

Exploration- the true R&D of Mining

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Mining



Smelting
and
Refining



Zinc

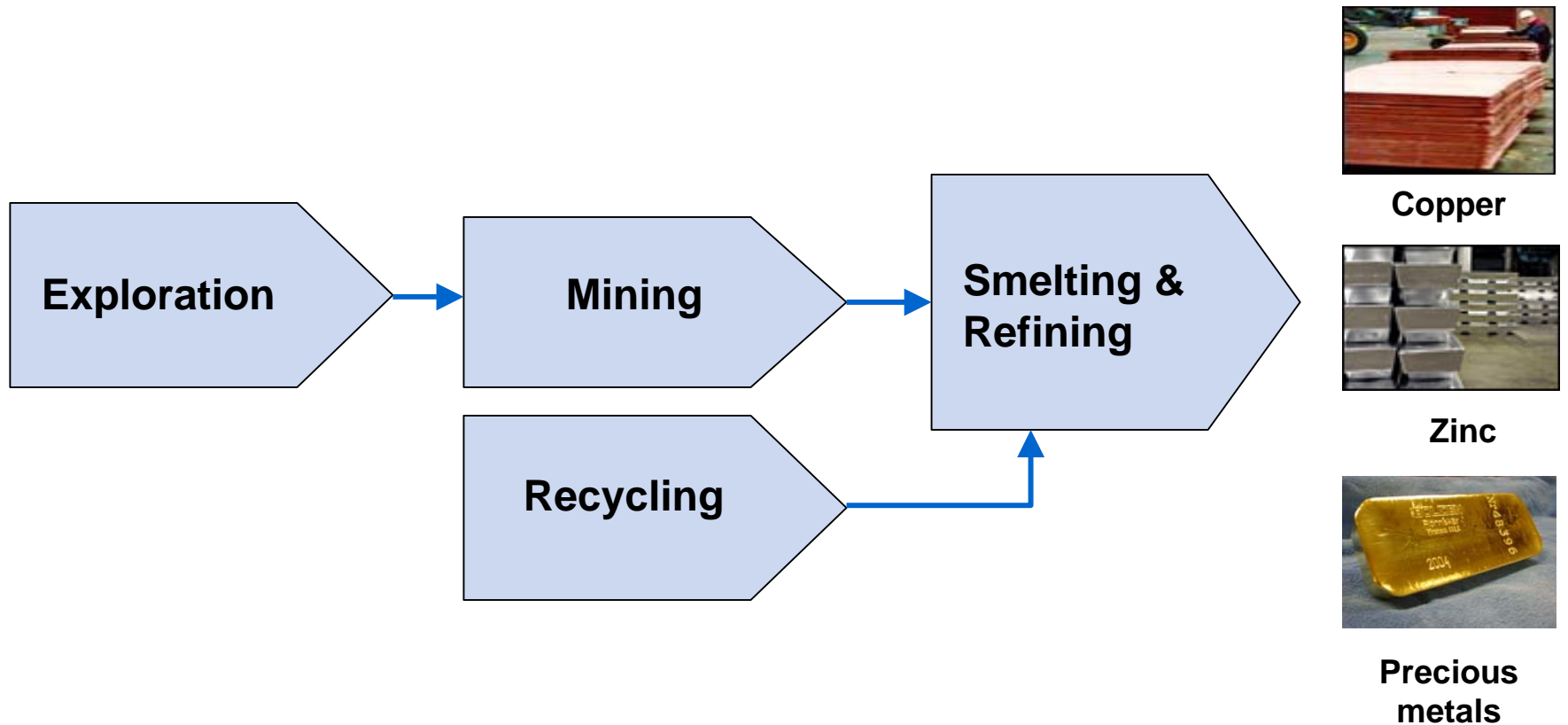


Copper

Agenda

- **Some basics about exploration and ore reserves.**
- **Goal and strategy**
- **Present status of reserves and resources.**
- **Case study Garpenberg / Ippberget**
- **Case study Kristineberg / J-zone**

