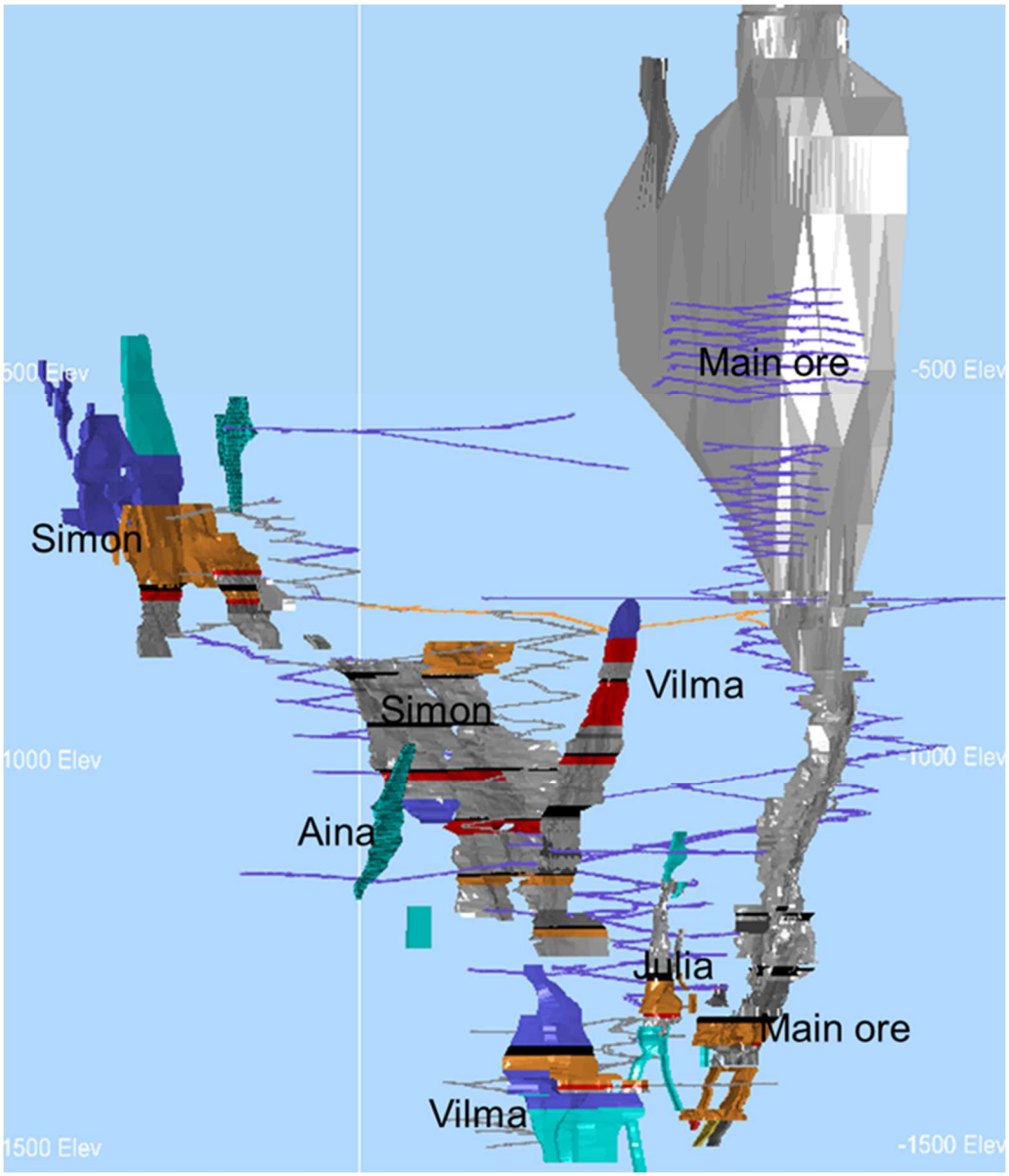
Boliden Summary Report

Mineral Resources and Mineral Reserves | 2019

Renström



Prepared by
Luc Collin

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1 SUMMARY

A summary table of Mineral Resources and Mineral Reserves is presented in Table 1 below.

Table 1.1. Mineral Resources and Mineral Reserves in Renström 2019-12-31.

	2019						2018					
	kt	**Au**	**Ag**	**Cu**	**Zn**	**Pb**	kt	Au	Ag	Cu	Zn	Pb
Classification		**(g/t)**	**(g/t)**	**(%)**	**(%)**	**(%)**		(g/t)	(g/t)	(%)	(%)	(%)
Mineral Reserves												
Proved	**300**	**2.5**	**116**	**0.51**	**6.2**	**1.0**	300	2.8	133	0.51	6.8	1.1
Probable	**3 700**	**2.0**	**111**	**0.39**	**5.7**	**1.1**	3 200	1.8	99	0.43	4.8	0.9
Total	***4 000***	*2.1*	*111*	*0.40*	*5.7*	*1.1*	*3 500*	*1.9*	*102*	*0.43*	*5.0*	*1.0*
Mineral Resourcess												
Measured												
Indicated	**1 200**	**2.1**	**111**	**0.43**	**4.8**	**1.0**	1 900	2.2	112	0.35	5.6	1.0
Total M&I	***1 200***	*2.1*	***111***	***0.4***	***4.8***	***1.0***	*1 900*	*2.2*	*112*	*0.3*	*5.6*	*1.0*
Inferred	**1 500**	**2.2**	**133**	**0.96**	**9.3**	**1.6**	1 600	2.4	154	0.26	10.1	1.8

1.1 Competence

Table 1.2. Contributors and responsible competent persons for this report

Description	Contributors	Responsible CP
Compilation of this report	Luc Collin	Johan Bradley
Geology and exploration		
Resource estimations	Luc Collin, Lina Åberg	
Mineral processing	Marie Lundberg	
Mining	Lena Andersson	
Environmental and legal permits		

2 GENERAL INTRODUCTION

This report is issued annually to inform the public (shareholders and potential investors) of the mineral assets in Renström´s mine held by Boliden. The report is a summary of internal / Competent Persons' Reports for Renström. Boliden method of reporting Mineral Resources and Mineral Reserves intends to comply with the Pan-European Reserves and Resources Reporting Committee (PERC) "PERC Reporting Standard 2017".

