NINETY YEARS OF KNOWLEDGE

Stefan Romedahl, GM Boliden Tara Mines
This is Boliden

- Metal company with focus on sustainable development.
- Core competence within Exploration, Mining, Smelting Metal recycling.
- Produce and sell Copper, Zinc, Lead, Silver and Gold.
- Five mining areas and five smelters.
Safety and Environmental excellence are key focus areas within Boliden operations

ISO accredited
Delivering operational excellence

Operational excellence
- Productivity - availability
- Metallurgy
- Project management

Focusing on profitable growth
- Organic expansion
- M&A

Boliden Tara Mines
### Two large organic expansion projects conducted during the last decade

<table>
<thead>
<tr>
<th>Aitik Copper Mine</th>
<th>Garpenberg Zinc Mine</th>
</tr>
</thead>
<tbody>
<tr>
<td>36 Mtonne ore/year</td>
<td>2.5 Mtonne ore/year</td>
</tr>
<tr>
<td>Head grade 0.2 %</td>
<td>Head grade Zn 5 %</td>
</tr>
<tr>
<td>Investment decision 2006</td>
<td>By products Ag, Pb, Cu and Au</td>
</tr>
<tr>
<td>Environmental licence January 2008</td>
<td>Investment decision 2011</td>
</tr>
<tr>
<td>Construction time 2 years</td>
<td>Construction time 2011-2014</td>
</tr>
<tr>
<td>Commissioning March 2010</td>
<td>Commissioning March 2014</td>
</tr>
<tr>
<td>Total Capex 550 M Euro</td>
<td>Total Capex 350 M Euro</td>
</tr>
</tbody>
</table>
World-class design

- Fundamentals
  - Geological target, conceptual study
  - Mineral resource, pre feasibility
  - Mineral reserve, feasibility study

- Mine
  - Infrastructure – production areas – stopes

- Concentrator
  - Mill
  - Flotation
  - Dewatering
  - TMF
High level of productivity but more to be achieved

**Zinc - underground mines 2016**

- Citronen project (Grönland)
- Pyhäsalmi (Finland)
- 777 (Canada)
- Doe Run (USA)
- Aguas Tenidas (Spain)
- Cerro Lindo (Mexico)
- Kazakhmys (Kazakhstan)

**Million tonne ore production per year**

- 0.0
- 0.5
- 1.0
- 1.5
- 2.0
- 2.5
- 3.0
- 3.5
- 4.0
- 4.5
- 5.0

**Copper - open pit with mill 2014**

- Aitik
- Mount Milligan (Canada)
- Gibralt (Canada)
- Boddington (Australia)
- Highland Valley (Canada)
- Sierrita (USA)
- Bingham Canyon (USA)
- Antamina (Peru)
- Cerro Verde (Peru)
- Los Pelambres (Chile)
- Collahuasi (Chile)
- Escondida (Chile)

**Million tonne ore production per year**

- 0
- 20
- 40
- 60
- 80
- 100

**Boliden Tara Mines**
Increasing performance at mine and mill

- **Key productivity drivers at mine**
  Minimizing lead time between work processes at faces/stopes/benches

- **Key drivers for the concentrator**
  Optimizing availability of mill/flotation/dewatering and metallurgical performance
Integrated control system drives efficiency

- Integrated control system for mine and mill
  - Increased efficiency
  - Lower costs
- Mobile control room
  - Enables operators to monitor and adjust in real time
- Control system integrated with maintenance system
  - Only one original document
  - All share same info
  - Improved surveillance
  - Easier to spot errors
  - Real time updates improves visibility
- WLan
  - Enable status control and operational guidance
Boliden Tara Mines (Tara) today

Tara current realities

- Decreasing Resources & Reserves (R&R)
- Decreasing head grades
- High cost level
Tara ore body value position
Net grade (increased by by-products)
Cash Cost (normal) Zn

2014 Zn Cost Curve, Ranked By C1, Normal Costs, Grouped By Mine in c/lb (WM2015 Q1 - All Mines)

Source: © Wood Mackenzie Ltd. 2015
Two Focus Areas For Tara

- Cost reduction
- Near mine exploration and treatment of R&R
Restructuring Tara for improved profitability

Lowering headcount

<table>
<thead>
<tr>
<th>Year</th>
<th>Headcount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>700</td>
</tr>
<tr>
<td>2014 Q3</td>
<td>620</td>
</tr>
<tr>
<td>2015</td>
<td>590</td>
</tr>
</tbody>
</table>

Decrease mobile fleet

Optimization on-going
Boliden Exploration in Ireland

- Concentrate on near mine exploration proximate to Tara
- Boliden ceased regional exploration July 2014
- Boliden open to joint ventures on the regional exploration projects
Ireland’s Zinc metal production

Source: Wood Mackenzie, Zinc market outlook Q4 2014
Challenges for Mining Industry in Ireland

Strength and Opportunities

Exploration opportunities
- Great geological potential
- Strong initial support from authorities

Infrastructure
- Generally good – (rail, road, ports and power grid)

Weakness and Threats

Cost base
- High employment costs in the mining sector in general
- One of the highest energy cost countries in Europe

Tax regime
- Corporate Tax rate in Ireland 12.5% **BUT** Mining 25% (plus Royalty payments)

Regulation
- Long lead time to an operational mine – 8+ years dealing with regulatory authorities.
- Complex closure requirements – long monitoring period in closure (active-passive rehabilitation – monitoring).