



Operational excellence and organic growth

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Operational excellence and organic growth



Improving
productivity through
mine design and
technical know-how

Organic growth
through
development of
existing assets

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2017 – a good year with high production

- Record profit
 - EBIT Q1-Q3 4 501 MSEK (1 668)
 - ROCE Q1-Q3 24% (10)

- Favorable prices and terms
 - Base metal prices up
 - Precious and currencies flat

- Increased milled production
 - Aitik 28,9 Mton (26,5)
 - Kevitsa 5,9 Mton (5,4)

- High grades
 - Three main mines (Aitik, Garpenberg and Kevitsa) mining over reserve grade

Prices and terms

	Q1-Q3 17	FY 16
Zinc USD/tonne	2 783	2 095
Copper USD/tonne	5 952	4 863
Nickel USD/tonne	10 021	9 609
Lead USD/tonne	2 259	1 872
Gold USD/oz	1 251	1 250
Silver USD/oz	17.2	17.1
USD/SEK	8.61	8.56
EUR/USD	1.11	1.11

Grades

	Q1-Q3 17	Reserve grade
Aitik Cu	0.26	0.23
Garpenberg Zn	4.1	3.1
Garpenberg Ag	132	97
Kevitsa Cu	0.41	0.34
Kevitsa Ni	0.25	0.22

Maintenance in Mines

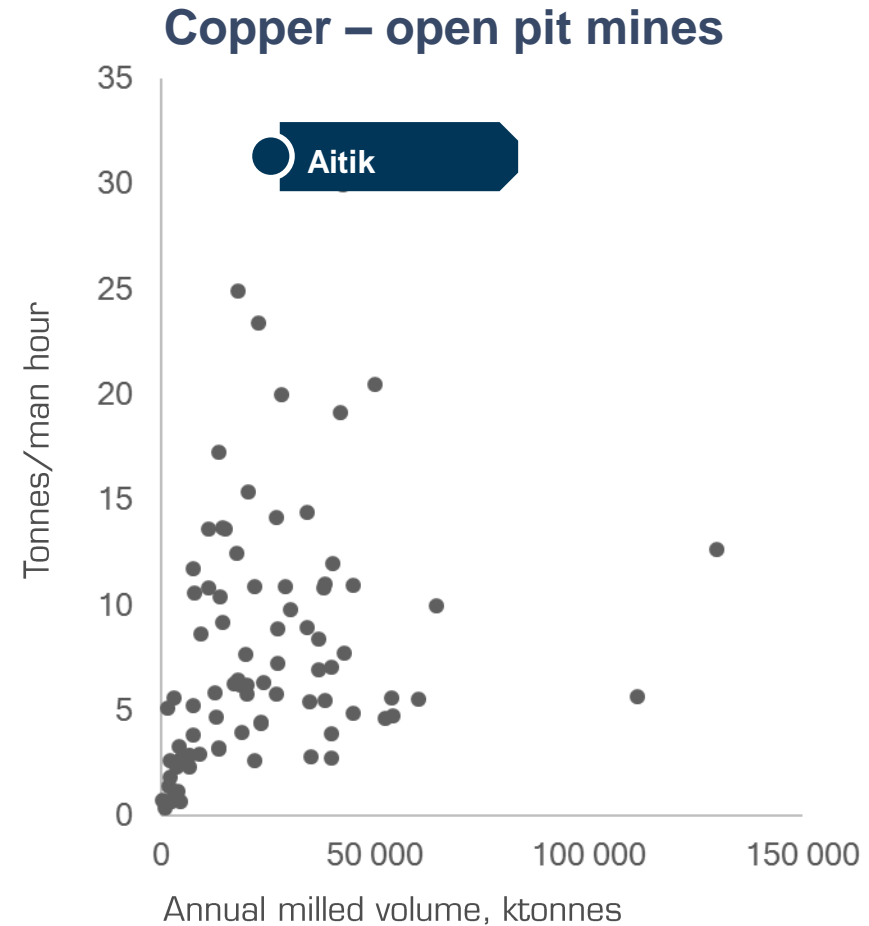
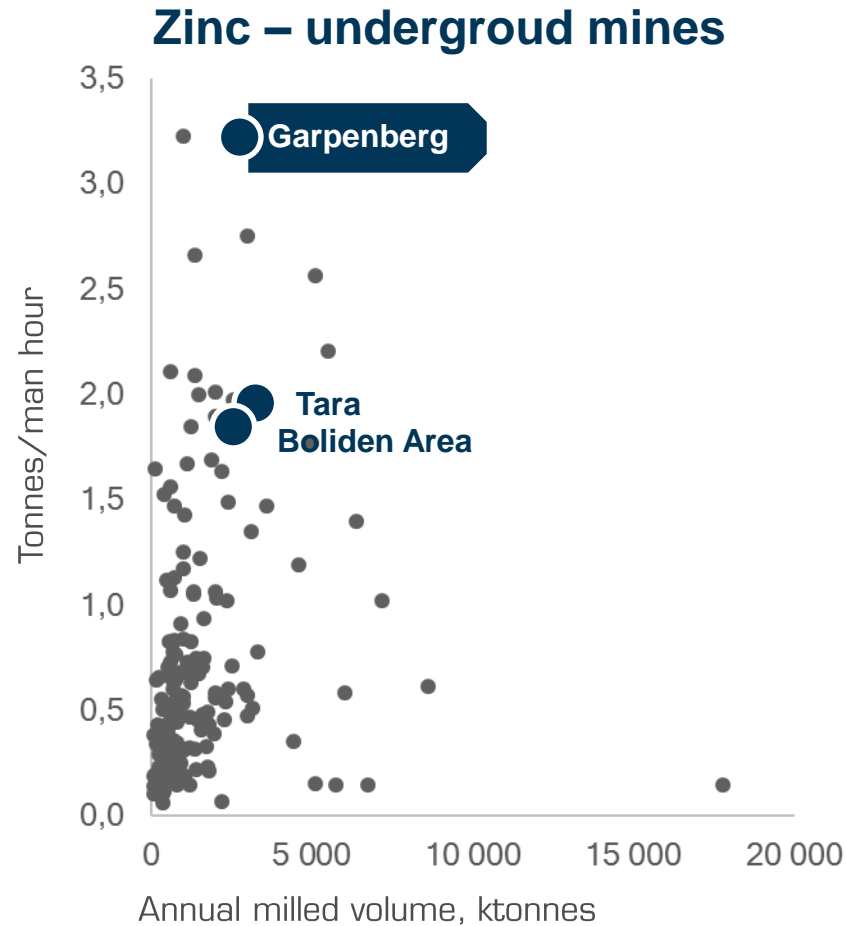
- When mills are shut for relining the mine can usually continue to work
- In times of low metal prices the economic effect is limited
 - When prices are high the effect becomes larger
- Difficult to give longer term guidance
 - Plans changes according to needs