The PERC Reporting Standard is an international reporting standard that has been adopted by the mining associations in Sweden (SveMin), Finland (FinnMin) and Norway (Norsk Bergindustri), to be used for exploration and mining companies within the Nordic counties.

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

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

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

2.2 Definitions

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

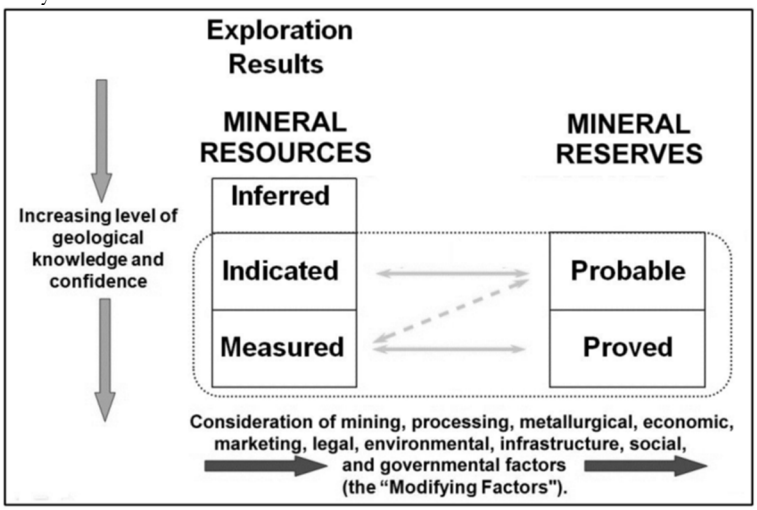

Figure 2.1. General relationship between Exploration Results, Mineral Resources and Mineral Reserves (PERC 2017)

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.

3 RENSTRÖM

3.1 Project Outline

The Renström mine is located approximately 17 km north-west of the Boliden Area Process Plant in Boliden and produces from polymetallic mineralisations of Volcanogenic Hosted Massive Sulphide type. The production in 2019 was 447 kton[1] with gold, silver, copper, zinc and lead. The mine has been in production since 1948 and the mining today is done underground between 600 and 1500 m depth. Valuable metals and their relative importance are showed below:

Table 3: metal value relative importance

Au	31%
Ag	20%
Cu	8%
Zn	36%
Pb	4%

3.2 Major changes

3.2.1 Technical studies

3 technical studies were conducted in 2019 for the positions S643/619G; S690/565H and V1500/1460. As a result the following tonnages of indicated mineral reserves were moves to probable reserves:

Table 4: new positions into mineral reserves

Positions	Tonnages to reserves (kton)
S643/619G	320
S690/565H	179
V1500/1460	381

[1] Mill throughput

3.3 Location

Figure 2: Location

3.4 History

In 1926, Renström East was found in drill holes and two subsequent principal ores. A mining test and a shaft down to a 469 m level were achieved during the period 1944-48. In 1953, Renström was in full production. The shaft was deepened in 1959 down to the 910 m level. Simon was discovered in 1998 and was in production in 2000. Two sulphide lenses were encountered in 2005 in the deep ore zone (Vilma and Julia) and ore production in Vilma started in 2006.

Up to 2019, 14 014 000 tonnes of ore have been concentrated with 2.7 g/t Au, 143 g/t Ag, 0.7 % Cu, 6.1 % Zn and 1.3 % Pb.

3.5 Ownership and Royalties

3.6 Permits

Boliden owns the deposits and also the tenement

Table 5. Mining lease and impact survey

Mining lease	Valid to
Renström K no. 1	31/12/2024
Renström K no. 2	12/08/2038

3.7 Geology

3.7.1 Local

The Renström stratigraphy is, according to general opinion, a pack with andesistic vulcanites consisting of a mixture of both coherent lavas and fragment-bearing reworked sediments. This unit is layered over by dacitic feldspar-porphyric vulcanites and clastic mass flow sediments which consist of fragment-bearing layers of lythic vulcanites and dacitic pumice re-layered by silt-sand-gravel sediments. The alteration gradient in this clastic unit is generally clear and there generally occurs stringer-like mineralization with local high contents of FeS-FeS2-CuFeS2 with locally increasing ZnS. The Fingal Au-Cu mineralising is a more consistent volume of these stringers (Nylander, 2004a)

3.7.2 Mineralizations

Metals are held or build Pyrite, sphalerite, chalcopyrite, pyrrhotite and galena.

3.8 Drilling procedures and data

3.8.1 Drilling techniques

Diamond drilling is the main technique of drilling used for Renström exploration. However, due to the high amount of chloritisation around most of the Renström ore lenses alternative drilling methods have also been used, mainly to penetrate the chlorite layers and prevent the drill rods from getting stuck. Drilling was performed by Protek during the start of the year 2018, they were later on replaced by Drill Con drilling company by April of 2018. The drill rod sizes used by Drill Con for the exploration diamond drilling are in general BQ (36.5mm core diameter), WL56 (39mm or NQ (47.6mm) while Protek used for the most part WL66 (50mm) and WL56 (39mm).
Infill drilling of mineral reserves is conducted ahead of mining on a pattern from 20*15 to 15*15m2 depending of the geometry of the lodes. The method is the same as for exploration, except the core´s diameter is always 39 mm (WL56). Core´s lengths range from 100 to 200m. 11 841core meters have been produced for production aims.

3.8.2 Downhole surveying

Downhole surveying are done by either EM-measurements or then by Gyro Is-measurements. Most of the EM-surveys done by exploration are for longer exploration holes and stand for approximately 10% of the measurements while the majority of holes are surveyed by gyro. The EM-surveys are done by the Boliden geophysics department while the Gyro-measurements are done by the Drill Con team.
All infill drillholes are surveyed by the drilling company using a reflex gyro ®tool.

