Boliden Summary Report

Resources and Reserves | 2021

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

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 2021.

Table 1. Mineral Resources and Mineral Reserves for Boliden Kevitsa Mine as of 31-12-2021 and 31-12-2020 for comparison.

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**	**0.010**
Probable	**52**	**0.27**	**0.33**	**0.10**	**0.15**	**0.23**	**0.010**
Total	124	0.22	0.32	0.10	0.13	0.20	0.010
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**
2020 Classification	**Mton**	**NiS (%)**	**Cu (%)**	**Au (g/t)**	**Pd (g/t)**	**Pt (g/t)**	**CoS (%)**
Mineral Reserves							
Proved	**70**	**0.19**	**0.31**	**0.09**	**0.11**	**0.17**	**0.01**
Probable	**59**	**0.24**	**0.33**	**0.10**	**0.14**	**0.20**	**0.01**
Total	128	0.21	0.32	0.09	0.12	0.18	0.01
Mineral Resources							
Measured	**43**	**0.19**	**0.29**	**0.08**	**0.11**	**0.18**	**0.01**
Indicated	**132**	**0.23**	**0.34**	**0.07**	**0.07**	**0.13**	**0.01**
Total M&I	175	0.22	0.33	0.07	0.08	0.14	0.01
Inferred	**4**	**0.12**	**0.22**	**0.03**	**0.02**	**0.06**	**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 2021.*
- *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.*
- *A 2022 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 18 EUR/t for 2022, and 15 EUR/t from 2023 onwards.*
- *Mineral Reserves include 40 Mt of ore to be mined at the last four years of the LOM (years 2030-2034) 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 2020_2 Mineral Resource block model, using LOMP 2022 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.

Since both 2020_2 and 2021 Mineral Resource models are used, this document refers to PERC compliant Technical Reports by Pabst (2020) and 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.

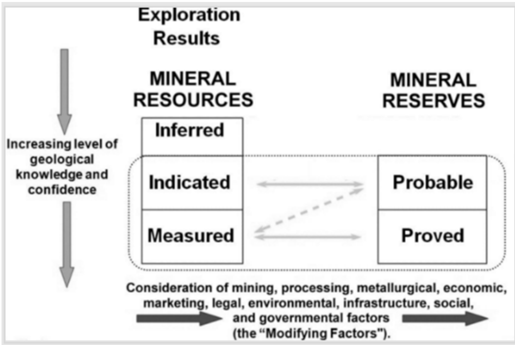

Figure 1. General relationship between Exploration Results, Mineral Resources and Mineral Reserves (PERC 2017).

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.

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	Loraine Berthet Sonja Pabst	Sonja Pabst	
Mineral Processing	Benjamin Musuku	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 2021 was 9.803 Mt, which is an increase from last year by 0.314 Mt. Total mined material (ore + waste) was 33.762 Mt at 2021.

Total milled material in 2021 was 9 469 kt. Nickel metal annual production was 12 876 t in Ni concentrate. Ni recovery improved by 0.4 % units from 2020. Cu metal annual production was 26 013 t in Cu concentrate and 2 712 t in Ni concentrate. Cu recovery improved by 2.2 % units to copper concentrate, and total copper recovery improved by 0.5 % units.

Cu is the most valuable commodity in the Kevitsa Mine, even though the Kevitsa Mine produces more Ni concentrate. Revenue from Cu concentrate was 46.7 % and 33.5 % from Ni concentrate. 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 2021 total revenue per element at Mineral Reserve average grades.

Commodity	Revenue (%)
Cu	46.7
Ni	33.5
Co	1.8
Au	4.4
Pd	8.0
Pt	5.7

3.1 Major changes

- NSR formula and cut-offs used during 2021 for grade control are presented in Table 4.

Table 4: NSR revenue factors by commodity and cut-off applied for grade control in 2021

	January 2021	**February 2021**
Commodity	**Factor**	
Cu	43.76	
NiS	62.54	
CoS	54.65	
Au	14.79	
Pd	17.74	
Pt	7.47	
NSR cut-off EUR	**17**	**15 with a marginal cut-off of 13 conditional to mineralogical composition**

Note: Marginal NSR cut-off of 13 € was implemented in February in order to improve the metallurgical quality of the concentrate. Only the material meeting specific mineralogical requirements was considered as ore.

- Estimation parameters from MRE 2020_2 by Sonja Pabst in December 2020 have been implemented in production in June 2021.
- Modifications on pit designs for LOMP and Budget 2021 were used for reserve calculation.
- MRE 2021 by Sonja Pabst in December 2021 was used for resource calculation.
- Infill drilling campaign was completed during 2021 and was taken into account in MRE preparation.
- Whittle pit optimization was used to define RPEEE from December 2021 MRE.

3.1.1 Technical studies

Technical studies conducted during the year:

- A geotechnical risk assessment has flagged a potential for important changes in future mining positions due to wedge risk failure. The risk assessment is on going before implementing changes in mining design, planification and budget.
- Updated mineralization shells to inform the Resource Model.
- Mineral Resource Estimate/Resource model was updated.

Information on the technical work can be found in the 2021 reports Kevitsa 3D Slope Stability Numerical Analysis by SRK Consulting (Finland) Oy and 2021 Mineral Resource Estimate by Pabst.

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 (2020).