- Difference between Q2 and Q3 2017 is over 200 MSEK
- Q4 2017 will be average in terms of maintenance

Planned mill maintenance

Quarter	Days	Units
Q4 2015	8	1
Q1 2016	15	3
Q2 2016	29	6
Q3 2016	6	1
Q4 2016	16	4
Q1 2017	18	3
Q2 2017	11	2
Q3 2017	44	6

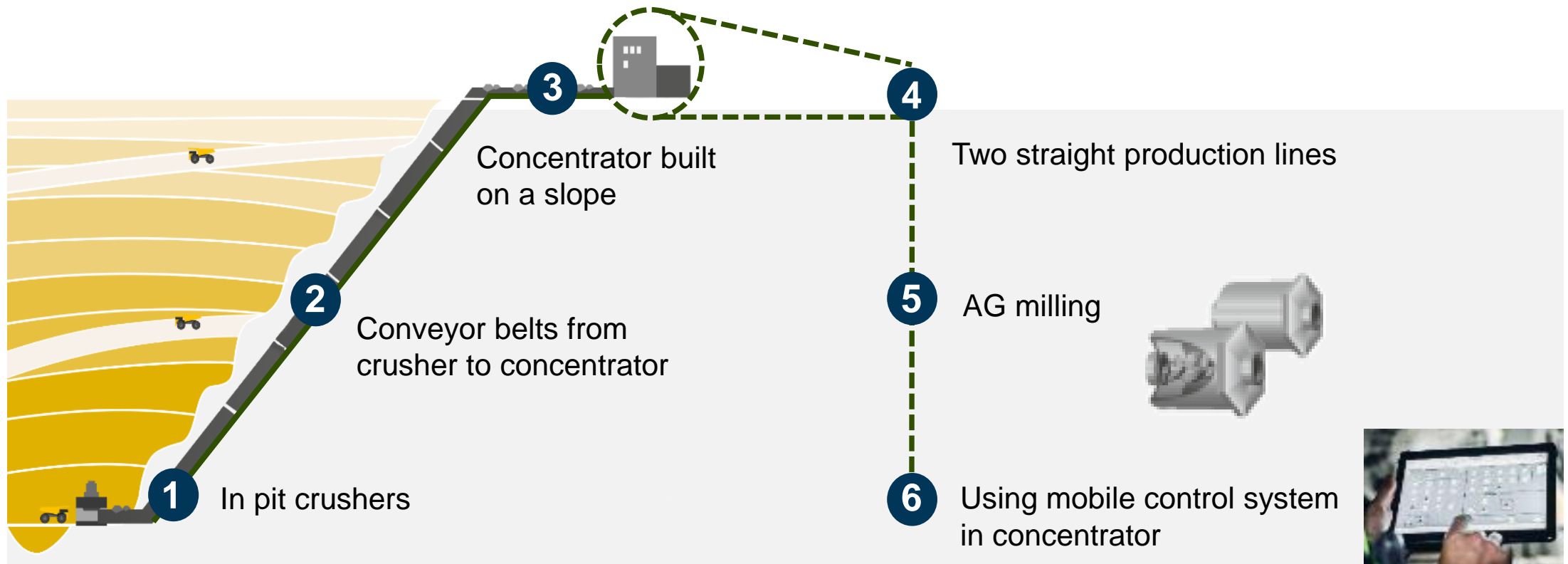
World-class productivity driven by mine design and technical know-how



