Boliden Summary Report

Mineral Resources | 2022

Älgträsk

Prepared by
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Front page: Strongly mineralised quartz and altered vein (originally tonalite) consisting of quartz - pyrite ± muscovite (phyllic alteration). This sample was taken from “Juhani’s trench” and assayed ~4 g/t Au

1 SUMMARY

The Älgträsk mineralization's are divided into the Nyhem and Liden mineralized lenses. Nyhem was estimated by Boliden in 2013 and Liden by SRK in 2015. These figures summarized in Table below have not been updated since 2015.

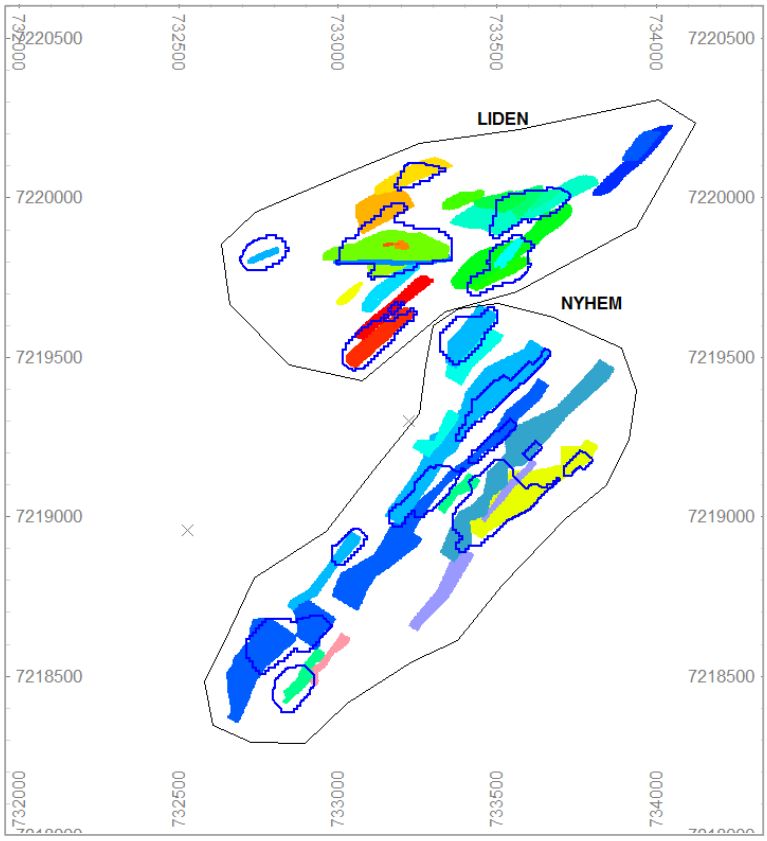

Figure 1. The Älgträsk mineralized lenses divided into Nyhem and Liden mineralisations

Table 1. The Älgträsk mineral resources

		2022	
Classification	**kton**	**Au (g/t)**	**Ag (g/t)**
Mineral Resources			
Measured			
Indicated	**1 072**	**2.8**	**5**
Inferred	**3 520**	**2.0**	**4**

Notes on Mineral Resource and Mineral Reserve statement.

- *Mineral Resources are reported exclusive of Mineral Reserves.*
- *Mineral Resource and Mineral Reserves is a summary of Resource estimations made 2013 and 2015 and has not been updated since then and thus represent the status of December 31 2022.*
- *Mineral Resource are compiled with a minimum mining width of 10 m in open pit mining and 2.5 m in underground mining. No additional waste dilution is included.*
- *Reasonable prospect for eventual economic extraction (RPEEE) is defined by a Whittle pit optimisation for open pit quantities and with cut-off for underground quantities.*

- *Different cut-off are used to define the Mineral Resource:*
    - *Nyhem 2013 open pit 0.4 g/t Au*
    - *Liden 2015 open pit 0.6 g/t Au-equivalent (Au 95 % of value)*
    - *Liden 2015 underground 2.0 g/t Au-equivalent (Au 95 % of value)*
- *The deposit is protected by valid Mining Concessions. Environmental permits have not been applied for.*
- *No Mineral Reserve is defined.*

1.1 Competence

The Mineral Resource estimation for Nyhem is made by Boliden in 2013 and the Liden mineralization's are estimated by SRK in 2015. The data from these estimations are compiled into this report by Gunnar Agmalm. Contributors and competence persons as listed in Table 2.