3.8.3 Sampling

The exploration drill cores are logged by Boliden geologists and sampled by Boliden technical personnel. A couple of drill holes have been analysed for lithogeochemical

purposes; 20-30cm sample of the core is taken every 20-30m meters. In the case of metal analysis of mineralization of core samples; the sampling is started up to 10m before the actual mineralized zone to assure that there is no gold associated with any base metals that might be present even before the actual ore. Samples with the length of 1.5–2m are taken for the extent of the mineralization and extended roughly 10m past the visible zone of mineralization. For both lithological and metal analysis, the core samples are then halved either by the Boliden core shed technical personnel or by a separate preparation laboratory before further assaying. The metal samples are analysed for the base metals Zink (Zn), Lead (Pb) and Copper (Cu), Sulphur (S), Silver (Ag) and Gold (Au), and for processing the negatively affecting elements Arsenic (As) and Antimony (Sb).
Infill samples are labeled during core logging, entered (BHID, FROM, TO) in the database acQuire® and shipped to the external lab ALS Chemex. Samples are made of whole cores. Assays are entered and matched by the central geodataservice in acQuire.

3.8.4 Density

Density is calculated out the grades Cu, Zn; Pb; As, and S in a polynomial formula of first grade. Density of barren rock is 2,7.

3.8.5 QAQC

The sample preparations were done by ALS Minerals, ACT Lab or MS Analytical. Metal sample assaying is done by the previously mentioned laboratories while BVM (Bureau Veritas Minerals) is used for lithological samples. In most cases, ALS Minerals performs the pulp duplicate check assays alternatively the pulp duplicate assays are done by MS Analytical. In-house standards BSBM2 and BSBM3 were utilized as standards for control. For the year 2018 a total of 843 metal samples and 170 litho samples were taken for analysis of which the number of standards sent for QAQC were; 39 + 7 QAQC standards (4.0% + 3.8% of total metal and lithological samples), 57 + 7 blank samples (5.9% + 3.8% of total). Additionally 31 + 2 check assays (3.2% + 1.1% of total) were submitted to ALS and MSA.
The results of the QAQC in 2018 have in general been good with only a few minor deviations outside of the error limits but none that would have forced the laboratories to take corrective measures or any deviations that would have showed systematic errors in analysis methods. There have also been a few incidents where the measured values of a standard and a sample have been mixed up by the assay laboratories but these have been noticed when reviewing the results. The laboratories have been notified of any errors and asked to correct them before the results have been accepted.
As mineral reserves are infill drilled and start to be mined, the QAQC consists of reconciliation between grade model and mill input.

3.9 Exploration activities and infill drilling

Infill drilling focused on opening the positions V1500/1460 (11 000m) and S670H (2700m)

3.10 Mining methods, mineral processing and infrastructure

3.10.1 Mining methods

4 mining methods are used in the mine:

Table 6. Proportion of different mining methods used in Renström 2018

Methods	Proportions
Cut & fill	88% (amongst 2% rest mining)
Open stoping	7%
Retreat mining	5%
Bench	0.1%

Backfilling reuses barren rock from the developments and tailings from the mill.

3.10.2 Mineral processing

Ore is delivered by truck to the industrial area where each truck is weighed on a truck scale in order to determine the tonnage arriving to the industrial area. The ore arriving at the industrial area is either taken into the processing plant or stored in a stockpile. Separate stock piles are kept for each of the individual mines in the Boliden area. Ore from the different mines is processed in campaigns where fresh ore from the mine is combined with ore from stockpiles. The feed tonnage to the processing plant is determined using a weighing system with a stationary belt scale. Feed tonnage and weights from the trucks scale are used to determine current tonnage on the stockpiles.

In the processing plant the ore is ground in two stages. The primary mill is a fully autogenous mill and the secondary mill is a pebble mill fed with pebbles extracted from the primary mill. The ground ore is classified using screens and hydrocyclones. A gravimetric concentrate containing coarse grained gold bearing minerals is produced in the grinding circuit and a flash flotation cell is used to extract mainly copper minerals with high flotability. The gravimetric concentrate is packed in big bags and delivered by truck to the Rönnskär smelter.

Flotation is done in a three-stage process: copper-lead bulk flotation, copper-lead separation and zinc flotation producing three concentrate qualities, copper, lead and zinc.

Cyanide leaching is performed on flotation tailings when the leaching plant is available. Gold and silver is leached and recovered to doré bullions that can be delivered to the smelter.

The mineral concentrates are dewatered using thickeners and vertical plate pressure filters. The concentrates are transported by truck to the Rönnskär smelter and shipping port. Lead and zinc are transported by boat to Boliden smelters in Norway and Finland or to external buyers.

Metallurgical accounting where a sum of products calculated using assays from daily composite samples of main process streams and assays and tonnage for delivered products together with feed tonnage is used to determine the head grade of the ore.