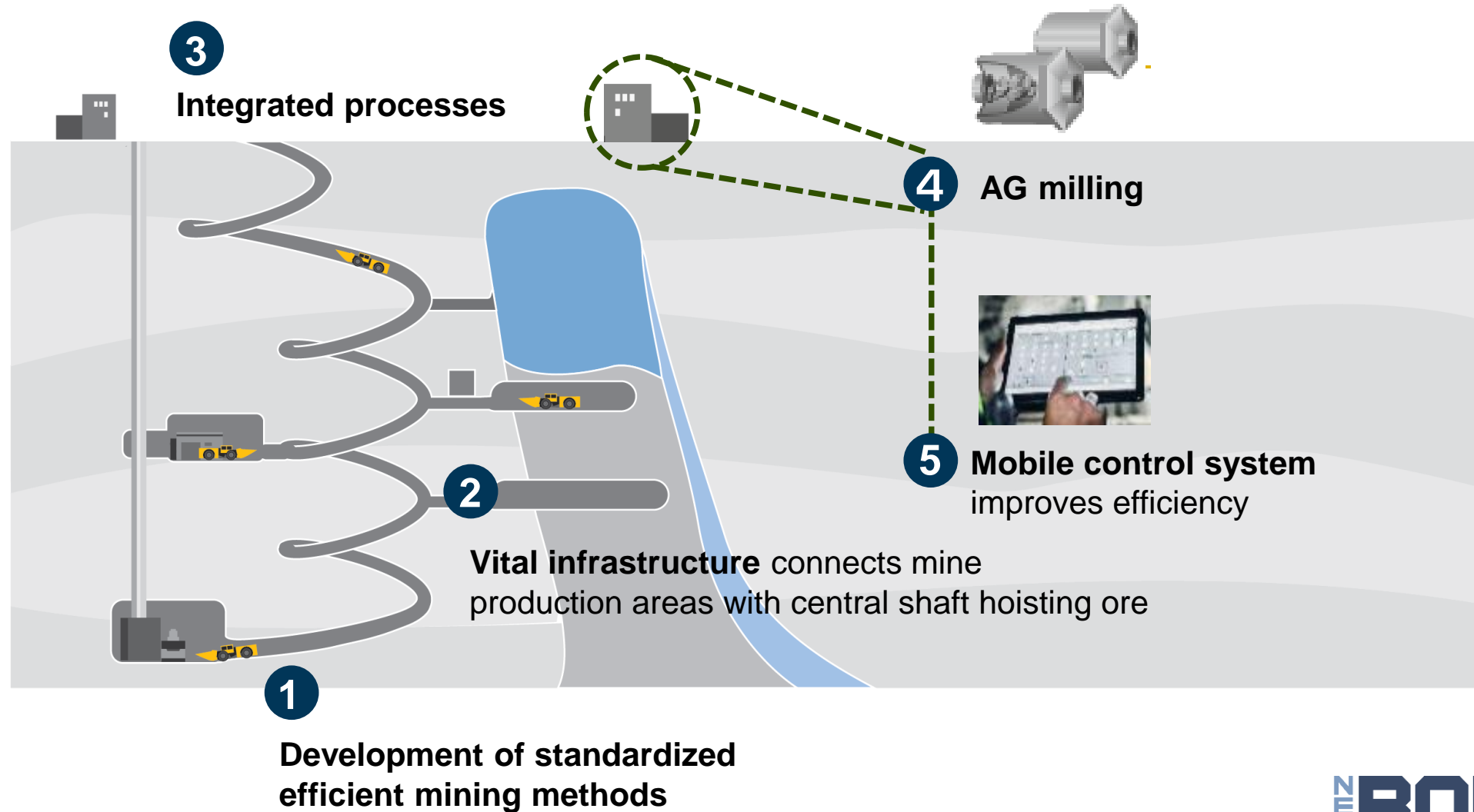
Source: Wood Mackenzie 2017, Copper mines includes open pit mines and mines with mix open pit-underground



Aitik – high productivity through optimal mine design based on the mineralisation



Garpenberg – optimised logistics and Boliden mill design



Technical know-how underpins performance

Dedicated centralized technical team

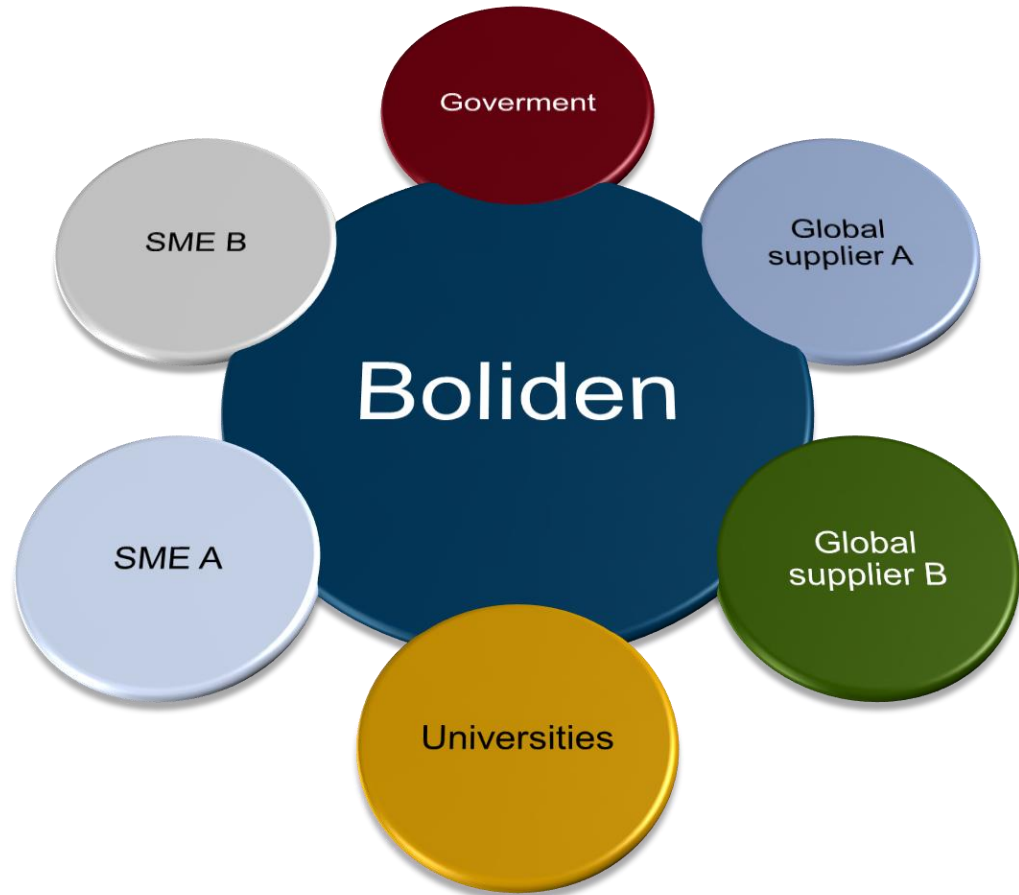
Expert know-how – over 100 specialists in different technology areas