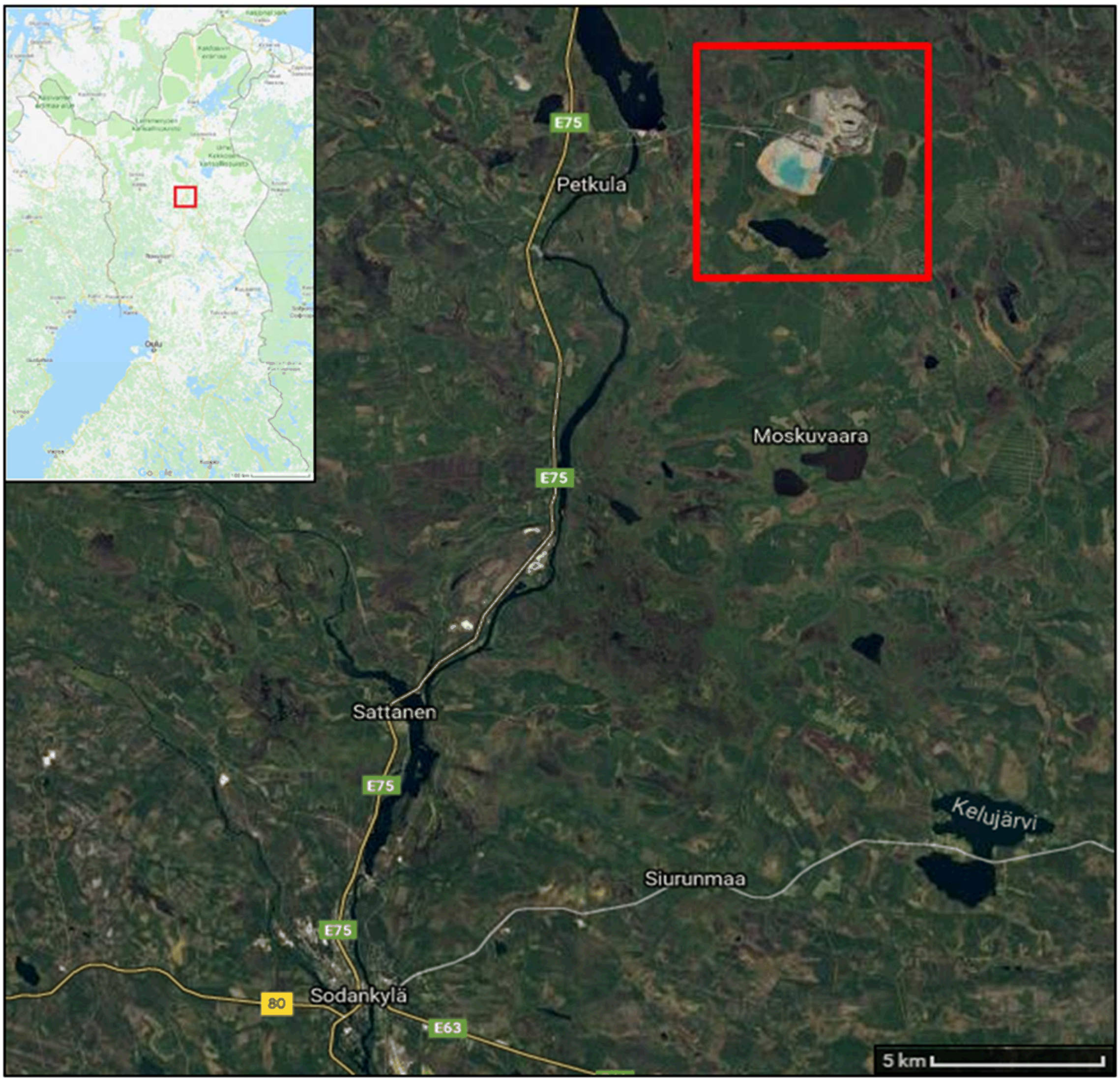

Figure 2. Map of the Kevitsa Mine property (red square) in relation to Sodankylä

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 programme
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 Mineral AB**
2020	Commissioning of 9.5 Mtpa expansion project, with design capacity of 9.9 Mtpa

Table 6.Waste and ore production history of the Kevitsa Mine in Mt

Production		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**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	73.59
Waste	[Mt]	4.23	16.01	21.21	30.39	31.9	34.2	33.5	32.23	29.96	23.96	257.59
Total	[Mt]	7.6	21.82	28.14	37.02	39.57	42.48	41.4	39.91	39.45	33.76	331.15

Table 7. Processed metals history of the Kevitsa plant

Production		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	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	71 903.9
Cu metal in concentrates	[t]	8 093	14 775	17 535	17 204	20 571	29 957	27 498	19 736	27 402	28 725	211 496
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	102 872
Co metal in Ni concentrate	[t]	167	401	422	369	501	587	591	445	495	592	4 570
Au in concentrates	[oz]	6 914	12 875	14 110	14 110	17 143	22 822	22 223	14 368	20 591	22 473	167 629
Pt in concentrates	[oz]	15 097	33 369	37 390	35 133	41 553	50 019	55 592	33 629	45 027	51 030	397 839
Pd in concentrates	[oz]	13 298	27 020	28 501	27 761	31 782	36 015	40 812	24 654	30 251	36 546	296 640

3.4 Ownership

In accordance with Finnish regulations, BKMOY owns the land within the mining concession. 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. BKMOY has also applied for an expansion of the mining concession for the potential requirement of building new infrastructure around the mine area. Another expansion still needs to be applied at the same direction according to the conceptual model.

The original environmental permit was granted in July 2009. In 2014, new environmental permit was granted for mining 10 Mt of ore per annum. BKMOY will submit new environmental permit application to the authority before summer 2022. Some of the permit clauses are 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 and plans on applying for additional environmental permit. EIA is done for five different alternative locations and for 203 Mt tailings. Plan is to start construction TSFA2 in summer 2024.

A new closure plan for Kevitsa mine has been submitted to the authorities in autumn 2019 and the permitting process is proceeding. Moraine permitting will be submitted to the local municipality in summer 2022, EIA is ongoing and will be submitted to the authorities in spring 2022. Update for closure plan shall be submitted to the authorities in 2024.

As a potential social issue, 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.

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 three valid exploration permits, plus several permit applications and reservation notifications in vicinity of Kevitsa and wider in Sodankylä area. The limited number of exploration permits is explained by TUKES having very long lead times for processing the exploration applications which is causing unpredictability and issues for long-term, systematic exploration.