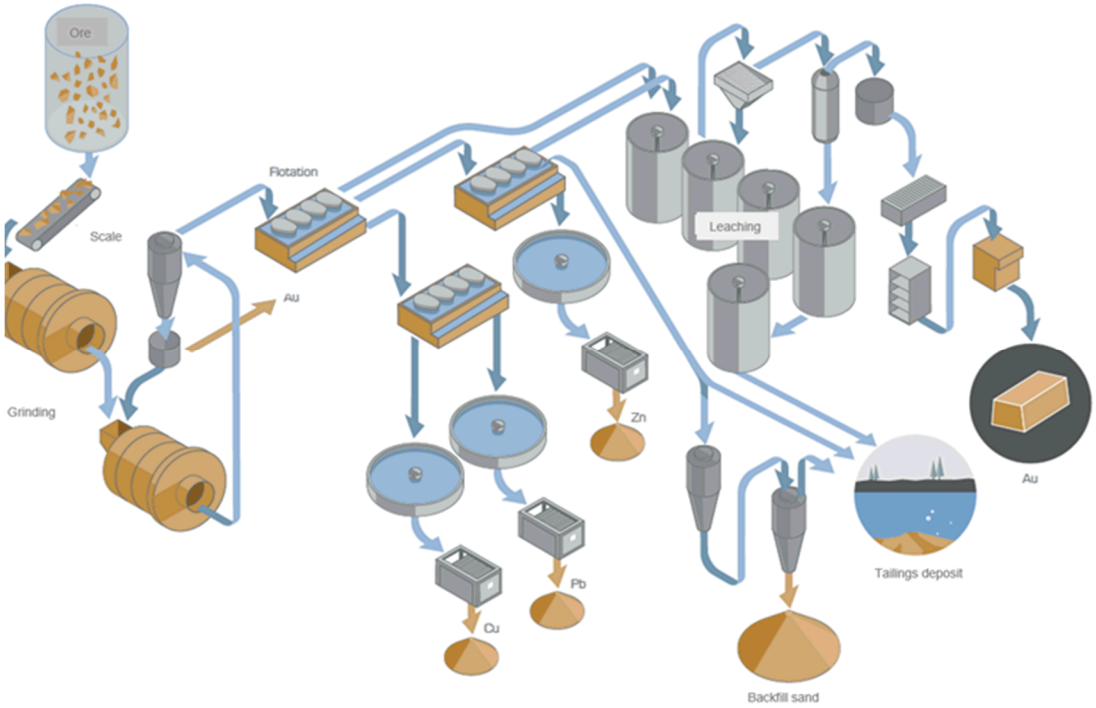

Figure 3: Flowsheet

3.10.3 Infrastructure

Beside dewatering and power supply, a ramp system goes from any level to the main shaft at the level 900m. There a crusher prepares ore for skipping to surface. Lorries carry the ore to the plant. A decline joins Renström to surface via Petiknäs' mine.

3.11 Prices, terms and costs

	Long term prices 2020
Copper	49500 kr/ton
Zinc	18 000 kr/ton
Lead	15 700 kr/ton
Gold	289 357 kr/kg
Silver	4 099 kr/kg

Table 7: Long term prices

Mining, transportations and concentrate costs as well as other cost relevant for cut-off are stated in feasibility studies for the positions entering the mineral reserves depending of the mining method and the position in the mine. Regarding to mining methods cut-offs are:

Metods	Cut-off
Cut &fill	550 kr/ton
Open stoping	390 kr/ton

Table 8: Cut-offs

3.12 Mineral Resources

Boliden is currently in the process of changing reporting standard from Fennoscandian Review Board (FRB) to the Pan-European Reserves and Resources Reporting Committee (PERC) "PERC Reporting Standard 2017". The reports and estimations summarized here are compiled according to the previous standard (FRB). Boliden consider this data accurate and reliable.
After the completion of exploration drilling the geological modelling is done using the CAD software Microstation, Leapfrog or Datamine. Typically, for Boliden VMS deposits a drill spacing grid of 100 x 100 m is used as a guide for inferred mineral resource, 50 x 50 m for indicated mineral resource and 25 x 25 m for measured mineral resource.

The mineral resource is obtained from a wireframe based on geology, mining assumptions and NSR (Net Smelter Return) value. The NSR value is based on Boliden's long term estimation on metal prices for zink, silver, lead, copper and gold and on results from the mineral process for Renström ore. Mineralized domains (ore sections) along drill holes are often defined, using CAD program Microstation with ad-on program Propack, based on analyzed grades in drill hole sections.

The geology controls the interpretation of the ore and a cut-off value is used as a guide. The cut-off of 480 SEK/ton is given by the mine to reflect the actual mining costs in Boliden Renström mine. A cut-off value of 550kr/ton is used when deciding on what sections of the mineralization to include in the estimation from each drill hole. This corresponds to the cut-off defined by Renström mine at 480kt/ton with an added 15 % waste rock dilution. Ore interpretations are then created as horizontal shapes every 5e meters though the area of interest.

Based on the 2D ore interpretations a three dimensional model is made and a block model is created within the domains.

The block models in Renström have parent block size of 6 x 5 x 5m (x, y and z respectively).

Today there are two alternative softwares packages which are being used for the resource estimations. Propack, which is an add-on to CAD program Microstation has historically been used by Boliden, but in recent years Datamine Studio RM is being used increasingly.

Ordinary kriging and inverse distance weighing methods are used for estimating mineral resources.

Normally a composite length of 2m is used which represents the dominating section length of the analyses or a multiple of it.

Statistics (histograms) are studied for outliers in order to decide the used of grade capping. For many of the resource estimates a straight grade cap of 10g/t Au and 1000g/t Ag is used.

The classification of the resources is based on geological understanding and continuity, quality and quantity of informing drill hole data and confidence in the block estimates. Mineral Recourses in Renström are normally reported with 15% waste dilution.

3.13 Mineral Reserves

Before actual mining, positions in the mineral reserves are infill drilled. See 3.7. Out of the geological logs a geological interpretation is set up. Based on it and on the assays wireframes are made for each lode in Studio ®. Grades are interpolated in the wireframes most generally using inverse square distance for calculation and dynamic anisotropy for the search volume. The wireframes are then extended to the minimal mining unit and restricted to the economical ore. That builds the reserves. After each slice (for cut&fill positions) the model is updated to take in account the face and roof mappings.

Table 9. Mineral Resources and Mineral Reserves divided by ore lenses and totally