“Conservative” roll-out
– Start small scale, then roll-out across asset base

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Nordic mining technology cluster

- Increase innovation speed by collaboration with suppliers
- Participate in R&D projects supported by Swedish Vinnova and EU



Case – ventilation on demand

- Ventilation in active areas only
- Lower electricity consumption
- Lower costs
- Opportunities to postpone investments in ventilation shafts when mines are expanding



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Social licence to operate

Main activities

- Strong in-house competence
 - Environment
 - Stake-holder contact
 - Permitting
- Good environmental performance
- Taking care of the history
 - Stekenjokk dam reconstruction finished 2017
- Dialogue with stake holder
- Work to improve regulatory frame-work



Garpenberg – feasibility 3.0 Mtonnes 2020 with limited capex

Strong platform

- World class productivity
- Strong track record
- Doubling of mineral reserves
 - Lower grades
- Above 35% ROCE 2015-2017Q3
- Well timed

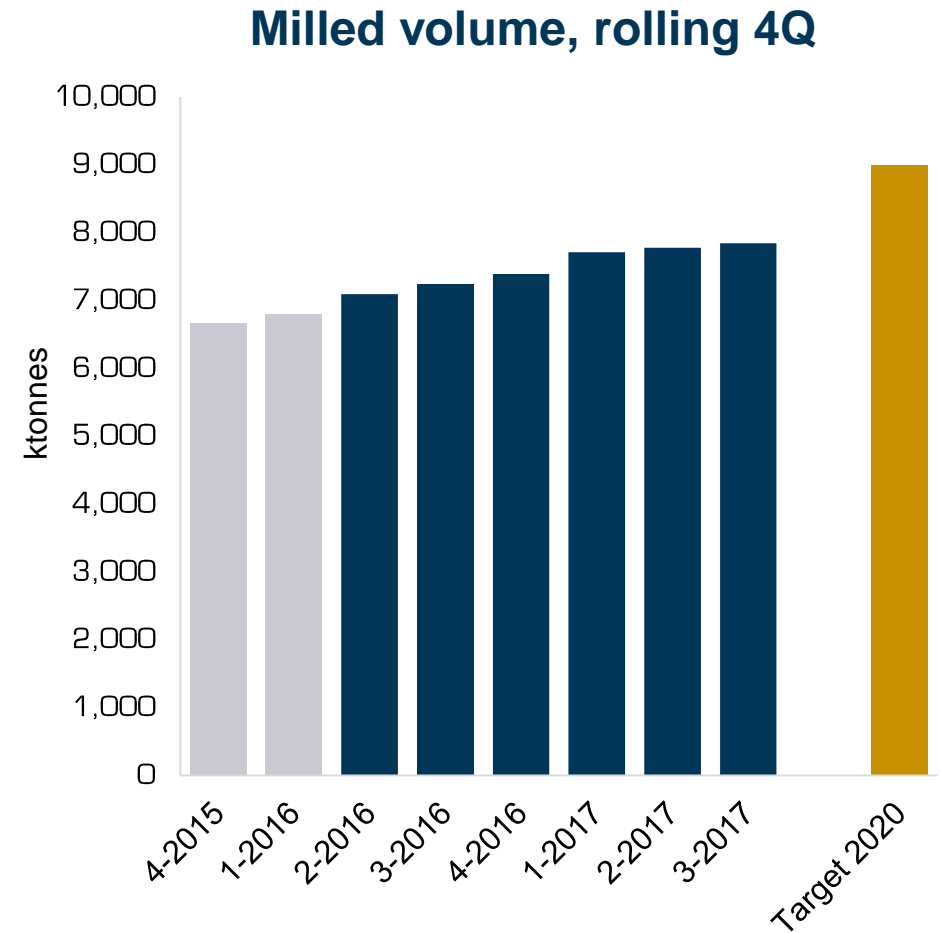


Increased production

- Increasing throughput from 2.6 to 3.0 Mtonnes per year
 - Feasibility study finishing up
 - Ramp-up start 2019
 - Design capacity reached 2020
- Limited additional capex
 - Paste plant and mill de-bottlenecking 60 MSEK
 - Development, tailings, ventilation, and back-fill earlier
- Lowering operating cost per tonne by 4% vs 2016
- Permit in place
 - Applying for permit to raise tailing dam Q4 2017
- Grade
 - 2018: 4.0% Zn, 115g Ag

