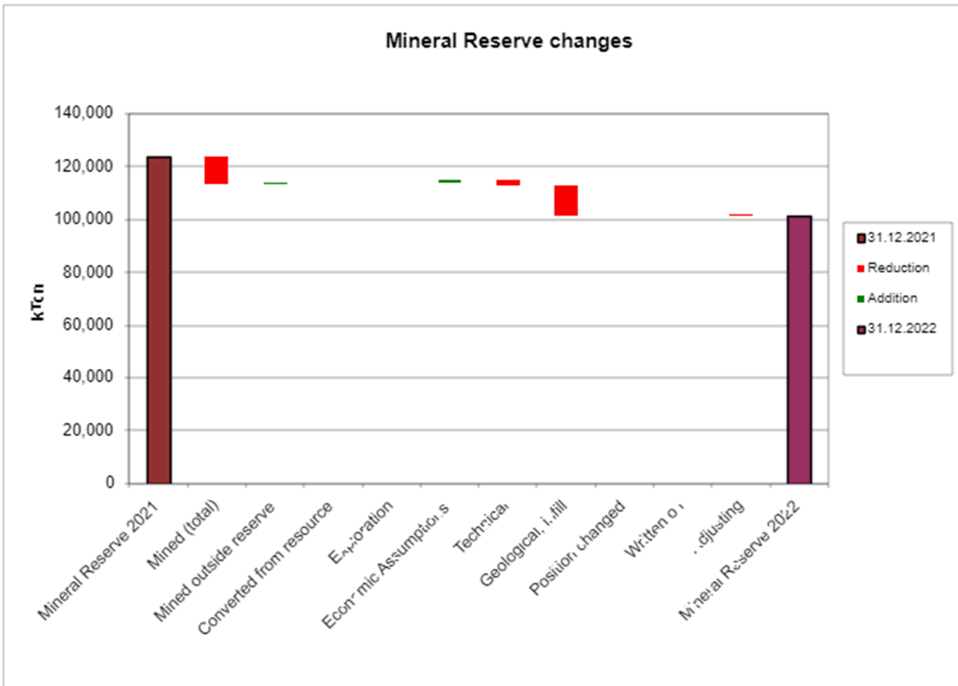



Figure 10. Mineral Reserve changes with previous year

## 3.15 Reconciliation

### 3.15.1 Tonnage reconciliation

Figure 12 compares ore tonnage per monthly production volume between:

- actual production (Production)
- Budget 2022 block model (BUD_bm_22)

with the planned Budget 2022 monthly ore tonnage. It is important to note that planned Budget monthly ore tonnage does not represent the same volume than production due to changes in the mining sequence.

Mined ore tonnage is consistent with the block model used for Budget 2022 (BUD_bm_22); the highest difference occurs in November 2022 (168 kt) when grade control drilling was done on a ramp previously inaccessible.

Most of the monthly discrepancy between mine production and Budget 2022 ore tonnage is due to changes in the mining sequence.