Boliden's Value Chain



Strategy to increase Ore Reserves

Balanced portfolio of

Mine-site Exploration

- Close to all existing mines
- Infrastructure in place
- Shorter lead times

Field Exploration

- Field Exploration Boliden
- Joint Ventures
- Juniors

Business Development

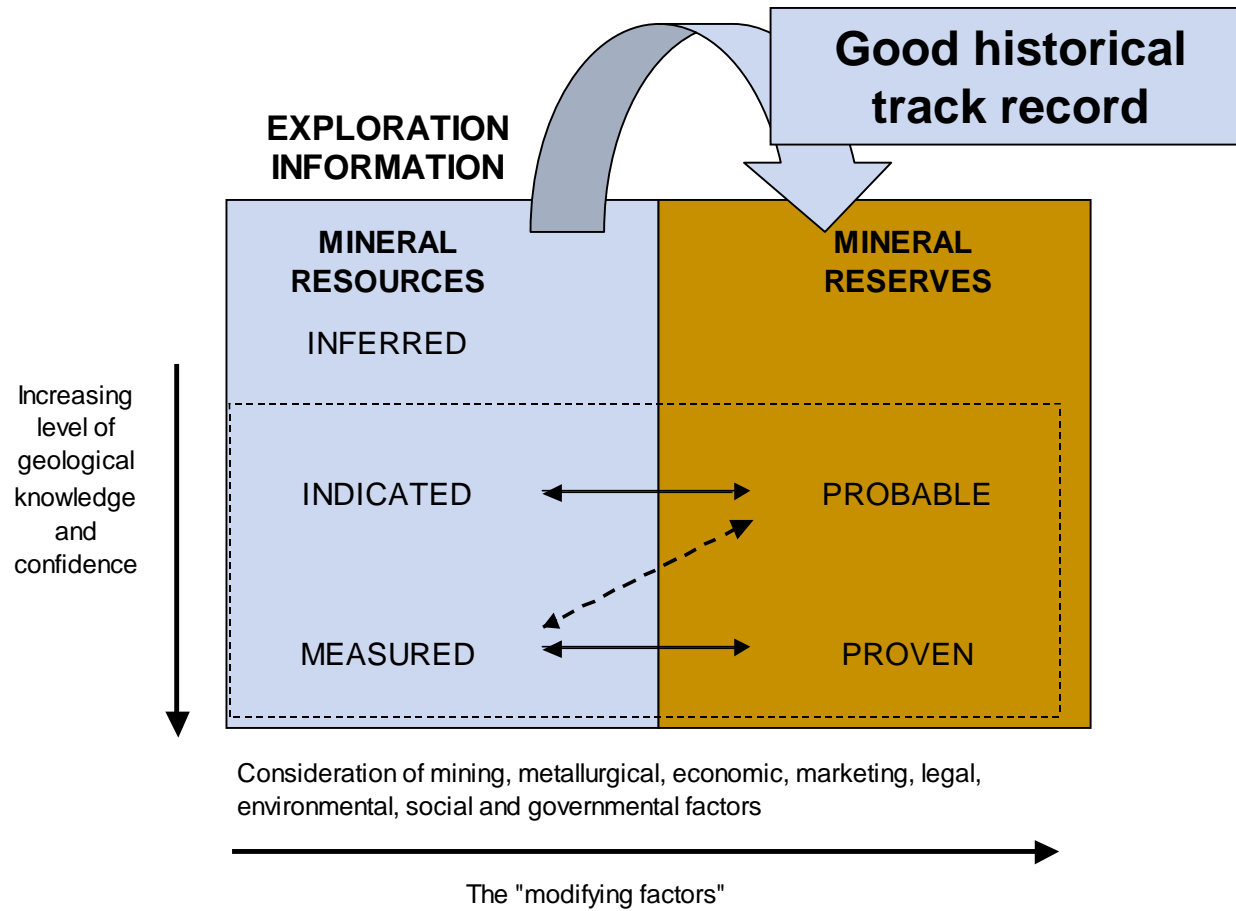