Ore/Lens Position	Classification	Quantity 2019-12-31 Kton	Au g / t	Ag g / t	Cu %	Zn %	Pb %	As %	S %	Dilution %	Ore Recovey %	NSR SEK/t
Main ore												
H1362 1388	Probable Reserve	**119**	1.05	48	0.66	2.26	0.57	0.03	8	8%	56%	907
H1362 1388	Inferred Resource	**26**	3.40	64	0.37	8.79	3.31	0.08	13	15%	100%	2366
H1450 1425	Proven Reserve	**32**	3.90	258	0.50	11.90	2.60	0.10	19	4%	78%	3398
H1450 1425	Probable Reserve	**231**	2.31	237	0.36	9.62	2.37	0.19	15	14%	90%	2641
H1530	Indicated Resource	**73**	3.51	148	0.54	7.25	1.81	0.06	12	15%	100%	2396
H1500 1600	Inferred Resource	**261**	1.30	38	0.78	4.31	0.68	0.01	9	15%	100%	1229
Pillar 1	Indicated Resource	**0**	0.00	0	0.00	0.00	0.00	0.00	0	0%	100%	0
Pillar2	Measured Resource	**0**	0.00	0	0.00	0.00	0.00	0.00	0	0%	100%	0
Total main ore		**741**	1.98	123	0.58	6.41	1.47	0.08	12	13%	89%	1865
Simon												
Simon J	Inferred Resource	**128**	1.31	65	0.06	4.97	0.76	0.48	11	15%	100%	1153
Simon I	Indicated Resource	**146**	1.00	183	0.10	4.00	1.00	0.10	14	15%	100%	1332
S690 565-H	Probable Reserve	**179**	2.60	61	0.39	4.82	0.52	0.20	7	15%	100%	1508
S609 575-H	Indicated Resource	**233**	3.10	164	0.12	7.15	1.49	0.20	7	15%	100%	2172
Simon H	Indicated Resource	**121**	1.20	53	0.16	3.68	0.64	0.20	7	15%	100%	963
Simon Eskil	Inferred Resource	**456**	2.95	219	0.13	13.27	2.22	0.28	15	15%	100%	3084
S643 619-G	Probable Reserve	**320**	3.10	165	0.16	9.59	1.56	0.20	8	15%	100%	2486
S752/727/702/677	Probable Reserve	**1 618**	1.92	74	0.20	4.59	0.84	0.11	7	5%	100%	1323
S768-G	Proven Reserve	**52**	1.70	46	0.45	5.29	0.60	0.09	9	9%	100%	1343
S855-G/830-G/805-G	Proven Reserve	**85**	2.49	60	1.11	6.84	0.75	0.04	12	12%	87%	1981
S768-F/746-F/722-F	Proven Reserve	**16**	2.90	251	0.27	7.05	1.51	0.15	17	10%	80%	2416
S768-F/746-F/722-F	Probable Reserve	**142**	2.43	238	0.23	7.13	1.36	0.32	19	8%	100%	2257
S855-F/830-F/805-F	Proven Reserve	**3**	1.89	185	0.45	4.16	1.15	0.10	20	10%	100%	1686
S855-F/830-F/805-F	Probable Reserve	**98**	1.61	159	0.35	5.57	1.03	0.16	22	13%	87%	1677
S1036/1070/1084	Proven Reserve	**2**	2.57	87	0.50	6.30	0.96	0.10	13	100%	20%	1821
S1036/1070/1084	Indicated Resource	**42**	1.77	27	1.70	2.59	0.19	0.03	22	15%	100%	1371
S1140/S1113	Probable Reserve	**47**	3.12	167	0.64	7.42	1.30	0.09	13	19%	100%	2379
S1206/1180	Probable Reserve	**34**	3.24	197	0.50	9.94	1.77	0.35	21	20%	100%	2780
S1245	Inferred Resource	**72**	2.40	218	0.29	7.36	1.90	0.07	10	15%	100%	2279
Total Simon		**3 794**	2.23	120	0.24	6.49	1.14	0.17	10	10%	99%	1786
Vilma												
V834	Indicated Resource	**43**	1.87	139	0.09	4.34	0.85	0.13	5	15%	100%	1430
V884/858	Proven Reserve	**16**	2.88	182	0.15	6.73	1.42	0.13	6	20%	100%	2129
V978/953/927	Proven Reserve	**45**	4.44	206	0.18	7.61	1.56	0.19	9	16%	100%	2676
V1047/1022	Proven Reserve	**18**	1.67	132	0.22	3.53	0.82	0.14	7	16%	100%	1310
V1206/1180	Probable Reserve	**16**	2.26	96	0.38	4.57	0.90	0.09	8	17%	100%	1525
V1240	Probable Reserve	**22**	0.68	76	0.10	2.59	0.71	0.14	6	21%	100%	767
V1355/1324	Indicated Resource	**129**	0.48	50	0.78	1.93	0.60	0.02	7	15%	100%	788
V1415/1399	Indicated Resource	**41**	0.18	5	0.52	0.24	0.07	0.01	4	13%	85%	263
V1415/1399	Probable Reserve	**104**	1.98	217	0.22	5.60	1.53	0.04	8	13%	85%	1922
V1415/1399	Proven Reserve	**27**	3.55	216	0.55	10.92	1.95	0.11	16	13%	85%	3052
V1500/1460	Probable Reserve	**381**	1.90	160	0.42	9.41	1.92	0.07	17	15%	98%	2292
V1500/1460	Inferred Resource	**28**	3.28	2	35.00	4.22	0.90	0.10	15	0%	100%	13076
Pos5	Indicated Resource	**0**	0.00	0	0.00	0.00	0.00	0.00	0	0%	100%	0
Pos5	Inferred Resource	**0**	0.00	0	0.00	0.00	0.00	0.00	0	0%	100%	0
Total Vilma		**870**	1.83	138	1.53	6.52	1.41	0.07	12	14%	96%	2201
Fingal												
F920	Probable Reserve	**308**	1.06	16	1.60	0.37	0.05	0.01	7	2%	87%	870
F920	Indicated Resource	**20**	1.15	18	1.86	0.47	0.03	0.02	7	6%	100%	993
Total Fingal		**328**	1.07	16	1.62	0.38	0.05	0.01	7	2%	88%	877
Julia												
J 1130	Inferred Resource	**33**	1.77	39	0.17	5.35	1.24	0.18	8	15%	100%	1298
J1362/1334	Proven Reserve	**6**	2.78	124	0.27	6.63	1.54	0.13	11	4%	100%	1976
J1362/1334	Probable Reserve	**69**	2.44	134	0.34	7.24	1.46	0.10	12	4%	100%	2019
J1400	Indicated Resource	**206**	2.78	98	0.49	5.45	1.13	0.06	10	15%	100%	1806
J 1550	Inferred Resource	**278**	3.29	183	0.46	15.23	2.24	0.08	14	15%	100%	3405
Total Julia		**592**	2.92	139	0.44	10.26	1.70	0.08	12	14%	100%	2556
Aina												
	Inferred Resource	**230**	0.85	57	0.18	4.10	0.69	0.11	11	15%	100%	956
Total Aina		**230**	0.85	57	0.18	4.10	0.69	0.11	11	15%	100%	956
Dagbrott												
	Indicated Resource	**107**	3.10	118	0.60	6.14	1.10		17	18%	100%	2054
Total Dagbrott		**107**	3.10	118	0.60	6.14	1.10	0	17	18%	100%	2054