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	BKMOY	4.01	3	7140
Valid Ore Prospecting Permits	BKMOY	34.28	3	ML2016:0054 ML2016:0055 8890/2-8890/4
Applied Ore Prospecting Permits (Includes the extended permits)	BKMOY	74.70	12	ML2013:0078 ML2013:0079 ML2014:0111 ML2014:0112 ML2014:0113 ML2014:0114 ML2015:0037 ML2015:0038 ML2015:0039 ML2017:0002 ML2017:0003

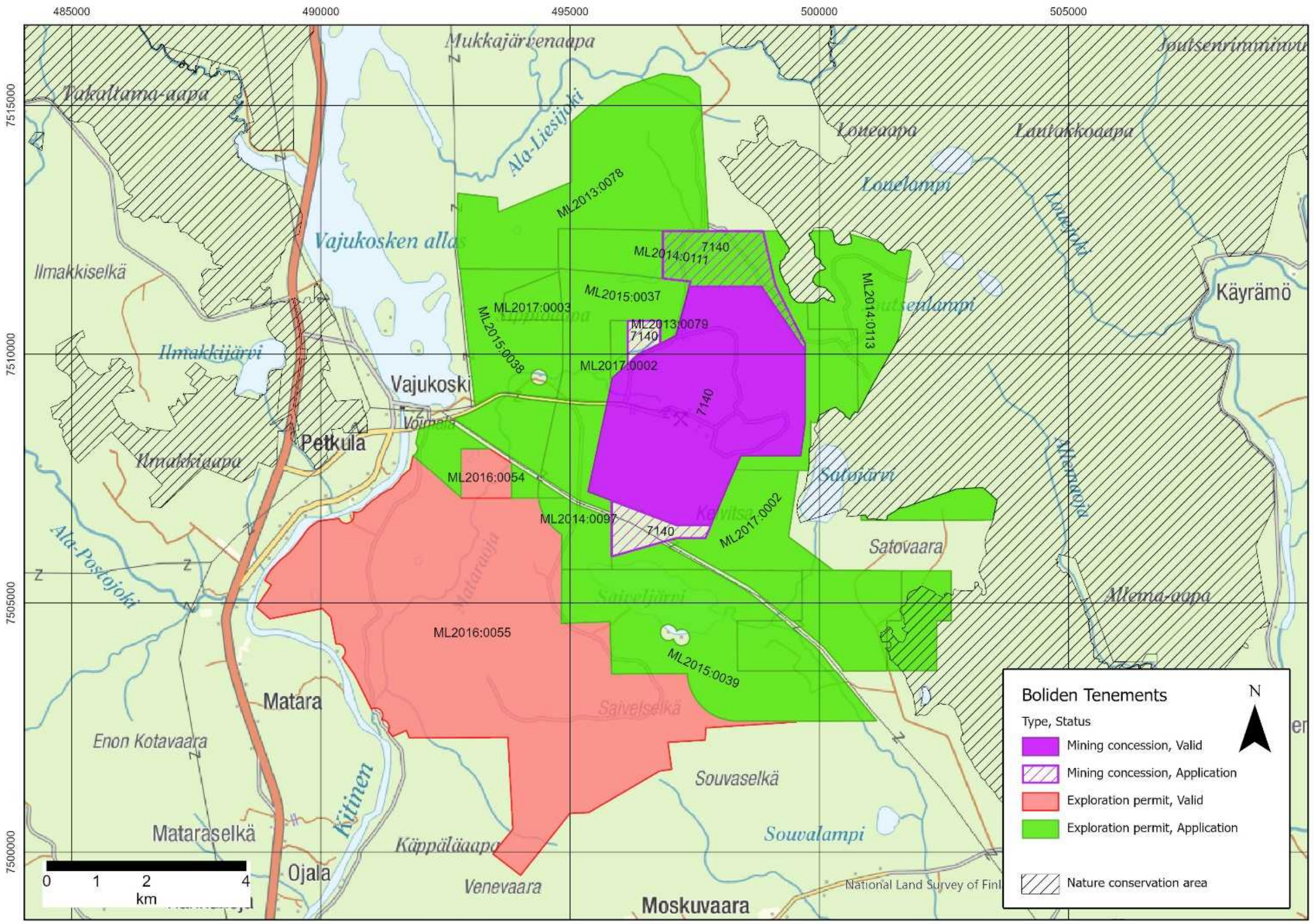

Figure 3: BKMOY tenements

3.6 Geology

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

3.6.1 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).