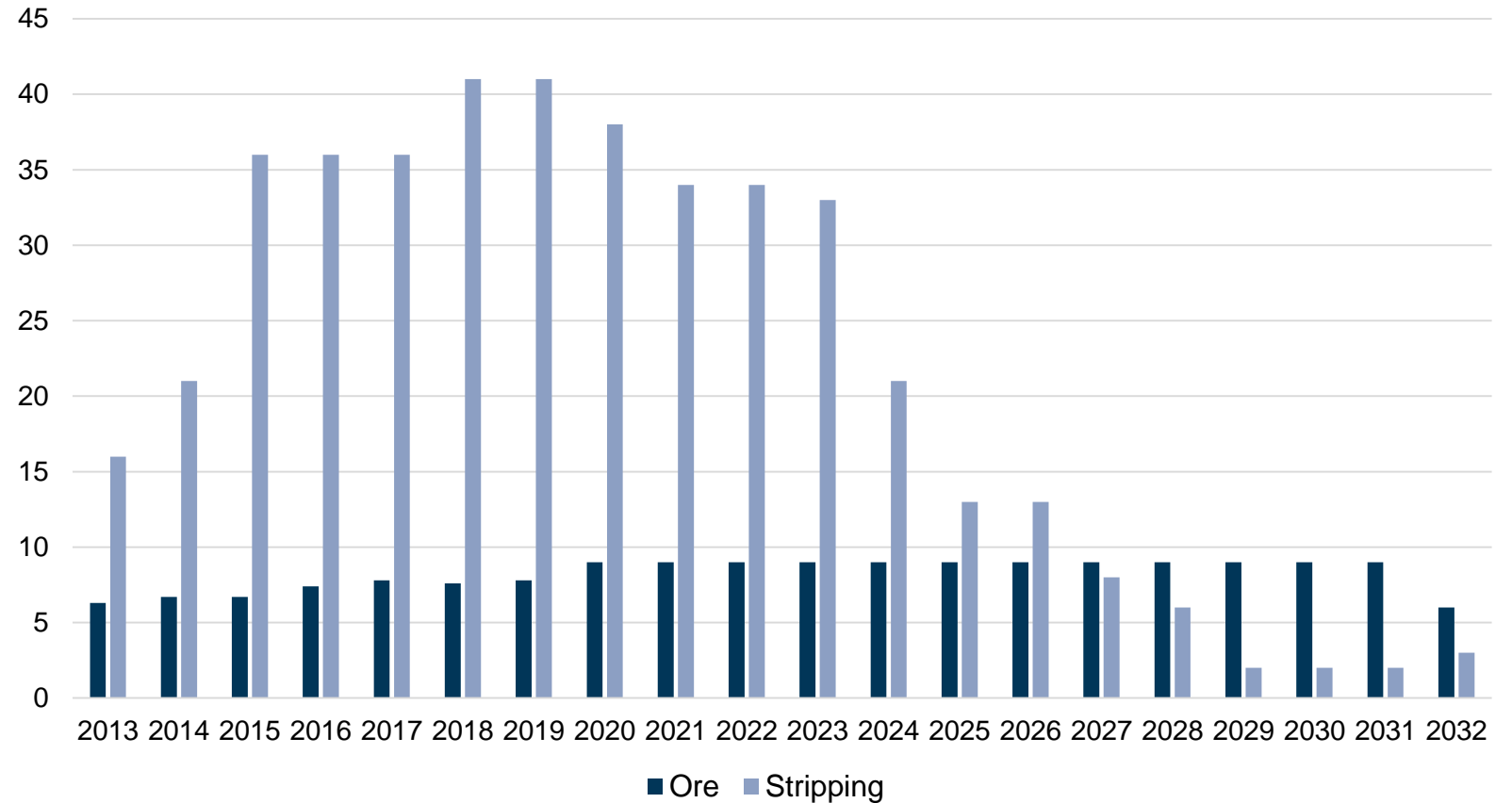
Kevitsa – from 7 Mtonnes to 9 Mtonnes by 2020

- Acquired 1 June 2016
- Optimizing installed infrastructure
 - Optimization in the crushing circuit
 - Improved ore blending
 - Helped by softer ore than average
- Install an additional mill and debottlenecking in concentrator
 - Feasibility study
 - Improve throughput to 9 Mtonnes
 - Preliminary Capex of 70 MEUR
 - Preliminary time plan commissioned 2020



High stripping in Kevitsa

- High stripping 2015-2023
- 2018-2020 peak years



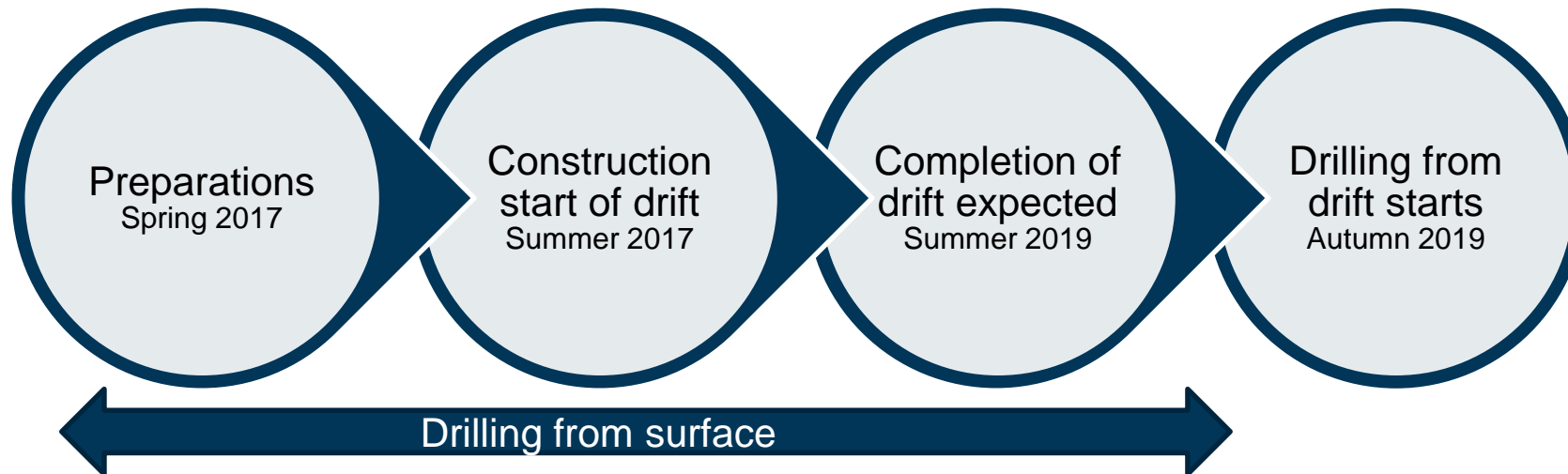
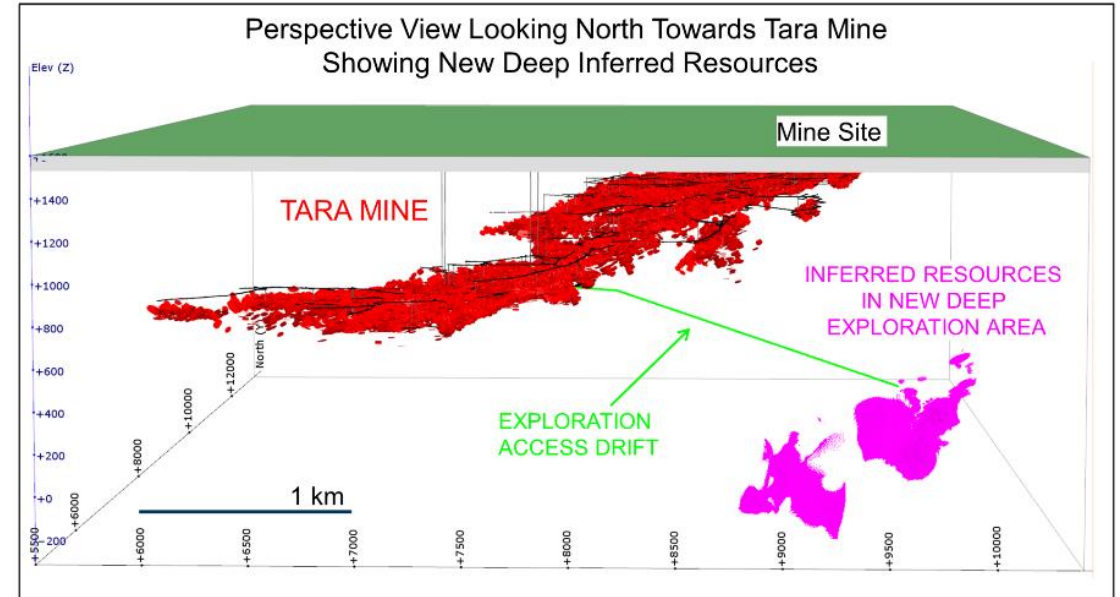
Tara