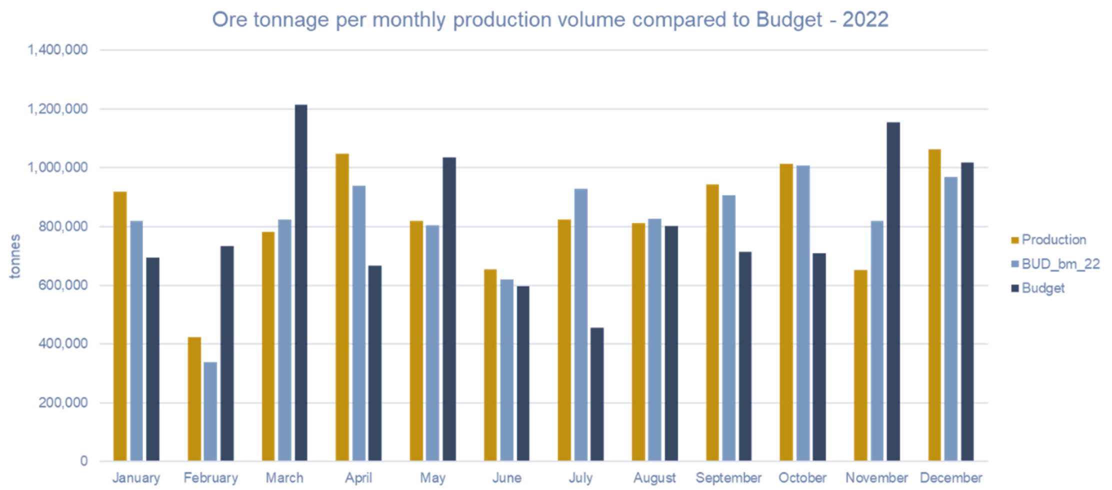



Figure 11. 2022 ore tonnage comparison within mined volumes between production and block model used for Budget 2022. Budget ore tonnage represent different volume due to changes in the mining sequence.

### 3.15.2 Recoverable resources

Usable waste material can be considered as a resource at Kevitsa as it plays an important role in Kevitsa economic model; estimating its tonnage is paramount for a sustainable operation.

Kevitsa mine geologists quantify the recoverable ore and usable waste in grade control models for monthly production planning, considering mining selectivity and blast design (delineating "geoblocks").

The Figure 12 and Figure 13 quantify tonnage change per monthly production volume by delineating recoverable resources between block model used for Budget 2022 and grade control models used for monthly production planning. It also shows the impact of additional grade control data in estimated tonnages.

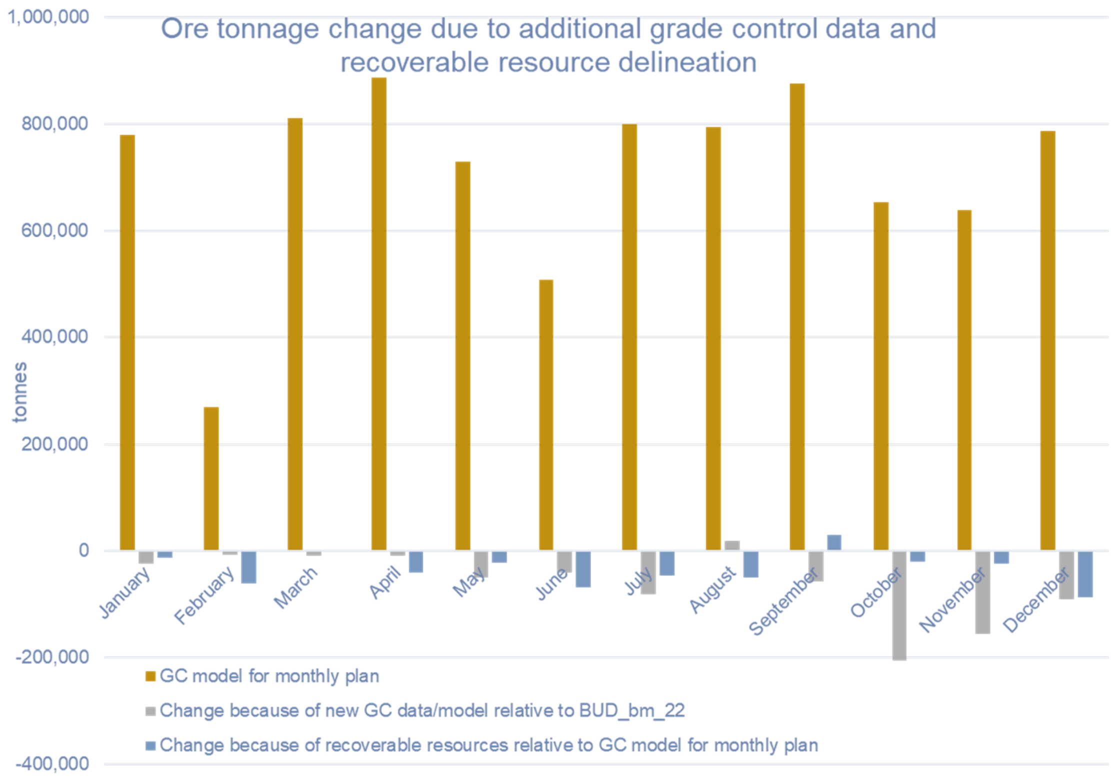



Figure 12. 2022 ore tonnage change due to additional grade control data relative to block model used for Budget 2022 and delineation of recoverable resources within grade control model for monthly plan.