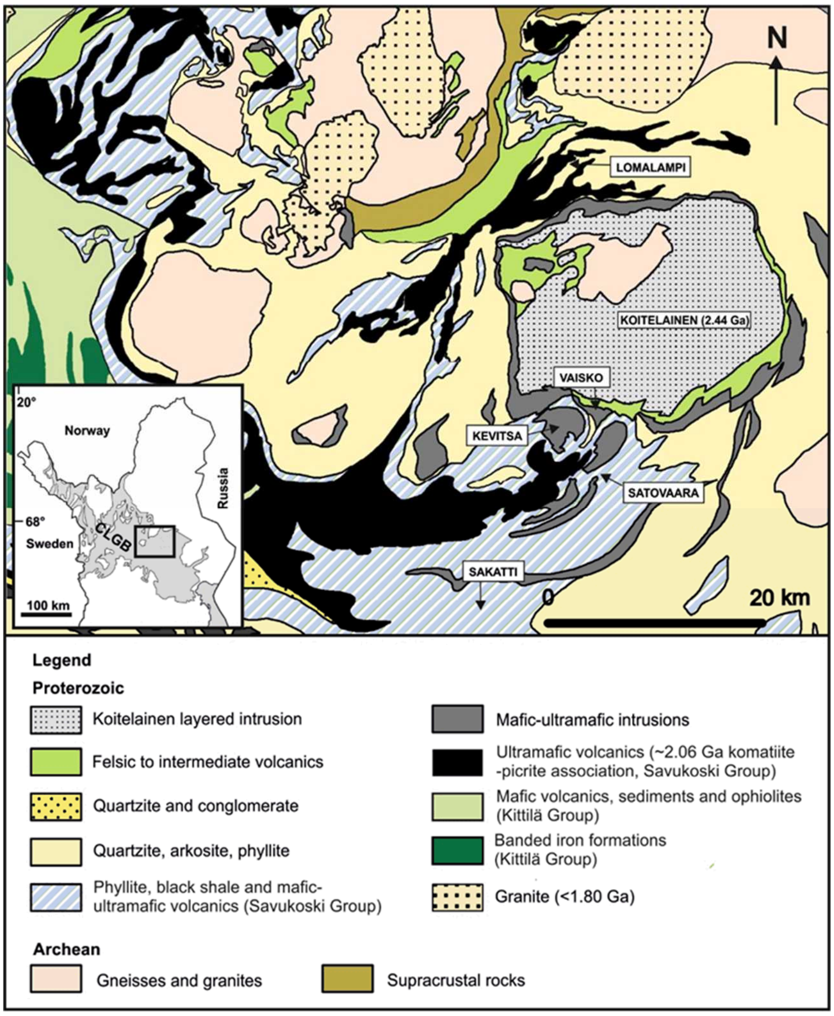

Figure 4. Regional geological map from Luolavirta et al. (2017)

3.6.2 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.

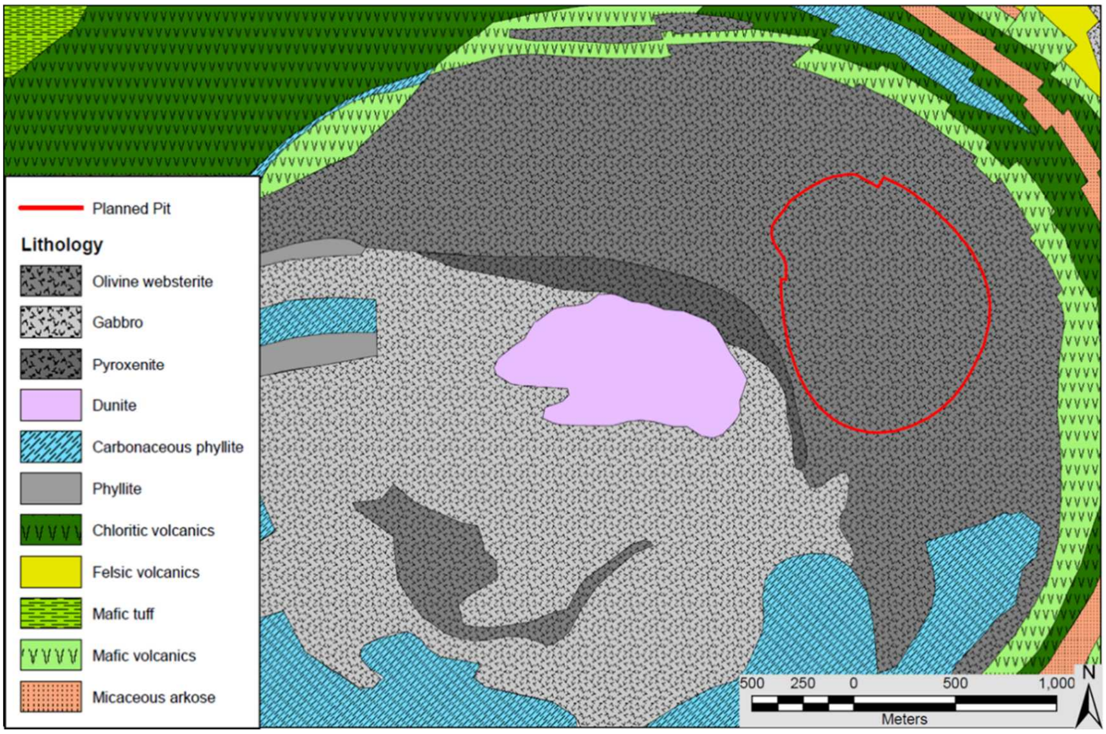

Figure 5.Geological map of the Kevitsa igneous ultramafic complex

3.6.3 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.

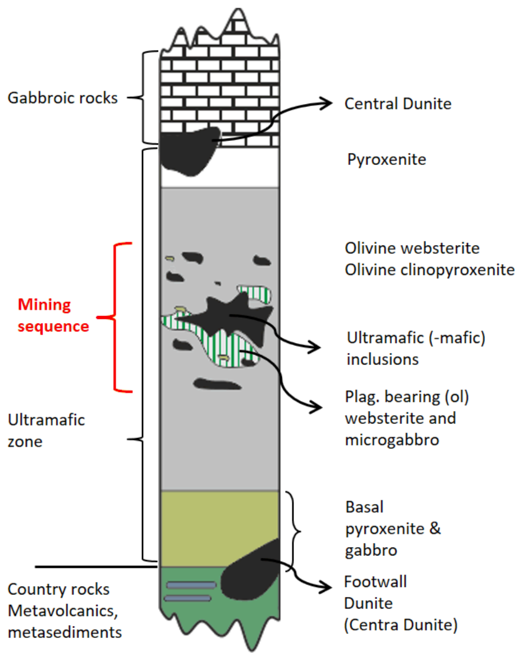

Figure 6. Schematic stratigraphy column of Kevitsa intrusion by Luolavirta, 2017

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.

3.6.4 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.

3.7 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).

3.7.1 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 2nd, 2021. The 2021 MRE includes grade control RC drilling, totaling 6 745 RC holes.