Table 2. Contributors and responsible competent persons for this report

Description	Contributors	Responsible Competent Person
Compilation of this report	Gunnar Agmalm	Gunnar Agmalm*
Studies from where this compilation is made		
Nyhem Geology and Resource Estimation (2013)	Annika Kruuna, Erik Nordfeldt	Gunnar Agmalm
Liden Geology and Resource Estimation (2015) (in accordance with JORC[1] code)	Christian Degen (SRK)	Lucy Roberts (SRK)

Lead Competent Person Gunnar Agmalm is Boliden's Ore reserves and Project Evaluation manager and a member of AusIMM[2] and FAMMP[3] Lucy Roberts is a consultant for SRK and a member of AusIMM. The Mineral Resource estimation for Liden was made in accordance with the JORC code.

2 GENERAL INTRODUCTION

This report is issued to inform the public (shareholders and potential investors) of the mineral assets in Älgträsk held by Boliden. The report is a summary of internal reports for Älgträsk. Boliden method of reporting Mineral Resources and Mineral Reserves intends to comply with the Pan-European Reserves and Resources Reporting Committee (PERC). The main text in this report was written before the updated version of PERC 2021.

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.

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.

[1] Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves
[2] Australian Institute of Mining and Metallurgy
[3] Fennoscandian Association for Metals and Minerals Professionals

2.2 Definitions

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

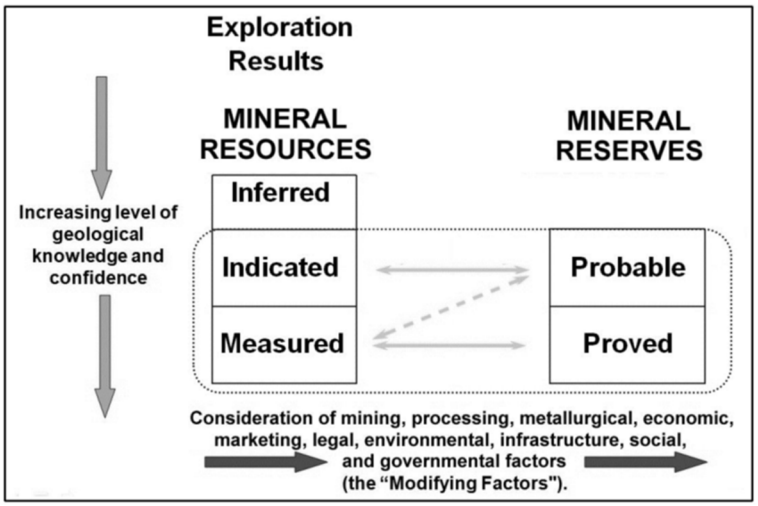

Figure 2. General relationship between Exploration Results, Mineral Resources and Mineral Reserves (PERC 2017).

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 ÄLGTRÄSK DEPOSIT

3.1 Project Outline

Älgträsk is a gold deposit made up from several rather thin mineralized lenses. The lenses are summarized into two mineralization's, Liden and Nyhem. Most lenses outcrop at surface and are now known down to 180 meter below surface. Nyhem Mineral Resource was estimated by Boliden 2013 and has not been updated since then. Liden Mineral Resource was estimated for Boliden by SRK in 2015 and has not been updated since then. So far only scooping studies are made on Älgträsk and no Mineral Reserve is defined in Älgträsk.

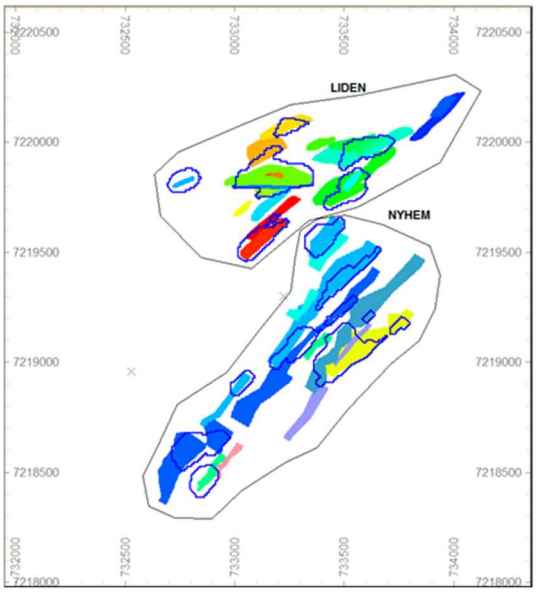

Figure 3. The Älgträsk mineralised lenses divided into Nyhem and Liden minralisations

More than 95 % of the metal value is from gold but there are also relatively low grades of silver and some copper in the mineralisations.