- Joint Ventures
- Partnership
- M&A

Ore reserve v.s. Mineral Resource

The Jorc Code

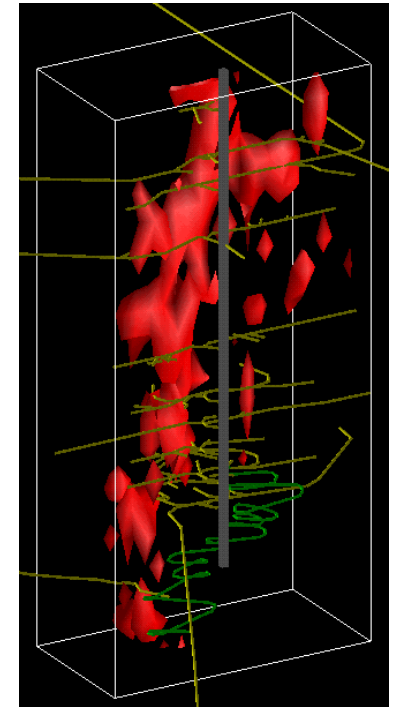
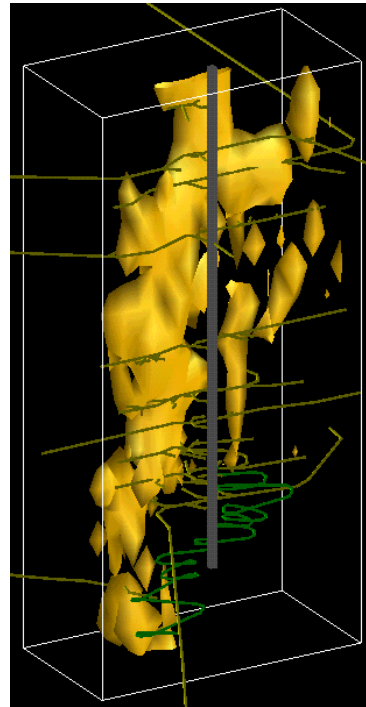
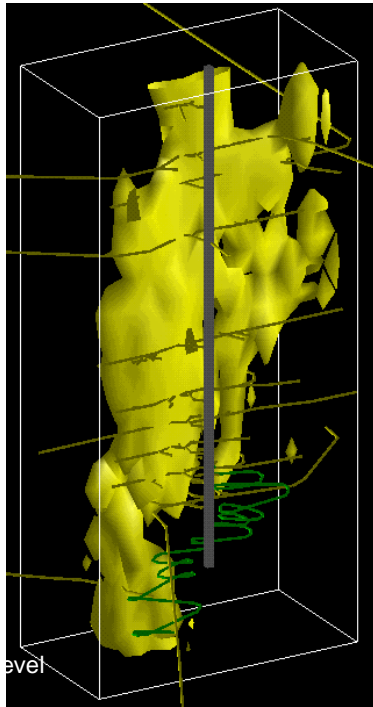
“An Ore Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction could reasonably be justified.”