3.7.2 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.

3.7.3 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

RC samples have used XRF 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 XRF 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.

3.7.4 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).

3.7.5 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.

[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.

3.8 Exploration activities

Before 2021, Boliden conducted exploration work within the Kevitsa Mining Concession and adjacent Exploration Permit areas through BFXOY, a separate entity from the mine operator.

Since the release of the 2016 Kevitsa MRE (Gray et al. 2016), BFXOY carried out its first DD campaign focusing primarily on resource definition from March to June 2019, consisting of 21 DDH including extensions of two older holes (KEV18003 and KEV18004). The purpose of the drilling campaign was upgrading existing and find new resources adjacent to the Kevitsa pit. Drill core was subject to the same geological logging, geotechnical logging and measurements, sampling, and assaying procedures than those used by BKMOY.

In 2020, BFXOY carried out the resource drilling campaign aiming to extend the resources outside the Stage 4 pit and convert the resources from inferred to indicate category. In total, the campaign consisted 15 diamond drill holes and nearly 6 600m of drilling.

At the beginning of 2021 BFXOY was merged to BKMOY who has since carried out all the Boliden's exploration activities in Finland.

In 2021, Kevitsa Exploration department conducted in total 16 724m of exploration drilling, including the resource campaign plus the near mine targets within, and in vicinity of Kevitsa concessions.

The 2021 resource drilling campaign was carried out from April to June. Drilling focused on the areas with lower geological confidence, especially in the deeper parts of the current resources. Overall, 15 diamond drill holes and about 6 200m of drilling were completed for the campaign. Resource drilling campaign and related results are described in more detail in Kevitsa Exploration 2021 annual report (Törmälehto et al., 2021).

3.9 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.

In 2021 a pilot track for e-Trolley was built and testing is ongoing. In the future the plan is to electrify more trucks and take the trolley to full production use.

3.9.1 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. Since April 2020, ore and waste mining is not assisted anymore by contractor services.

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 will be held 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

3.9.2 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.

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 five stages with regrind of the 2nd 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.

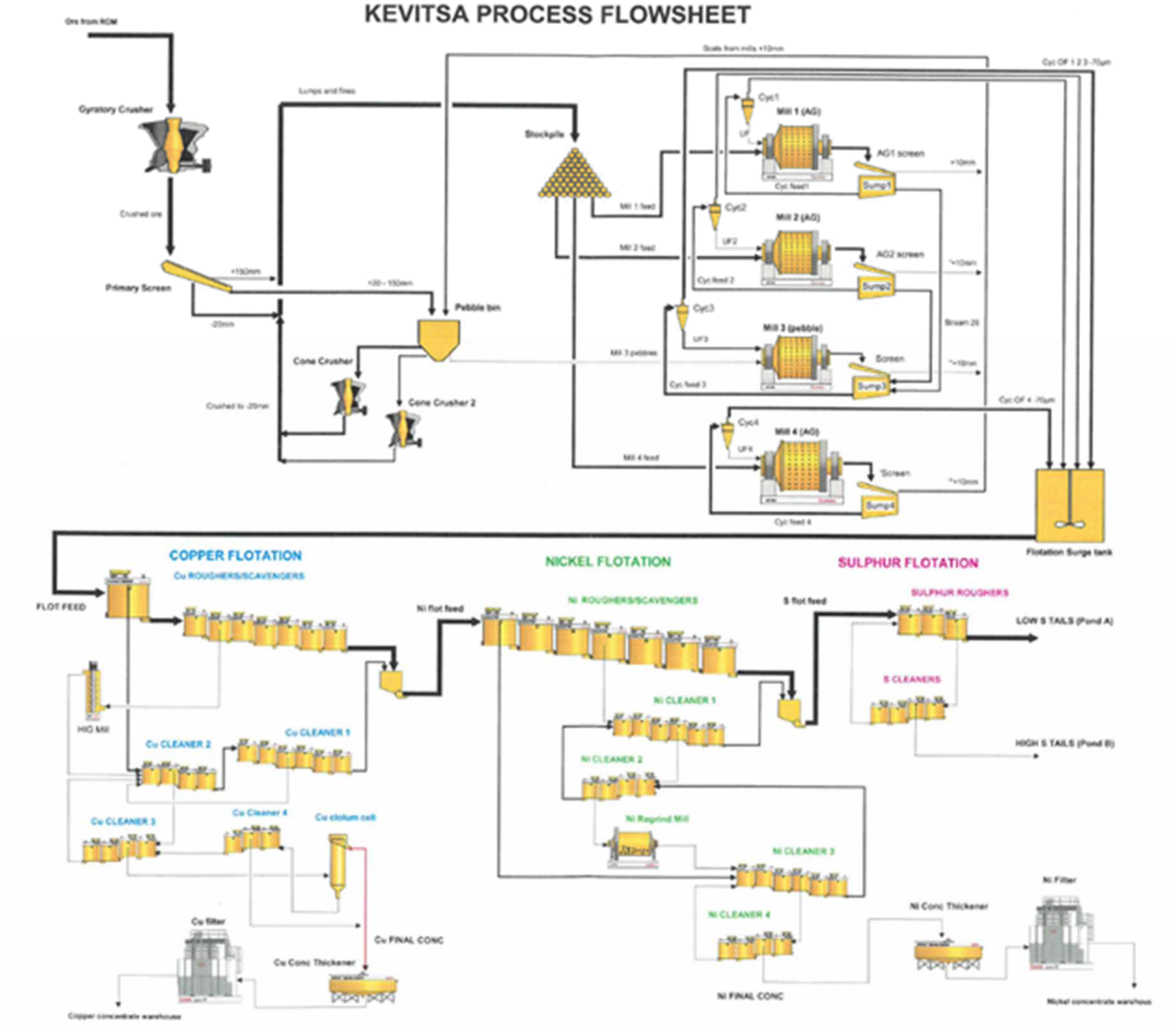

Figure 7. Simplified flowchart of the Kevitsa Mine process

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.