3.2 Major changes and studies

There are no change in the Mineral Resource since 2015. During 2020 the economic evaluation was updated with new metal prices and terms but that has not lead to a decisions on moving the project to the next phase.

3.3 Location

Älgträsk is located approx. 5 km south-west of Jörn, and approx. 30 km north-west of Boliden where the closest processing and tailings facilities are located.

Figure 4. Älgträsk is located apprximately 30 km north-west of Boliden, a few km south-west of Jörn

3.4 History

Exploration in the Älgträsk-Tallberg area started in the 1930s when several copper-mineralised boulders were discovered. It took until 1965 before drilling started in the area. Gold was discovered in Älgträsk for the first time in the mid-1980s through till sampling. Exploration has since then continued periodically. Liden was discovered through drilling at the end of the 1980s and the Nyhem zone was found through rock chip sampling during 2005.

During 2012-2013, 44 drill holes were drilled in Älgträsk and since then no drilling has been conducted in Älgträsk.

3.5 Ownership

Boliden have exclusive Exploitation Concessions for the deposit and there are no royalties agreement on the deposit beyond what is stated in Swedish Minerals Act for compensation to landowners.

3.6 Permits

Boliden Mineral currently has 3 Exploitation Concession in the Älgträsk area; the Liden mineralisation is covered by **Älgträsk K no. 1**, valid until June 6, 2029 and the Nyhem mineralisation by **Älgträsk K no.2**, valid until May 14, 2034. New Exploitation Concession Älgträsk K no. 3 was granted in 2016. Expiry dates for each Exploitation Concession are listed in Table 3 below. Environmental permits has not been applied for.

Table 3. Mining concession in Älgträsk

Mining concession (25 years)	Valid to	Area
Älgträsk nr 1	2029-06-06	Liden mineralisation
Älgträsk nr 2	2034-05-14	Nyhem mineralisation
Älgträsk nr 3	2041-01-07	Expansion around Liden mineralisation

3.7 Geology

3.7.1 Regional geology

The Älgträsk project lies in the Skellefte District, one of the most important mining regions in Sweden containing over 85 pyritic polymetallic massive sulphide deposits. The district also contains vein gold deposits and low grade porphyry Cu-Au-Mo mineralisation. The Älgträsk area is located in the southern part of the large Jörn Granitoid Complex (JGC) as illustrated below in Figure 5.