Ore Reserves and Mineral Resources



Relation between tonnage – ore value – metal price – production – new technique

Increasing metal price / Decreasing production cost / New technique



Decreasing metal price / Increasing production cost



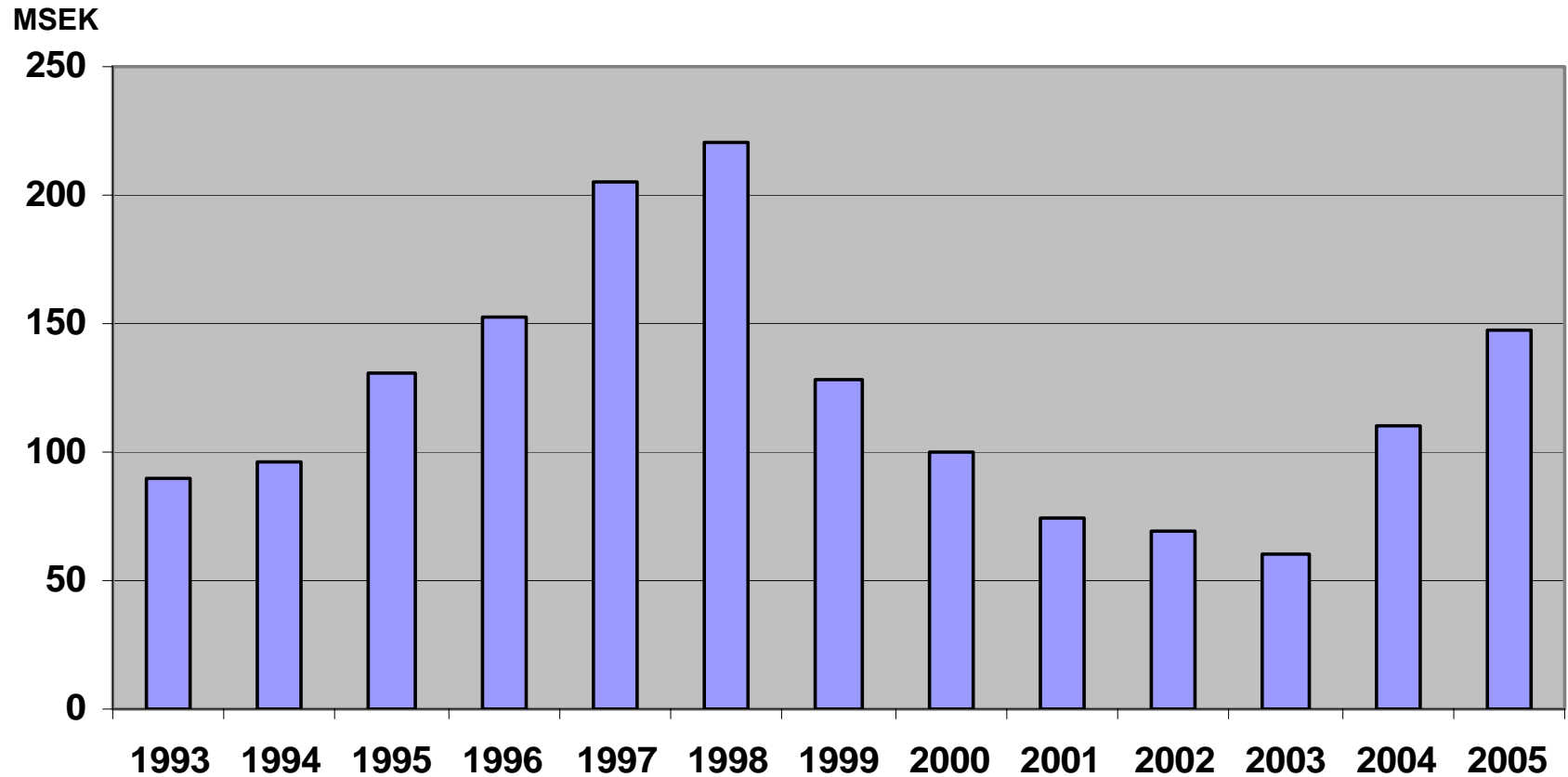
Exploration goals

- **Skellefte-field**
 - > 20 Mton reserves /resources 2005-2008
 - two additional discoveries within 4 years
 - > 5-10 Mton by mine site exploration
- **Aitik**
 - Mine site exploration to increase production
- **Garpenperg**
 - > 10 Mton reserves and > 25 resources 2005-2008
 - Additional discoveries within 4 years
- **Tara**
 - > 15 Mton resources 2005-2008