3.10 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 2023->	Budget 2022	Long Term 2023->
Copper	6 800 USD/t	9473 USD/t	6 800 USD/t
Gold	1 300 USD/oz	1 818 USD/oz	1 300 USD/oz
Nickel	16 000 USD/t	19 443 USD/t	16 000 USD/t
Palladium	1 300 USD/oz	2 488 USD/oz	1 300 USD/oz
Platinum	900 USD/oz	993 USD/oz	900 USD/oz
Cobalt	20 USD/lb	23 USD/lb	20 USD/lb
EUR/USD	1.17	1.19	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 2021 are described in 3.1Major changes.

3.11 Mineral Resources

The 2021 Kevitsa Mineral Resource 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. An additional 23 DDH were utilized in the estimate compared to the previous 2020 Mineral Resource estimate. The new 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 2021 Mineral Resources have been reported 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, according to 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 2021 Mineral Resource tabulation, depleted to 31 December 2021, is presented in Table 11. The Mineral Resources have been reported at a 10 €/t NSR cut-off and have been constrained below the Stage 4 final pit (LOMP 2022) and within the 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.

[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

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

	2021						
Classification	Tonnes(Mt)	NiS (%)	Cu (%)	Au (g/t)	Pd (g/t)	Pt (g/t)	CoS (%)
Measured	50	0.21	0.33	0.08	0.11	0.17	0.011
Indicated	88	0.23	0.36	0.07	0.07	0.11	0.011
Total M&I	**138**	**0.23**	**0.35**	**0.08**	**0.08**	**0.13**	**0.011**
Inferred	0.2	0.11	0.19	0.03	0.02	0.03	0.011
Total Mineral Resources	**139**	**0.23**	**0.35**	**0.08**	**0.08**	**0.13**	**0.011**

- *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 2021.*
- *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.*

3.12 Mineral Reserves

The Mineral Reserve is based on the 2020_2 Mineral Resource performed by S. Pabst.

3.12.1 Model depletion

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

- 2020_2 Mineral Resource block model, using LOMP 2022 NSR cut-offs updated with RC drilling data for grade control, database closed on August 30th 2021
- End December 2021 survey pickup
- LOMP 2021 stage 4 final pit design

A long section along 3499000mN is presented in Figure 8, illustrating the remaining Mineral Reserves and Mineral Resources.

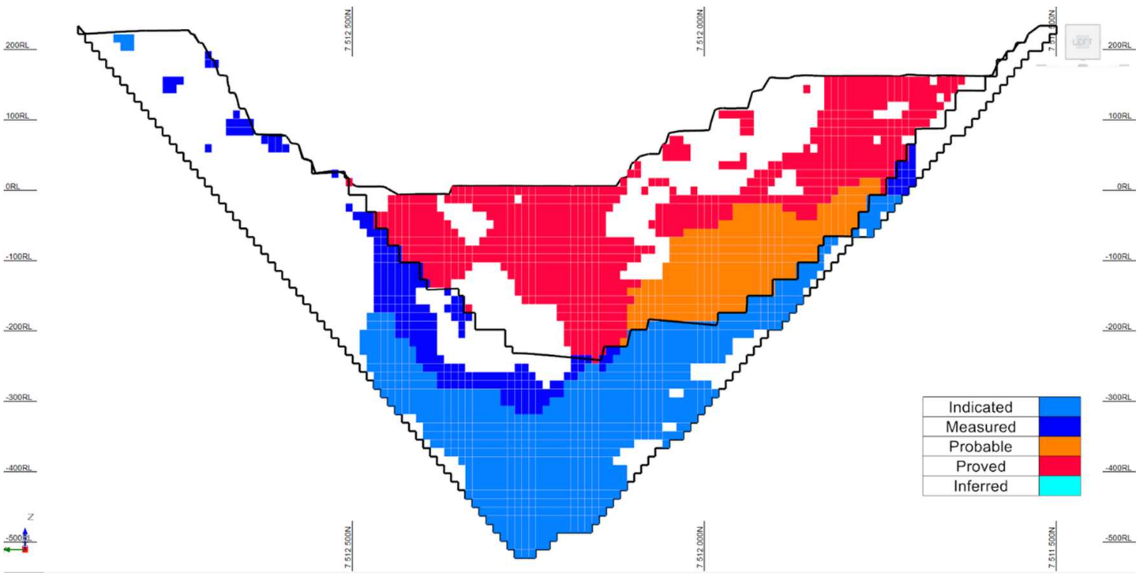

Figure 8. N-S long section along 3499000mN, illustrating the Mineral Reserves and Mineral Resources as of 31 December 2021 (below projected EOM December 2021 surface).

3.12.2 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 Mineral Reserve has been reported using a two-stage cut-off based on two NSR budget prices defined by forecast production period, as stipulated by Boliden.

Blocks within the scheduled 2022 production period were reported inside production geologist defined "geoblocks" or above a cut-off grade of NSR ≥ 18 €. Geoblocks are areas defined by a two stage cut-off described in 3.1 Major changes. Blocks within scheduling period of 2022 were reported using the following NSR factors:

NSR=Ni(S) % x 77.60 +Cu % x 63.89 +Pt ppm x 8.16 + Pd ppm x 20.12 +Au ppm x 13.52 +Co(S) % x 71.12

Blocks within the scheduled 2023-2034 production period were reported above a cut-off grade of NSR ≥ 15 €. Blocks scheduled between 2022 and 2034 were reported using a second NSR formula:

NSR=Ni(S) % x 64.20 +Cu % x 45.44 +Pt ppm x 6.56 + Pd ppm x 9.16 +Au ppm x 8.79 +Co(S) % x 59.16

Only blocks above the respective cut-offs and classified as Measured within the 2022 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.