For ore tonnage, the difference between block model used for Budget 2022 and monthly plan:

- caused by the acquisition of grade control data represents a 7% decrease in average over 2022;
- and the application of mining modifying factors on grade control models for monthly planning represents in average over 2022 a loss of 5% ore tonnage due to:
  - internal waste dilution of 7% (waste inside geoblocks)
  - ore loss of 11% (ore outside geoblocks)

For usable waste tonnage, the difference between block model used for Budget 2022 and monthly plan:

- caused by the acquisition of grade control data represents a 1% decrease in average over 2022;
- and the application of mining modifying factors on grade control models for monthly planning represents in average over 2022 a loss of 13% usable waste tonnage due to:
  - internal contamination by high S material of 3% (ore and high S or NiS waste inside geoblocks)
  - usable waste loss of 15% (usable waste outside geoblocks)

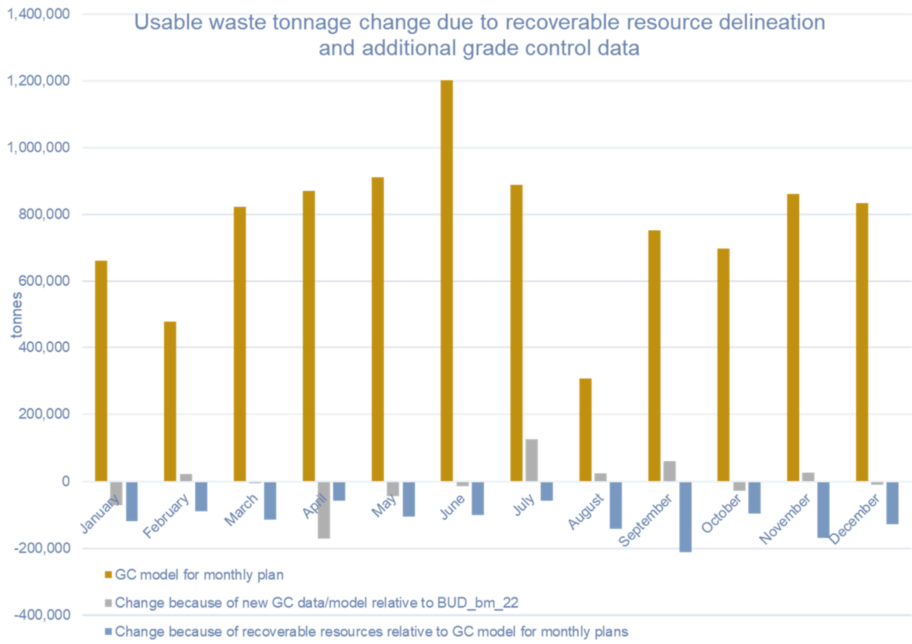
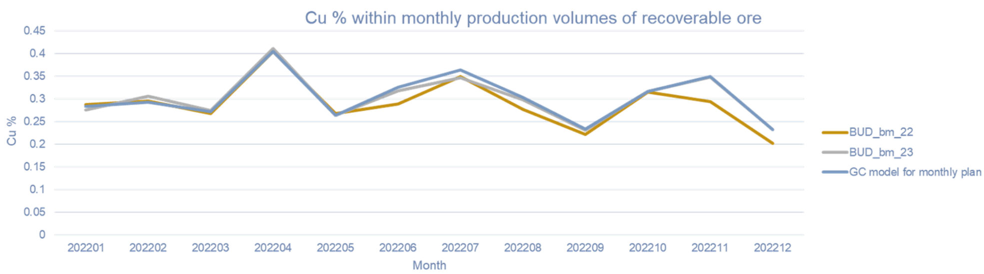



Figure 13. usable waste tonnage change due to additional grade control data relative to block model used for Budget 2022 and delineation of recoverable resources within grade control model for monthly plan.

### 3.15.3 Grade reconciliation

Figure 14 compares NiS and Cu grades per monthly production volume of recoverable ore from the block models used for Budget 2022, Budget 2023 and grade control models used for monthly production planning. It shows that average grades for NiS and Cu are higher in block model used for Budget 2023 than in Budget 2022 block model. This reflects the change between MRE 2020_2 and MRE 2021 models.