Table 10 Mineral Resources and Mineral Reserves Renström 2019-12-31

	2019						2018					
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Mineral Reserves												
Proved	**300**	**2.5**	**116**	**0.51**	**6.2**	**1.0**	300	2.8	133	0.51	6.8	1.1
Probable	**3 700**	**2.0**	**111**	**0.39**	**5.7**	**1.1**	3 200	1.8	99	0.43	4.8	0.9
Total	***4 000***	*2.1*	*111*	*0.40*	*5.7*	*1.1*	*3 500*	*1.9*	*102*	*0.43*	*5.0*	*1.0*
Mineral Resourcess												
Measured												
Indicated	**1 200**	**2.1**	**111**	**0.43**	**4.8**	**1.0**	1 900	2.2	112	0.35	5.6	1.0
Total M&I	***1 200***	*2.1*	***111***	***0.4***	***4.8***	***1.0***	*1 900*	*2.2*	*112*	*0.3*	*5.6*	*1.0*
Inferred	**1 500**	**2.2**	**133**	**0.96**	**9.3**	**1.6**	1 600	2.4	154	0.26	10.1	1.8

3.14 Comparison with previous year/estimation

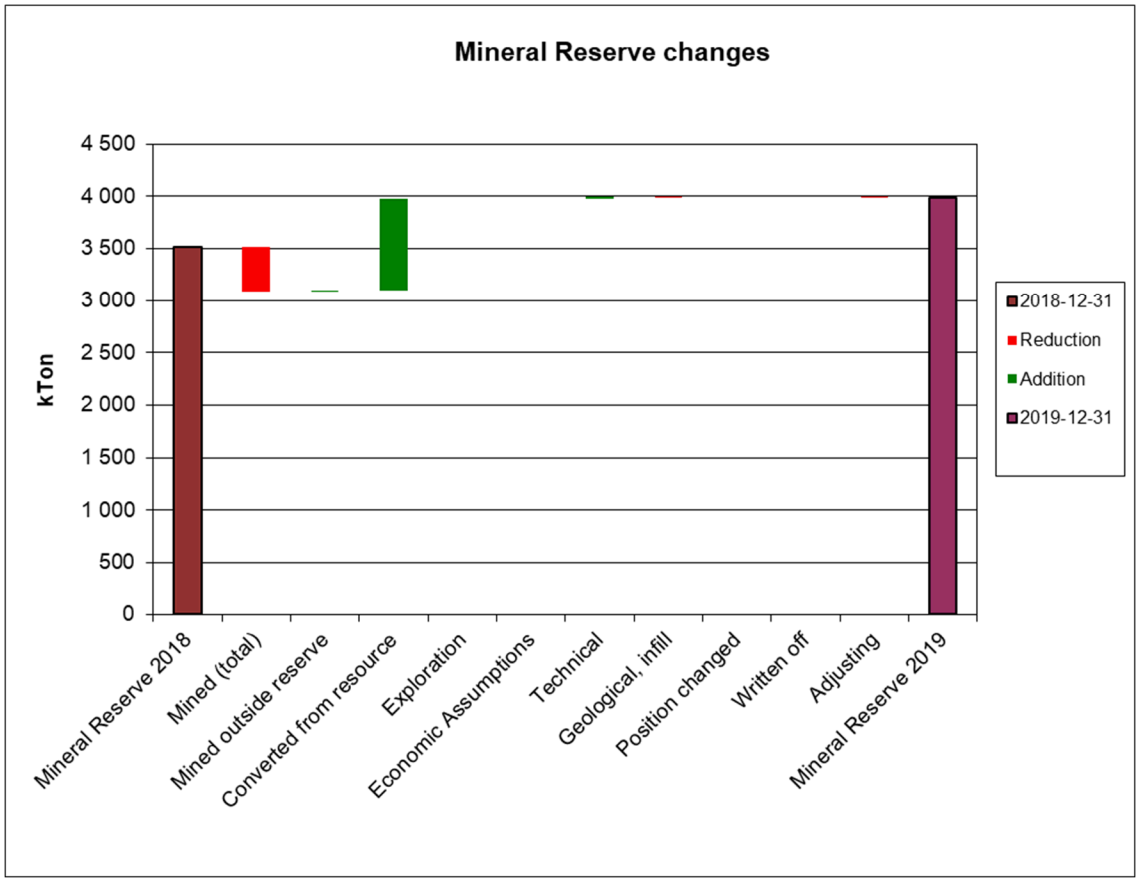

Figure 4 Changes to mineral reserve

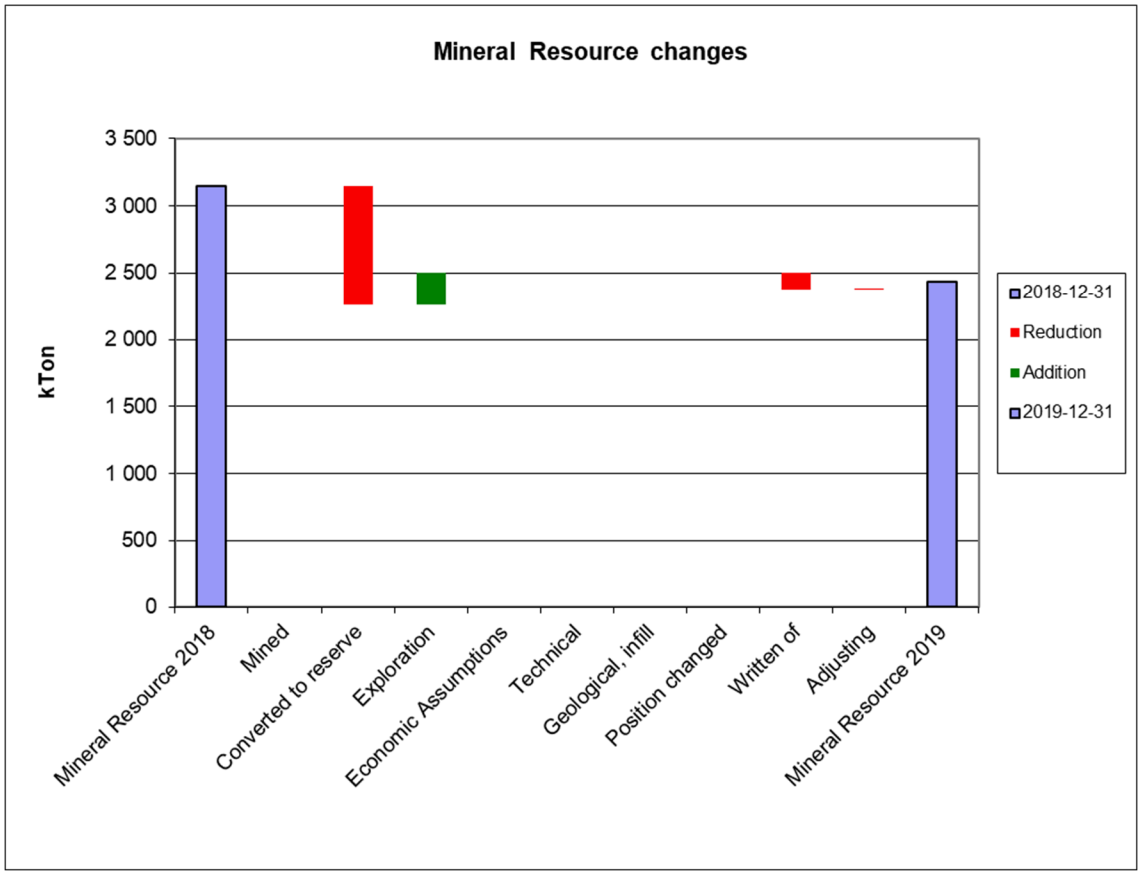

Figure 5: Changes to mineral resource

3.15 Reconciliation

Table 11. Reconciliation figures for stopes

Position m. Linsnr	Ton	Au g/t	Ag g/t	Cu %	Zn %	Pb %	S %	Dilution (%)
H1450 Skiva 2 H4	1 663	0.39	17	0.39	1.10	0.23	4.2	2%
H1450 Skiva 1 H3Z	11 617	3.61	209	0.41	12.28	2.32	18.9	3%
H1450 Skiva 1 H2	15 322	4.11	295	0.35	11.10	2.83	14.3	7%
H1388 linser B C och D Skiva 7	14 960	0.73	26	0.84	1.39	0.30	6.9	2%
H1362 linser B C och D Skiva 6	12 793	0.60	31	0.85	1.42	0.34	7.0	5%
H1362 lins A Skiva 7	14 355	1.71	165	0.33	6.32	1.88	12.3	13%
H1362 lins A Skiva 6	0	1.14	165	0.34	6.49	2.02	10.9	18%
S1036 A2 Skiva 10	4 105	5.61	41	1.09	6.00	0.56	21.3	3%
S1036 A2 Skiva 10 opping	20 770	2.93	155	0.51	8.92	1.60	19.3	9%
S1036 D Skiva 9	3 938	5.49	90	0.94	7.44	1.19	13.0	15%
S1036 D Skiva 9 pall	277	3.70	44	0.34	8.76	0.55	13.1	0%
S805-F Skiva 10	32 767	1.66	163	0.39	3.97	1.07	19.1	10%