The design used for Budget 2022 was modified to address operational constraints in hauling material using 40 m ramps as 37 m ramps are not suitable for double lane traffic.

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 2021 Kevitsa Mineral Reserve, depleted to 31 December 2021 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 2021

	2021						
Classification	**Tonnes (Mt)**	**NiS (%)**	**Cu (%)**	**Au (g/t)**	**Pd (g/t)**	**Pt (g/t)**	**CoS (%)**
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 Reserves is a summary of Resource estimations and studies made over time adjusted to mining situation of December 31 2021.*
- *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.*
- *A 2022 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 20 EUR/t for 2022, and 15 EUR/t from 2023 onwards.*
- *Mineral Reserves include 40 Mt of ore to be mined at the last four years of the LOM (years 2030-2034) 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.*

3.13 Comparison of Mineral Resources and Mineral Reserves with previous year

3.13.1 Mineral resource changes

The main differences between the 2021 Resource Model (used to report the 2021 Mineral Resource) and the 2020 Mineral Resource Model are explained by:

- An additional 23 DD holes and 527 RC holes have been included in the new 2021 MRE; the new DD drilling resulted in removal of previously modelled mineralization.
- Mineralization domains defined by a combined cut-off of Cu and NiS; in addition to the 'Normal ore', 'NiS PGE ore' and 'False ore' domains in 2020, 'Normal ore' was refined into 'Normal ore' and 'Ore' (the latter representing higher enstatite concentrations, i.e. "fresher" rock) and 'NiS PGE ore' was refined into 'NiPGE ore' and 'NiS ore' based on Pd and Pt concentrations.

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

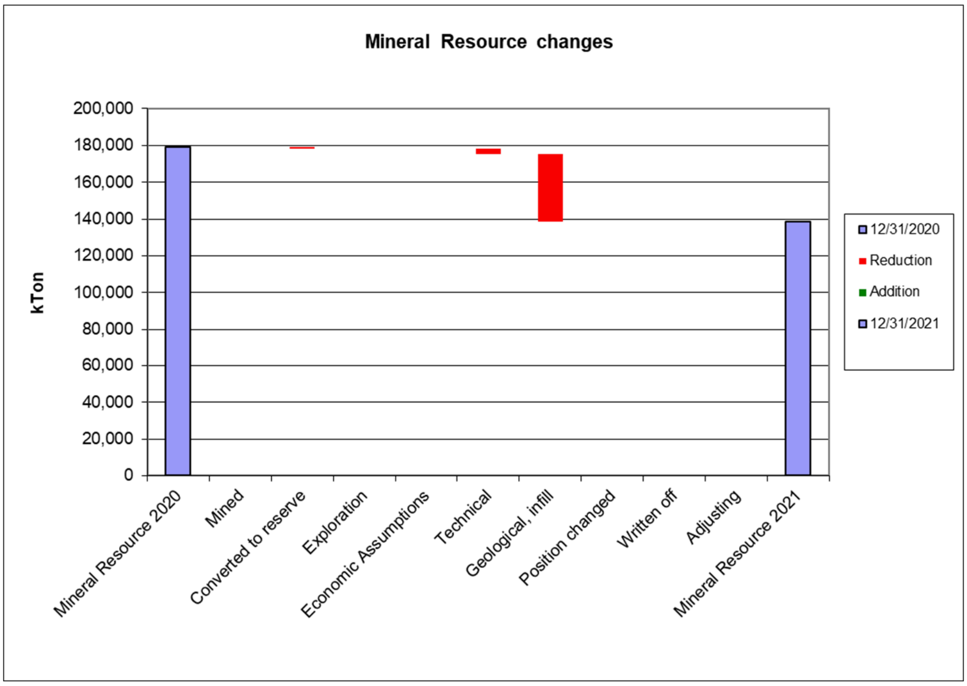

Figure 9. Mineral Resource changes with previous year

3.13.2 Mineral reserve changes

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

- A modification in the NSR cut-offs used to classify and report the Mineral Reserve.
- Changes to the stage 4 pit design.