- Sustaining Boliden's zinc mine production
 - Tara accounts for almost 50% of Boliden's zinc concentrate production
 - Attractive clean concentrate
- Extend tailings dam with capacity to 2026
 - Capex 33 MEUR
 - Construction 2017-2019
 - Construction permit approved
 - Commissioning mid 2019

Tara Deep provides potential growth options

- 10 Mtonnes inferred mineral resource with good grades
- Track record in converting mineral resources to reserves
- Building drift to new mineral resource enables intensified exploration
- Drift completed 2019



Aitik – new crusher station allows ramp-up to 45 Mtonnes by 2020

Construction
work completed
End 2017

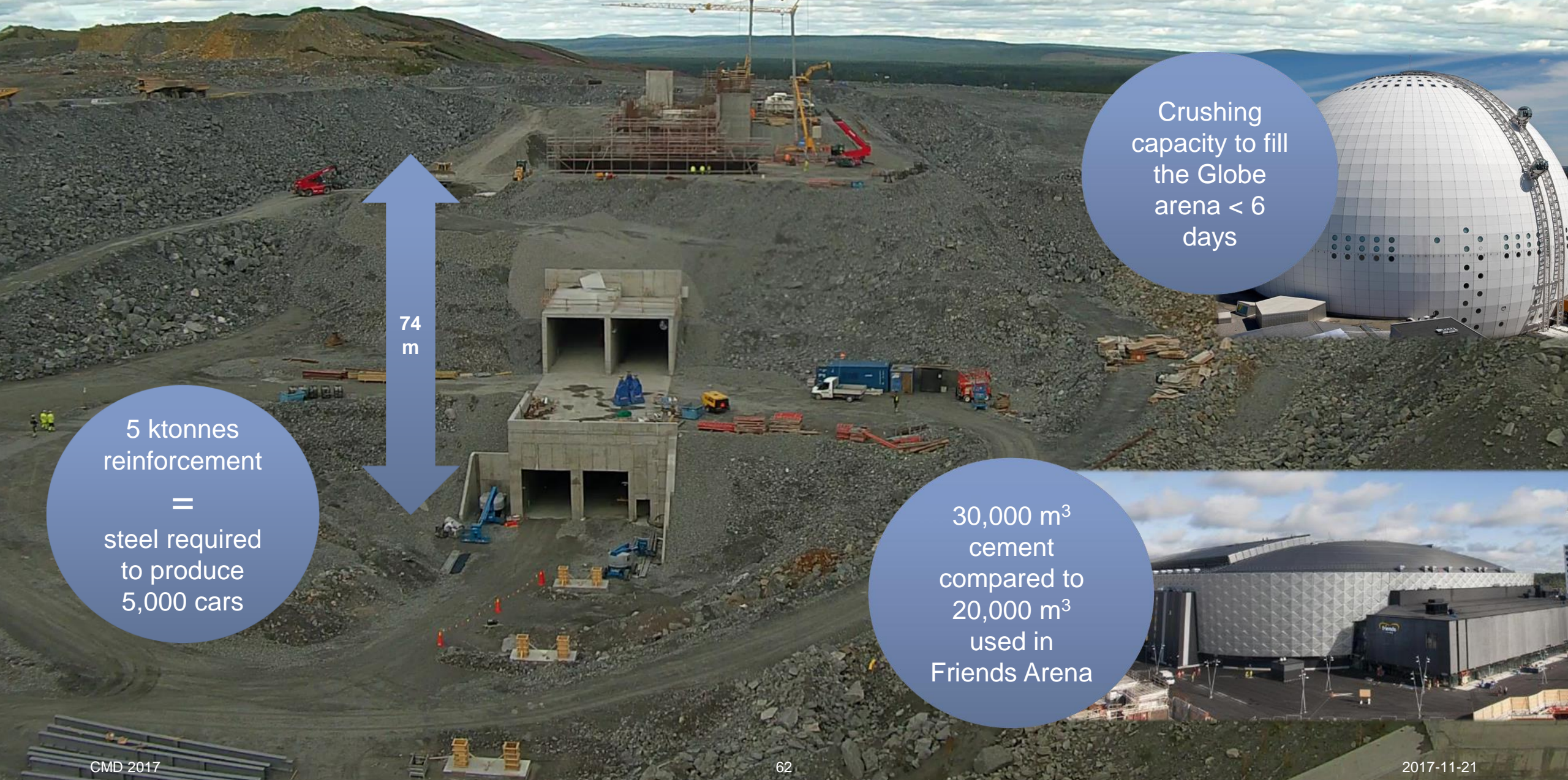
Installation of
equipment
Q1 2018

Commissioning &
test runs

Production
Mid 2018

KiD2 project – 2016-08-12

New crusher is based on a robust, well proven design