Exploration strategy 2005

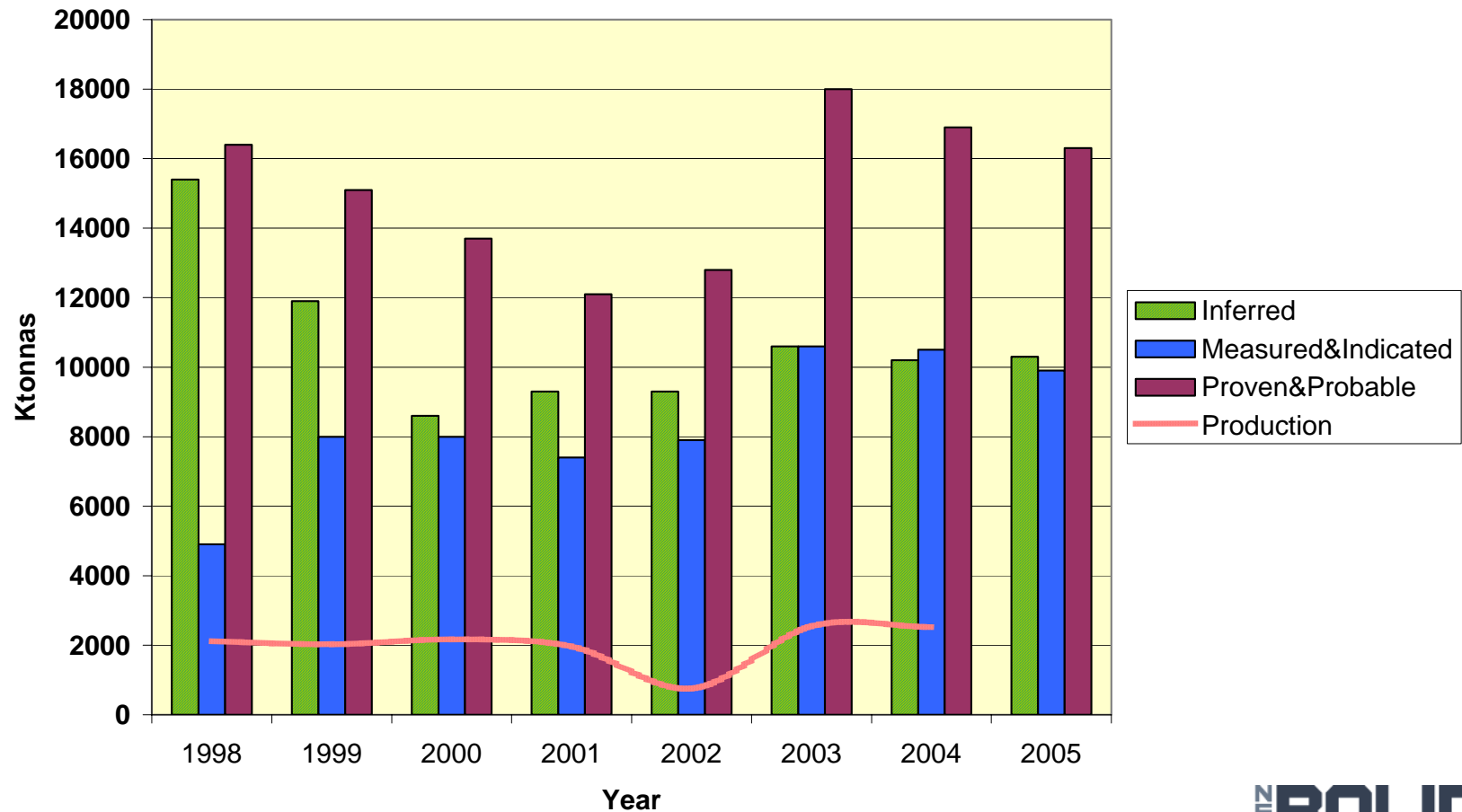
- **Focus mine-site exploration**
- **Field exploration in the Skellefteå-field for base metals and gold**
- **JV with Inmet Mining in the Bergslagen district**
- **Feasibility study: increased Copper exploration in Norrbotten**