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

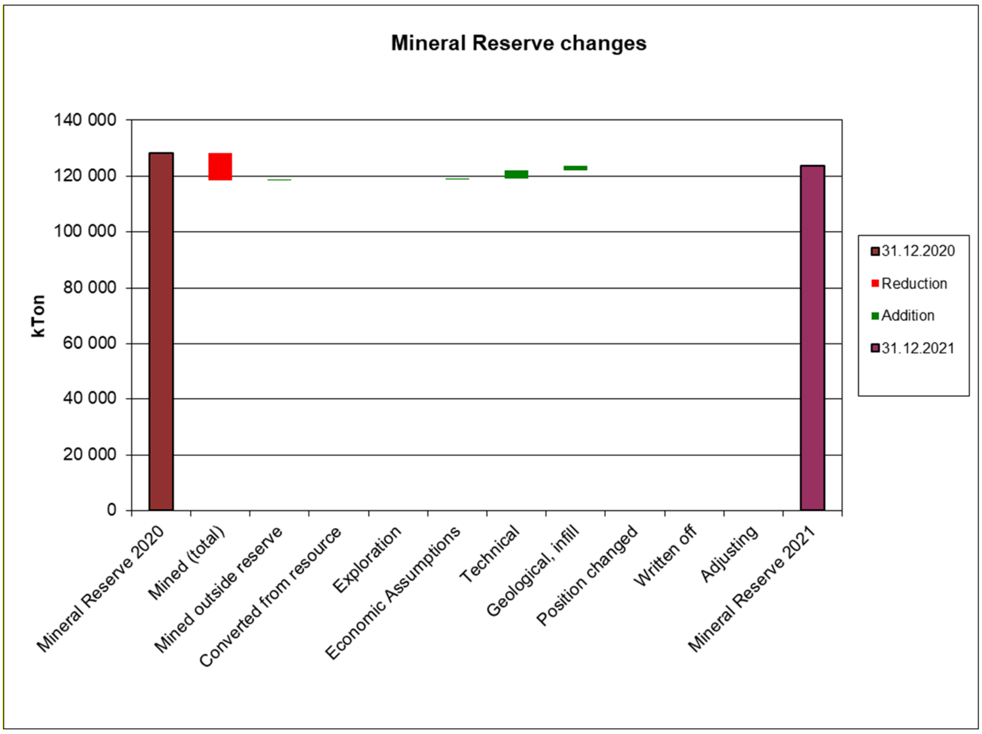

Figure 10. Mineral Reserve changes with previous year

3.14 Reconciliation

3.14.1 MRE comparison with production plans

Figure 11 compares MRE forecasted tonnages, Cu and NiS ore grades with the production plans (Digplan) in 2021. It shows that

- the implementation of the False Ore domain with MRE 2020_2 has improved the captured waste and usable waste tonnages forecast while keeping consistent ore tonnage forecast.
- MRE 2020_2 which estimation parameters were implemented in production in June 2021 is the most consistent with production plans (Digplan) Cu and NiS grades derived from grade control data for the entire year.

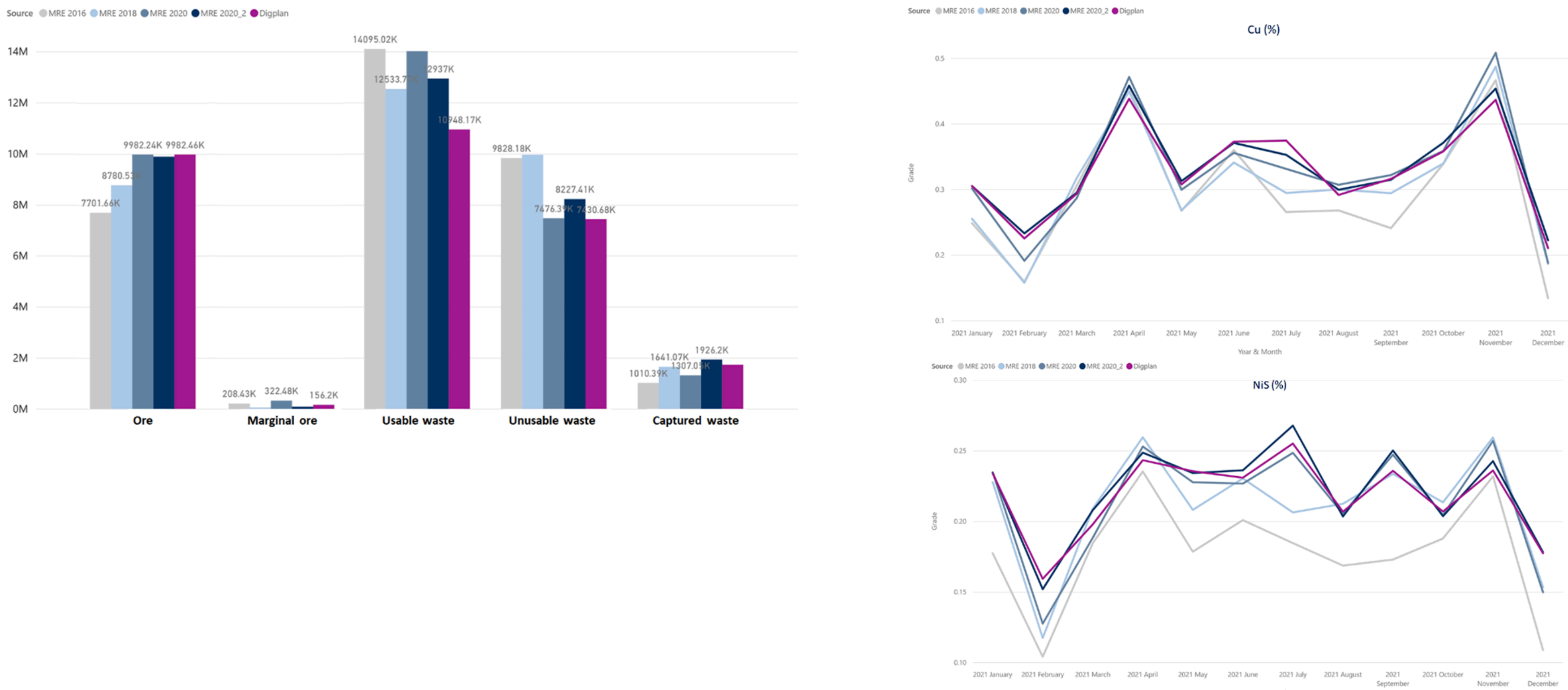

Figure 11. 2021 mined tonnages and grades comparison between MRE and production plans (Digplan)

Several actions have been implemented in order to improve the waste forecast in 2022:

- Improved domaining categories in MRE 2021 which domains and estimation parameters will be implemented in production during first quarter 2022
- Implementation of recoverable usable waste in monthly forecast in order to account for usable waste losses (since April 2021)

The latter will allow a better quantification of the usable waste losses for long term plans.

3.14.2 Grades comparison with production

During first half of 2021, 2020 MRE parameters were in use for grade control. In June 2021, grade control model estimation was updated with 2020_2 MRE parameters.

In Kevitsa data management system, tonnes which are loaded and hauled have metal grades and mineral concentrations interrogated from ore blocks in dig plans. Then the crusher feed grades are calculated as a weighted average of the different ore blocks entering in the composition of the “finger” (stockpile) fed to the primary crusher.

According to Plant results, 2021 grade control plans allowed to forecast the crusher feed grades; as it is presented Figure 12.

Figure 12. NiS and Cu grade comparison between grade control (Mine) and process (Process)

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