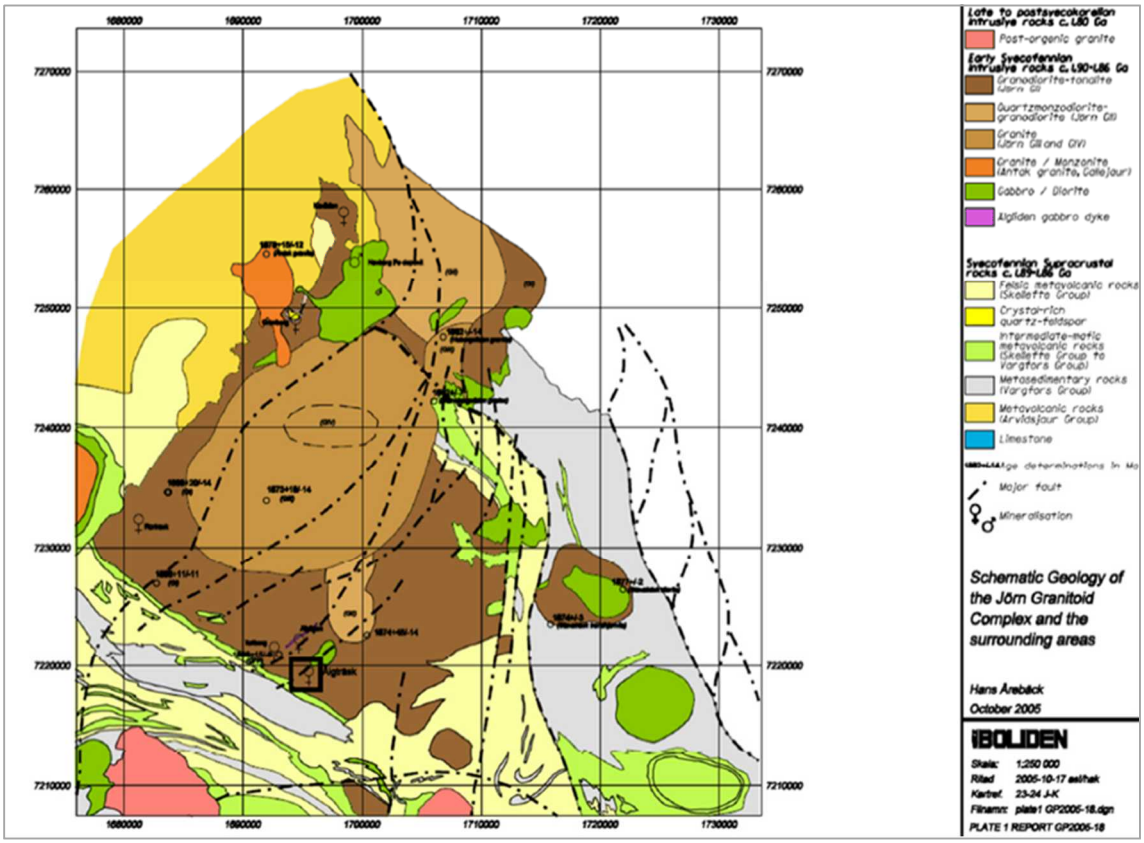

Figure 5. Schematic Geology of the Jörn Granitoid Complex (JGC) and the surrounding areas (from Boliden internal report).

3.7.2 Local geology

The geology in the Älgträsk area is dominated by a coarse-grained, quartz-porphyritic granodiorite part of Jörn Granitoid Complex which displays different degrees of alteration.

3.7.3 Property geology

The Älgträsk property area is rather homogenous, although minor areas with equigranular tonalite has been observed. The granodiorite to tonalite were intruded by quartz-feldspar and feldspar porphyries prior to mineralisation and later after the mineralisation event barren greenstones have intruded, often related to the same structural weak zones as the mineralisation. A major fault zone strikes N-S dipping eastwards can be follow from Nyhem all the way passing north of Liden. Post mineralisation and N-S fault zone, structural NNW-SSE shearing/faulting occurred and displaced of the geological units.

3.7.4 Mineralization

The gold mineralisation is structurally controlled. The gold occurs in strongly deformed tonalite to granodiorite associated with pyrite (disseminated and mm-wide stringers). Other

sulphides such as chalcopyrite, sphalerite and arsenopyrite normally occur at low grades. In the southernmost part As is higher. The gold mineralisation's form thin relatively steeply dipping zones as illustrated in Figure 6.