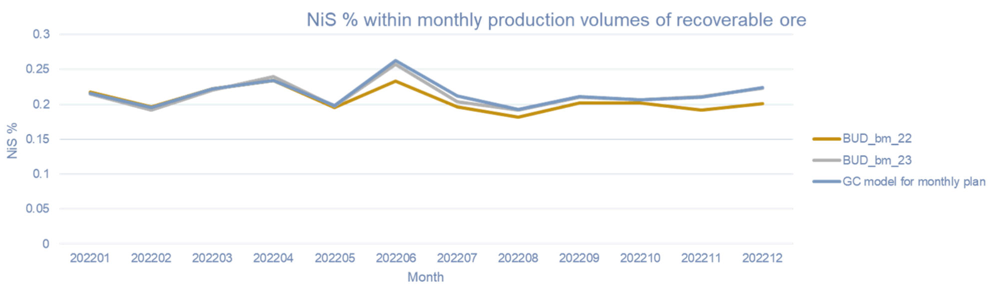




Figure 14. NiS and Cu grades per monthly production volume of recoverable ore from the block models used for Budget 2022, Budget 2023 and grade control models used for monthly production planning

According to Plant results, 2022 grade control plans allowed to forecast the crusher feed grades; as it is presented Figure 15, Figure 16 and Table 13 the deviation is within [-10%;10%] in average in 2022, except for talc.

Table 13. Weighted average grades and mineral concentrations of the forecasted grades per ROM stockpile (finger) and corresponding actual measured mill grades and mineral concentrations.

| Element | Forecast Grade | Process Grade | Δ Forecast vs Actual | Δ% Forecast vs Actual |
|---|---|---|---|---|
| Ni % | 0.218 | 0.234 | 0.016 | 7.27% |
| NiS % | 0.198 | 0.186 | -0.012 | -5.87% |
| Cu % | 0.280 | 0.304 | 0.024 | 8.70% |
| CuS % | 0.268 | 0.280 | 0.011 | 4.25% |
| CoS % | 0.010 | 0.009 | -0.001 | -9.64% |
| S % | 1.611 | 1.526 | -0.085 | -5.29% |
| Au ppm | 0.103 | 0.112 | 0.009 | 8.94% |
| Pt ppm | 0.235 | 0.250 | 0.014 | 6.06% |
| Pd ppm | 0.148 | 0.161 | 0.013 | 8.49% |
| Amph % | 34.016 | 34.676 | 0.660 | 1.94% |
| Talc % | 0.452 | 1.152 | 0.700 | 154.87% |

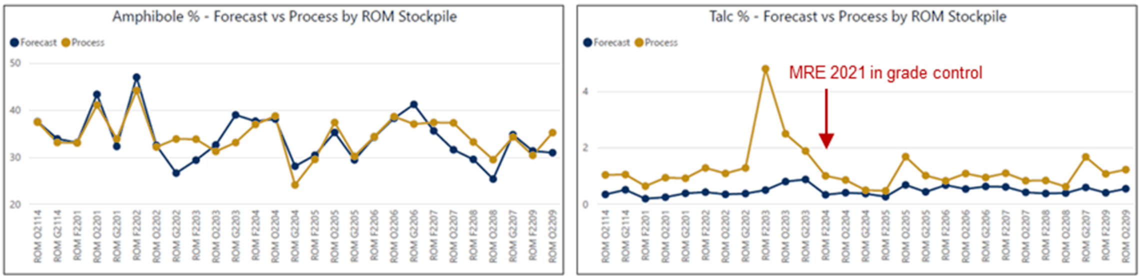



Figure 15. Mineral concentrations comparison between grade control forecast (Forecast Grade) and process (Process Grade) average per stockpile fed to the primary crusher. Fingers are presented by chronological order from January to December 2022

The implementation of MRE 2021 model in grade control models for monthly plan in May 2022 has improved the talc forecast and in conjunction with the CMC dosing system which ran in full capacity, helped depressing the talc.

There is a systematic bias in forecasted NiS and CoS grades. A study is currently going on at the laboratory (Eurofins Labtium) in order to investigate if the sample preparation of grade control samples, which is different from mill flotation feed (MFF) samples, can explain the grade differences. First results demonstrate that milling of MFF samples results in systematic higher grades for NiS and CoS. More test work will be undertaken.