S805-F Skiva 9	1 690	1.39	193	2.25	1.13	0.34	26.7	0%
S749-F Skiva 5	15 533	2.64	401	0.21	8.04	2.13	17.8	3%
S749-F Skiva 4	38 707	2.96	254	0.26	6.93	1.52	17.0	9%
S768-G Skiva 4	32 347	1.11	33	0.52	6.03	0.48	10.1	5%
S768-G Skiva 3	37 016	2.59	66	0.55	8.48	0.87	12.6	10%
S768 nivå	488	0.25	7	0.01	2.21	0.11	2.0	0%
S774 pålastningsort	4 595	0.40	61	0.15	3.34	0.81	10.5	0%
S752 tillredning till Skivpall	5 686	0.38	53	0.14	2.95	0.69	10.0	0%
F853 orterna (tillredningar)	5 223	0.21	5	0.78	0.05	0.01	4.9	0%
F873 primaira rillar	22 265	0.47	10	1.13	0.31	0.04	7.3	1%
F873 orterna	5 776	0.66	15	1.69	0.30	0.05	10.7	0%
F890 primaira rillar	8 773	0.65	14	1.30	0.31	0.03	9.8	3%
F890 secondaire rillar	0	0.74	9	1.09	0.23	0.03	6.2	3%
F890 orterna	6 881	0.69	14	1.45	0.18	0.04	7.8	1%
V1415 Skiva 4	1 930	10.48	671	1.17	16.55	5.51	24.6	1%
V1415 Skiva 3	36 826	1.89	154	0.44	10.06	1.76	13.9	12%
V953 Skiva 10	7 472	2.82	121	0.14	4.58	0.87	7.4	13%
V953 Skiva 9	6 229	3.39	118	0.22	7.06	0.99	12.5	13%
V953 Skiva 8	7 797	3.22	108	0.27	6.83	0.90	13.2	16%
V953 Skiva 7	5 921	2.68	112	0.28	4.48	0.76	10.4	19%
V858 Skiva 8	2 047	3.51	212	0.18	6.75	1.79	6.3	25%
V858 Skiva 7	5 597	2.93	151	0.25	5.97	1.10	8.9	17%
V858 Skiva 6	5 257	3.11	227	0.20	6.97	1.85	6.5	19%
V884 Skiva 5	5 536	2.89	201	0.18	5.99	1.59	5.6	21%
V884 Skiva 4	1 528	2.01	161	0.13	4.03	1.12	3.5	44%
J1334 Skiva 6	15 264	4.09	342	0.26	11.80	3.14	16.3	2%
J1334 Skiva 5	8 093	3.06	180	0.25	7.94	1.79	9.0	6%
Mined (model)	**430 824**	**2.2**	**143**	**0.52**	**6.3**	**1.2**	**13.0**	**8%**

Mined incl. stock piles	**422 287**	**2.2**	**138**	**0.5**	**6.2**	**1.2**	**13**
Mill throughput	*446 474*	*2.2*	*139*	*0.53*	*5.6*	*1.1*	*13*
Deviation model vs. Mill (grade)	**24 187**	**0.1**	**1.2**	**0.0**	**-0.6**	**-0.1**	**0.1**
Deviation model vs. Mill (%)	**5.7**	**3.4**	**0.9**	**1.0**	**-10**	**-12**	**1.0**