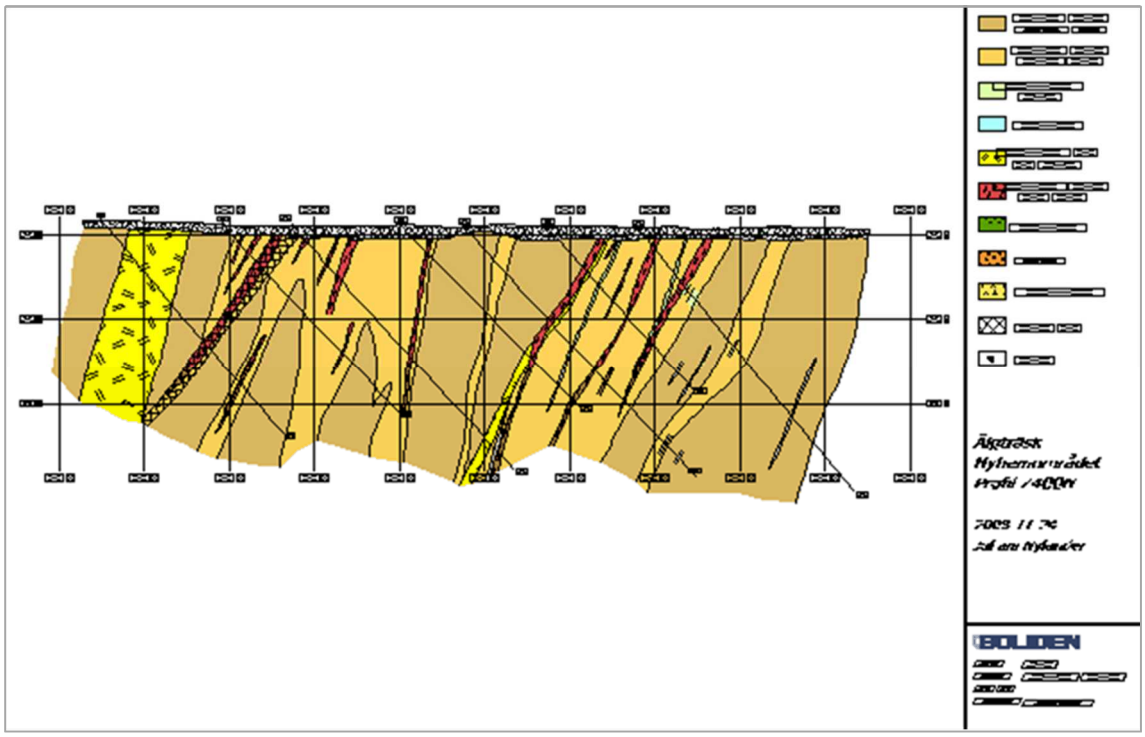

Figure 6. Cross section perpendicular to strike illustrating the steeply dipping vein type mineralisations

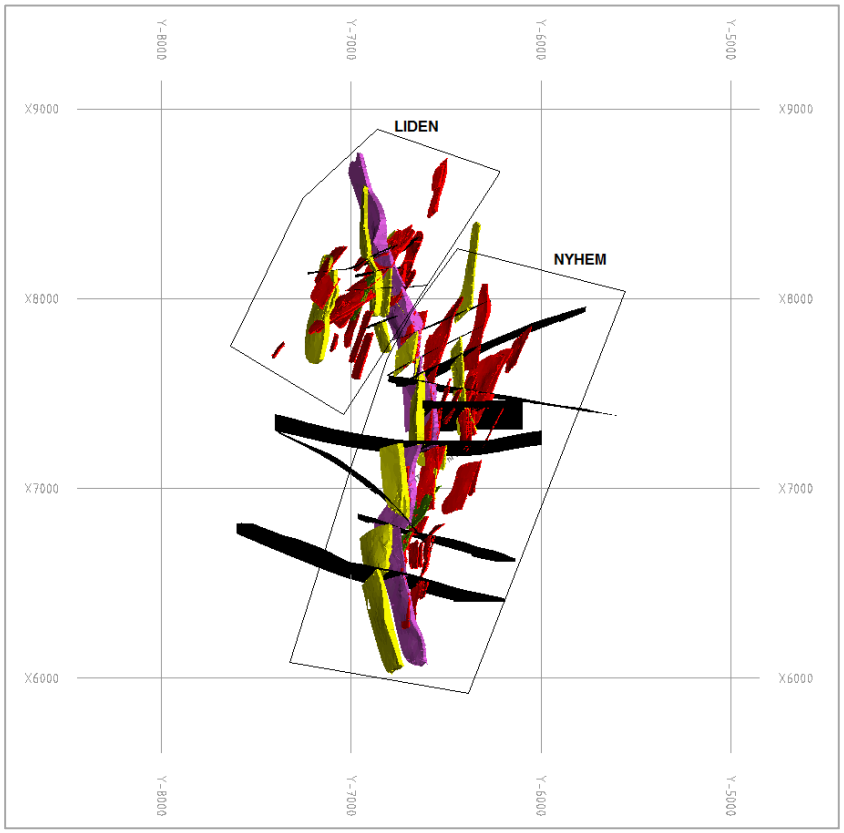

Figure 7. Älgträsk Liden and Nyhem 3D geological model of the mineralized (red) zones with greenstone (green), QFD dykes (yellow), fault structures (black) and crushed zone (purple).