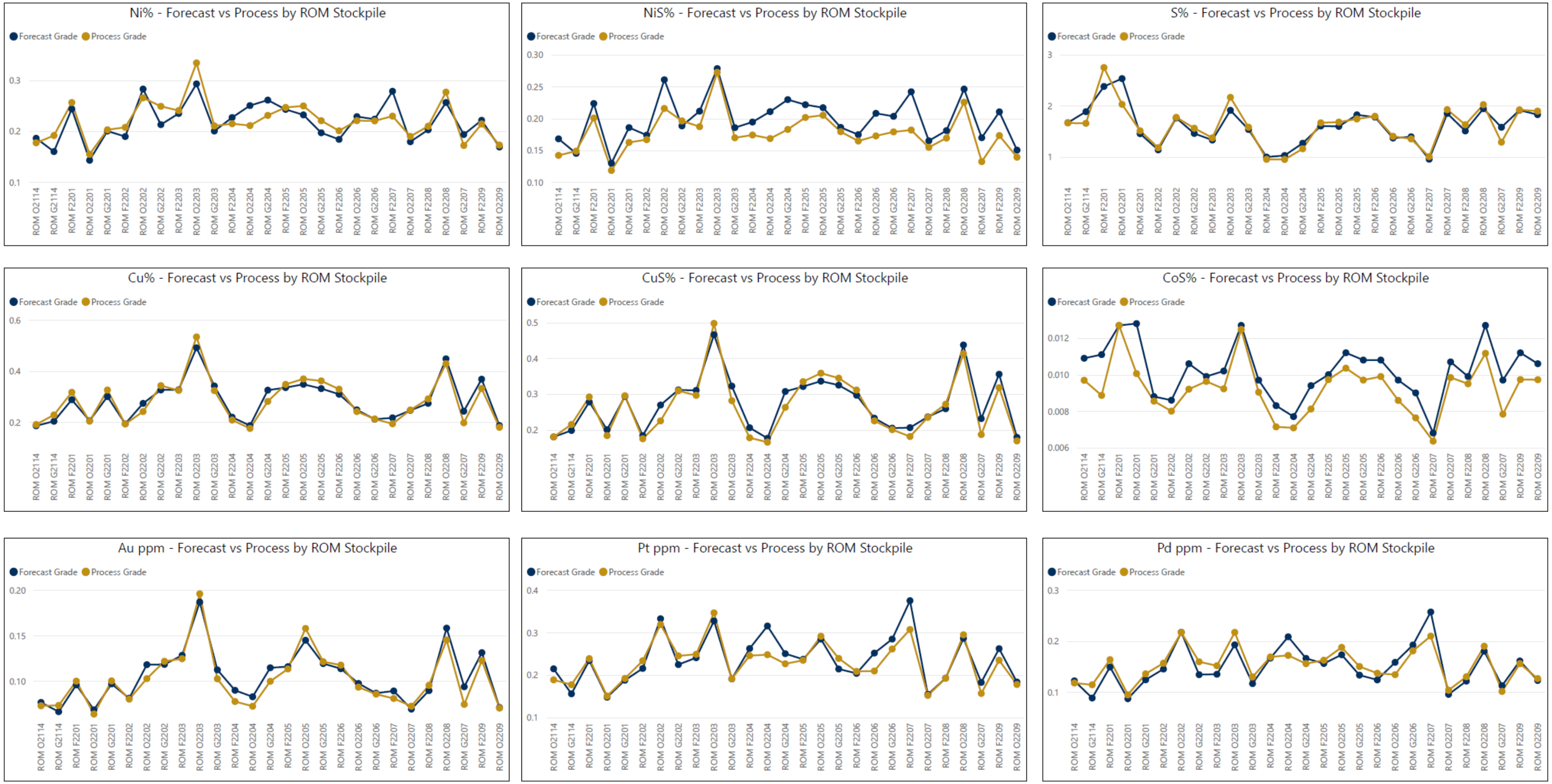



Figure 16. Grades comparison between grade control forecast (Forecast Grade) and process (Process Grade) average per stockpile fed to the primary crusher. Fingers are presented by chronological order from January to December 2022

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