Table 12: Reconciliation mill versus mine model

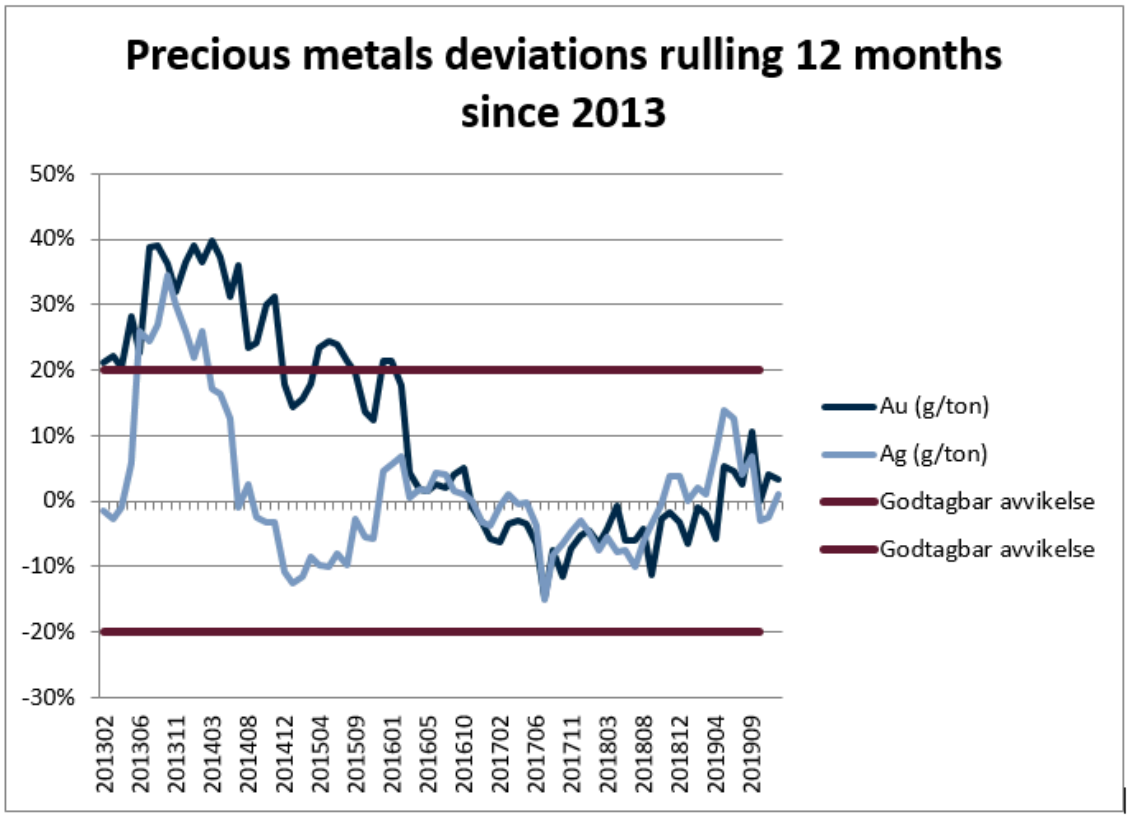

Figure 6: Yearly reconciliation of mine production and mill output, precious metals

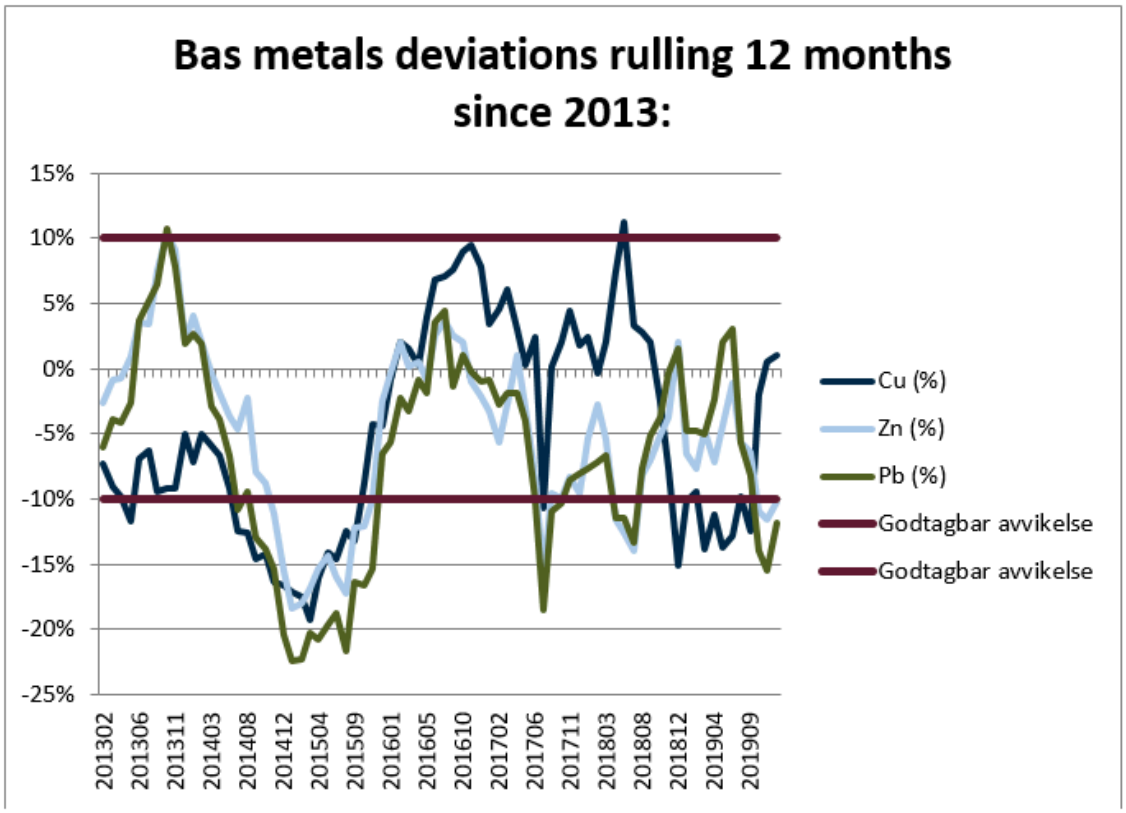

Figure 7: Yearly reconciliation of mine production and mill output, base metals

4 REFERENCES

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