3.8 Exploration procedures and data

Diamond drilling has been made by Boliden in the area between 1987 and 2015 with a total of 75 000 m. A summary is listed in Table 4. In 2008 also 7 000 m was drilled with reverse circulation (RC).

Table 4. Summary of diamond and reverse circulation drilling campaigns in Älgträsk

Period	Holes	Total length	Drill type
1987-1990	1 - 116	15 363	DDH
1996-1997	117 - 138	5 889	DDH
2004	139 - 147	1 507	DDH
2005-2007	148 - 268	22 397	DDH
2008-2009	269 - 348	14 288	DDH
2008	5001 - 5088	7 051	RC
2010-2014	349 - 387	7 974	DDH
2014-2015	388 - 430	6 500	DDH
1987-2015		**74 756**	**Total DDH**

The drill holes are surveyed for deviation with Boliden's downhole magnetic equipment.

The holes are sampled honoring lithological units with a normal sample length between 1.5 to 3.5 m and an average of 2 m. Half core is cut or sawn in Boliden Core archive and sent to

Boliden's Laboratory in Rönnskär until hole 207. In Rönnskär Au was analyzed by fire assay ICP finish. Gravimetric finish if first Au assay > 5 g/t. For As, Bi, Cu, Mn, Mo, Pb, Sb and Zn atomic absorption flame method was used and for S a combustion analytical method was used.

From hole 208 Labtium[4] in Finland is used for analyzing. Samples for Labtium were crushed, splitted and 1 – 3.5 kg was pulverized. The samples where digested by aqua regia and analyzed by Inductively Coupled Plasma - Atomic Emission Spectroscopy (ICP-AES; Labtium analyzes code 510P) for Ag, As, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, S, Sb and Zn. For Au a 50 g subsample was subjected to lead fire assay analysis. Gravimetric finish if first Au assay > 5 g/t and for Ag if firsts Ag assay > 100 g/t.

Pre 2007 no documentation of QAQC procedures exists. However from 2007 umpire lab check assays (pulp duplicates) were analyzed at Boliden's Laboratory Rönnskär. In 2011 Boliden started with a complete QAQC program with Certified Reference Material (CRM), in-house certified standards and blanks. The results are generally very good with only a few assays outside acceptable ranges.

3.9 Exploration activities

No exploration is ongoing in Älgträsk. Boliden has so far not been able to prove technical and economic viability for the project. There are technical studies ongoing in order to move the project forward.

3.10 Mining methods, processing and infrastructure

There is no Mineral Reserve defined in Älgträsk but some mining assumptions are used in the Mineral Resource estimations. Major part is assumed to be able to mine in open pits and it is only parts that fall outside the assumed final pits that can be classified as underground mineral resource. Open pit mining is assumed to be made with 10 m high benches and minimum mining width are set to 10 m to correspond to the bench height.

The minimum size for sub-blocks in XY direction is 2.5 m which thus function as the minimum with of the ore reported for underground mining.

Drill cores have been tested at Boliden pilot test lab for flotation, gravimetric and leaching all producing good concentrates at reasonable recoveries. The only penalty element noted is arsenic. Leaching is tested in those areas and a lower recovery assumed.

In the Mineral Resource definition the ore is planned to be transported to the existing processing plant in Boliden.

3.11 Prices, terms and costs

To determine reasonable prospect for eventual economic extraction pit optimisations are used for potential open pits and a fixed gold cut-off for underground mining.

Optimization for Nyhem area has been made in 2013 and for Liden area in 2015. For Nyhem in 2013 a gold grade of 0.4g/t was used as cut-off in the block model for the interpretation.

[4] Eurofins Labtium Oy is a FINAS-accredited testing laboratory T025 meeting the requirements of standard SFS-EN ISO/IEC 17025:2005.

The Mineral Resource was defined as economically mined ore blocks according to pit optimizer thus a variable cut-off but close to 0.7 g/t Au.

In Liden 2015 an gold equivalent is used to define the Mineral Resource

AuEq = AU_PPM + 0.012216 * AG_PPM + 0.77839 * CU_PROC

The open pit Mineral Resource is restricted to all material falling within the Resource pit shell, and above an AuEq cut-off grade of 0.6 g/t. The underground Mineral Resource is restricted to material underneath the pit shell and above a AuEq cut-off grade of 2.0 g/t. since more than 95 % of the value is from gold there is no big difference between Au and AuEq.