5 ktonnes reinforcement
=
steel required to produce
5,000 cars

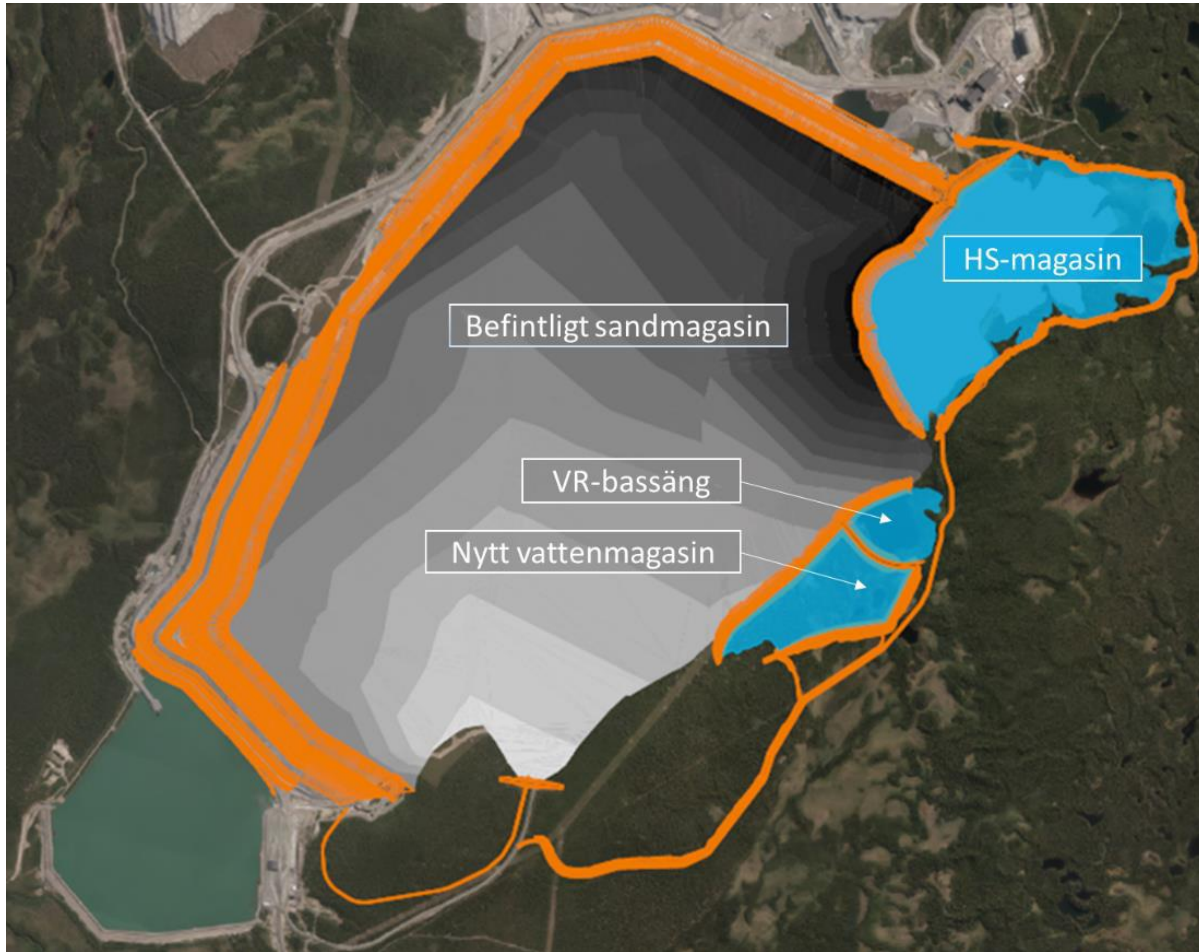
74 m

Crushing capacity to fill the Globe arena < 6 days

30,000 m³ cement compared to 20,000 m³ used in Friends Arena



Aitik – increased mine sustaining investments in the short term



- Separation of tailings into high and low Sulphur
 - Cheaper decommissioning
- Investments to move forward
 - Sand pumping to handle higher dams
 - Improved and extended water management
 - New spill-over
 - Moving roads and power lines

Boliden Area – Maurliden depleting

- Mill running at record pace
 - Maurliden depleting
 - Other mines unable to pick up the slack
-
- Milled production will go down with around 200 kton
 - Shift from Open Pit to under ground
 - Increased development in Kristineberg
 - Rock stability
 - Ore geometry complicated