Exploration expenses



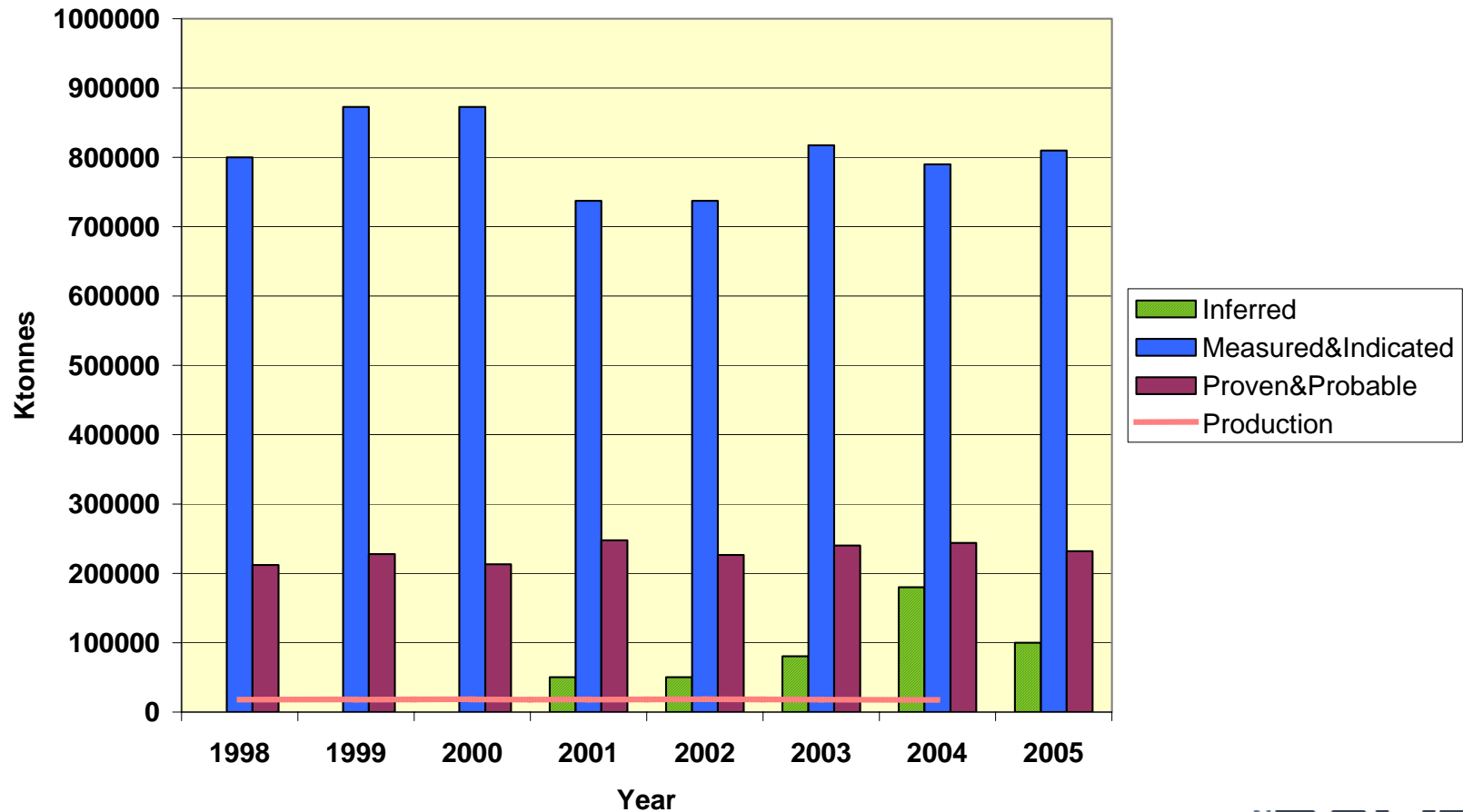
Tara

Resource & Reserve Development