Parameters for the two pit optimizations are listed in Appendix 1

3.12 Mineral resources

Grade models are estimated with ordinary kriging. In 2013 with a fixed composite length of 2m, in 2015 with variable length composites. The length representing the entire mineralized vein intersect.

In 2013 a straight grade cap of 30 g/t Au was used. In 2015 individual caps per zone varying between 13 – 154 g/t Au.

The mineralization's are classified as Inferred or Indicated Mineral resource. The geological continuity of the mineralized area is good but the grades and the individual zones vary more. A drill spacing of 50x50 m is used as a guide for Inferred Resource and reasonable assumed geological continuity in combination with a 25x25 m drill pattern is used for Indicated Resource. Mineral Resources are compiled in Table 5. Although 10 % waste dilution and 95 % ore recovery is used as input to pit optimizations Mineral Resources are summarized without dilution or ore losses.

Table 5. Mineral resources in Älgträsk. OP=Open pit, UG=Underground

Classification	Kton	2022 Au (g/t)	Ag (g/t)
Indicated Nyhem OP	445	4.2	5.9
Indicated Liden OP	613	1.7	3.6
Indicated Liden UG	14	2.7	4.3
Total indicated	**1 072**	**2.8**	**4.6**
Inferred Nyhem OP	2 235	2.1	3.2
Inferred Liden OP	911	1.5	3.7
Inferred Liden UG	374	2.9	5.2
Total Inferred	**3 520**	**2.0**	**3.5**

The effective dates of the Mineral Resource estimates are August 12, 2013 for Nyhem and April 30, 2015 for Liden.

Open pit resources are reported within conceptual optimized pit shells.

3.13 Comparison with previous estimations

The previous Mineral Resource estimation was made by SRK in 2009 as a part of a Conceptual Study for Älgträsk. In this study only open pit resources were considered. It can be seen that there are significant differences between the last estimation and the 2009 one in the individual lenses but not for Älgträsk as a total. This is partly due to that boundaries for Nyhem and Liden areas where not properly defined 2009.

Table 6. Comparison with previous resource estimation from 2009

	Kt	**Au (g/t)**
Nyhem 2009	3 954	2.6
Nyhem 2013	2 680	2.4
Liden 2009	246	1.9
Liden 2015	1 912	1.8
Älgträsk total 2009	**4 200**	**2.5**
Älgträsk total 2015	**4 592**	**2.2**

4 REFERENCES

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

Appendix 1

Parameters for Nyhem (2013) and Liden (2015) pit optimizations

2013			2015		
Parameter	**Unit**	**Value**	**Parameter**	**Unit**	**Value**
Metal Price			**Metal Price**		
Copper (CU)	$c/lb	286	Copper (CU)	$c/lb	384
Silver (AG)	$/oz	20	Silver (AG)	$/oz	24.5
Gold (AU)	$/oz	1200	Gold (AU)	$/oz	1510
Exchange rate	USD/SEK	7.0	Exchange rate	USD/SEK	8.57
GOLD CONCENTRATE (Gravity and Flotation. Leaching for high As)			**GOLD CONCENTRATE (Gravity and Flotation)**		
Recovery	CU %	-	Concentrate Grade	Au g/t	150
Recovery	AG%	-	Recovery	CU %	40.8
Recovery High As	AU %	70	Recovery	AG%	65
Recovery Low As	AU %	90	Recovery	AU %	90
Open pit mining & Processing parameters			**Open pit mining & Processing parameters**		
Overall slope angle (rock)	deg	55	Overall slope angle (rock)	deg	55
Mining dilution	%	10	Mining dilution	%	10
Mining recovery	%	95	Mining recovery	%	95
Reference Mining Cost	SEK/ t rock	30	Reference Mining Cost	$/ t rock	3.5
Reference Level	m	280	Reference Level	m	265
Incremental mining costs, up	SEK/bench	0.18	Incremental mining costs	$/ t rock * ben	0.07
Incremental mining costs, down	SEK/bench	0.35	Incremental bench height	m	10
Incremental bench height	m	10			
Processing	SEK/t ore	180	Processing	Cost $/ t ore	16.46
G&A	SEK/t ore	30	G&A	$/ t ore	1.52
Royalty	%	0.02	Royalty	%	0.02