Boliden Area – actions to secure prolongation

- 1 Extension of tailings dam
 - Capacity until 2028 vs previously 2020
 - Capex 300 MSEK
 - Construction 2017-2019

- 2 Building a drift to the Rävliiden mineral resource
 - Close to the Kristineberg mine, Boliden Area
 - The drift can also be used for production
 - 130 MSEK (capex and opex), 2017-2019
 - Drift planned to be completed mid 2019
 - Preparations for extension of mining licence and environmental permit on-going



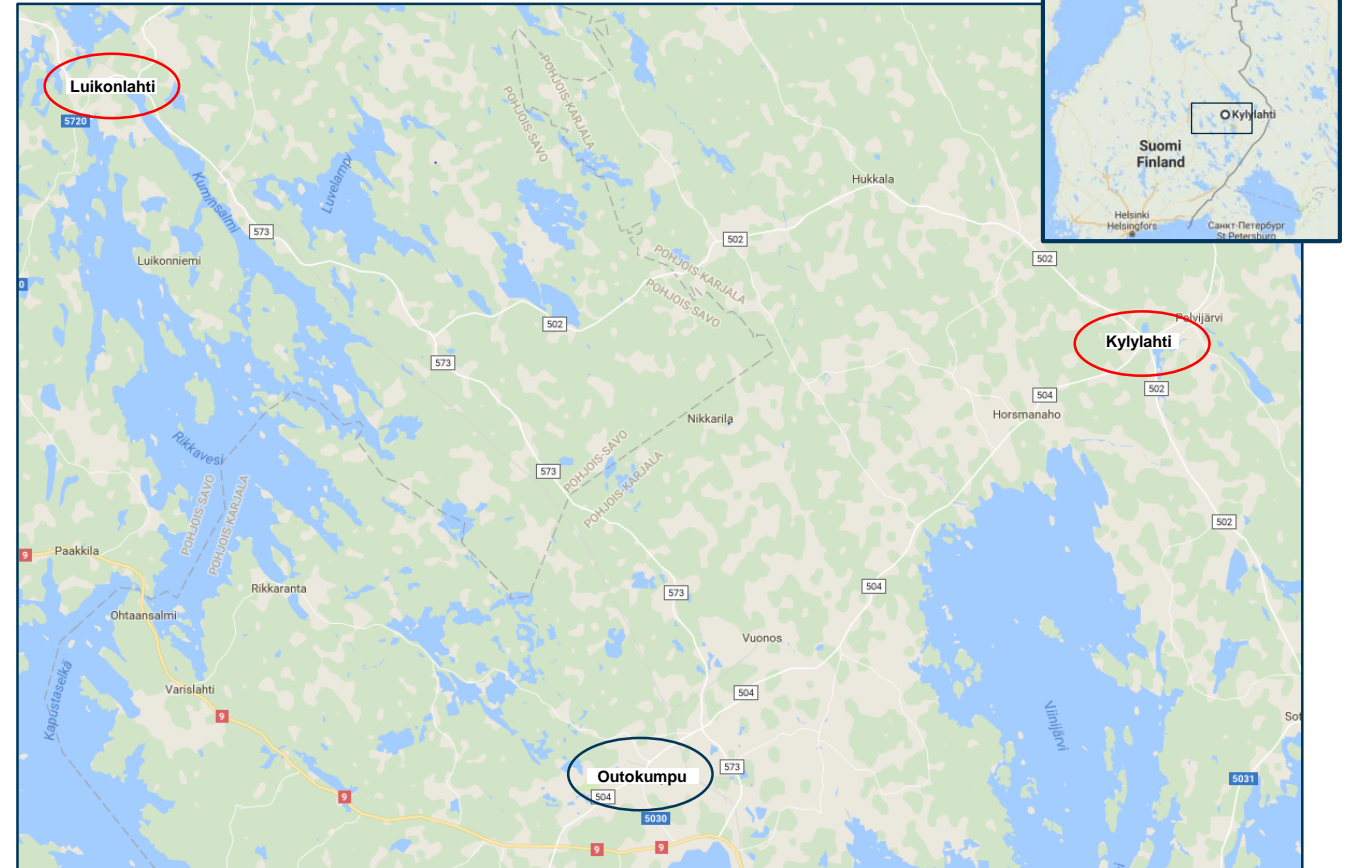
Kylylahti – cobalt could convert resources to reserves

- No substantial new exploration finds
- Potential for extension through cobalt containing resources
 - Cobalt large part of in-situ value
 - Metallurgical challenges
 - Market conditions improving
 - May potentially convert resources to reserves
- Deadline for closing decision summer 2018



Exploration continues in the Outokumpu area

- 2 focus areas
 - Near the Kylylahti Mine infrastructure
 - Trucking distance to the Luikonlahti mill
- Prioritized target areas
 - Keretti-Vuonos-Karnukka belt
 - Luikonlahti
 - Saramäki-Miihkali
 - Valkeisenranta



Exploration 500 MSEK per year

Near mine:

Kylylahti

Tara

Boliden Area

Garpenberg

Aitik/Nautanen

Kevitsa

Field (including near mill):

Outokumpu

Skellefteå district

Bergslagen

Norrbotten

Northern Finland

Ireland



Summary

Plus

- Strong 2017
- Garpenberg study, 3.0 mton
- Growth potential
 - Aitik 45
 - Tara Deep
 - Rävliiden/Boliden Area
 - Laver
- Kevitsa integration
- Technology potential

Minus

- Grades lower in R&R than presently mined
- Maurliden depleting
- High investments
 - Expansion and mine sustaining in Aitik and Kevitsa
 - Mainly managed in-house
- No exploration success in Kylylahti

Q&A

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