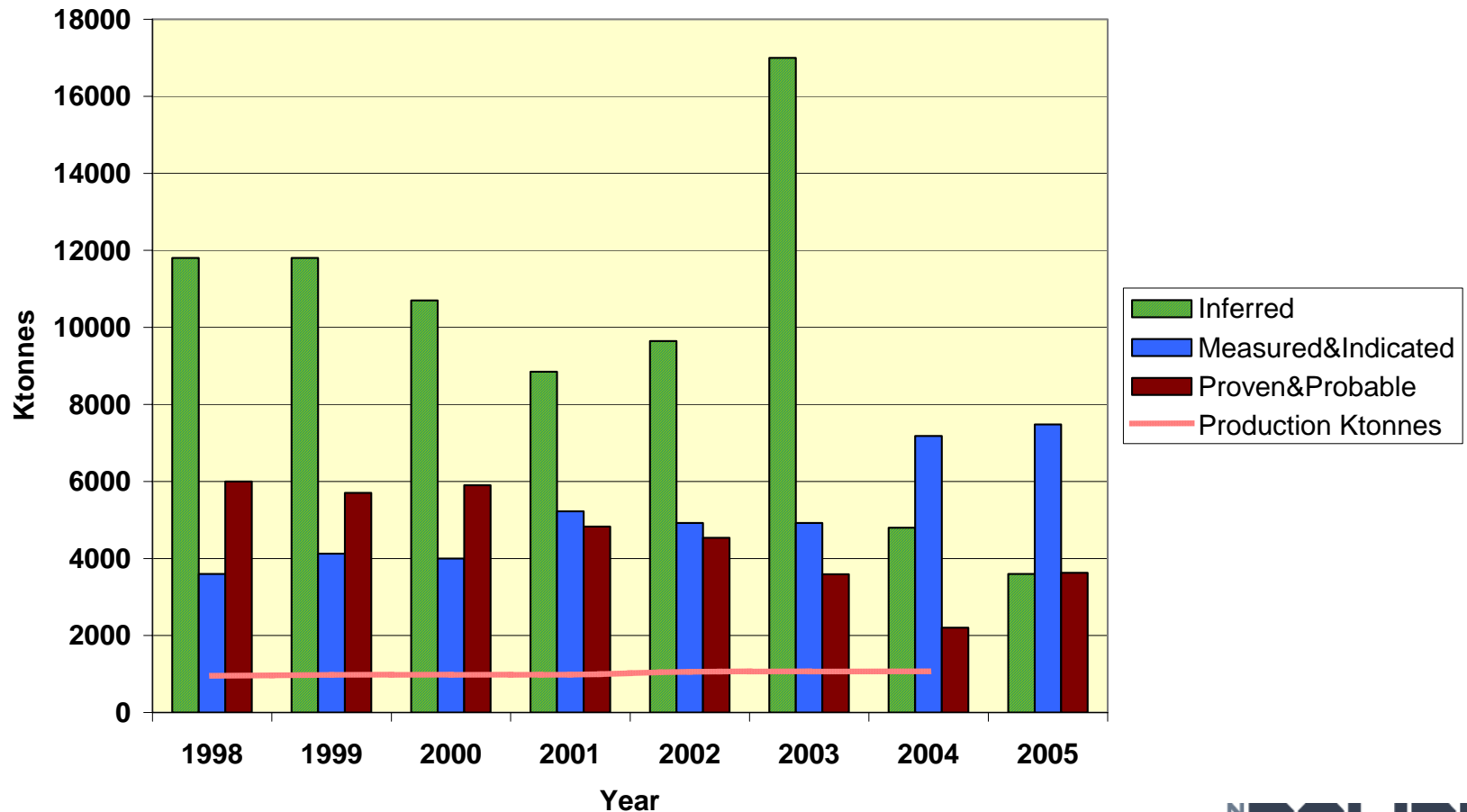
Aitik

Resource & Reserve Development

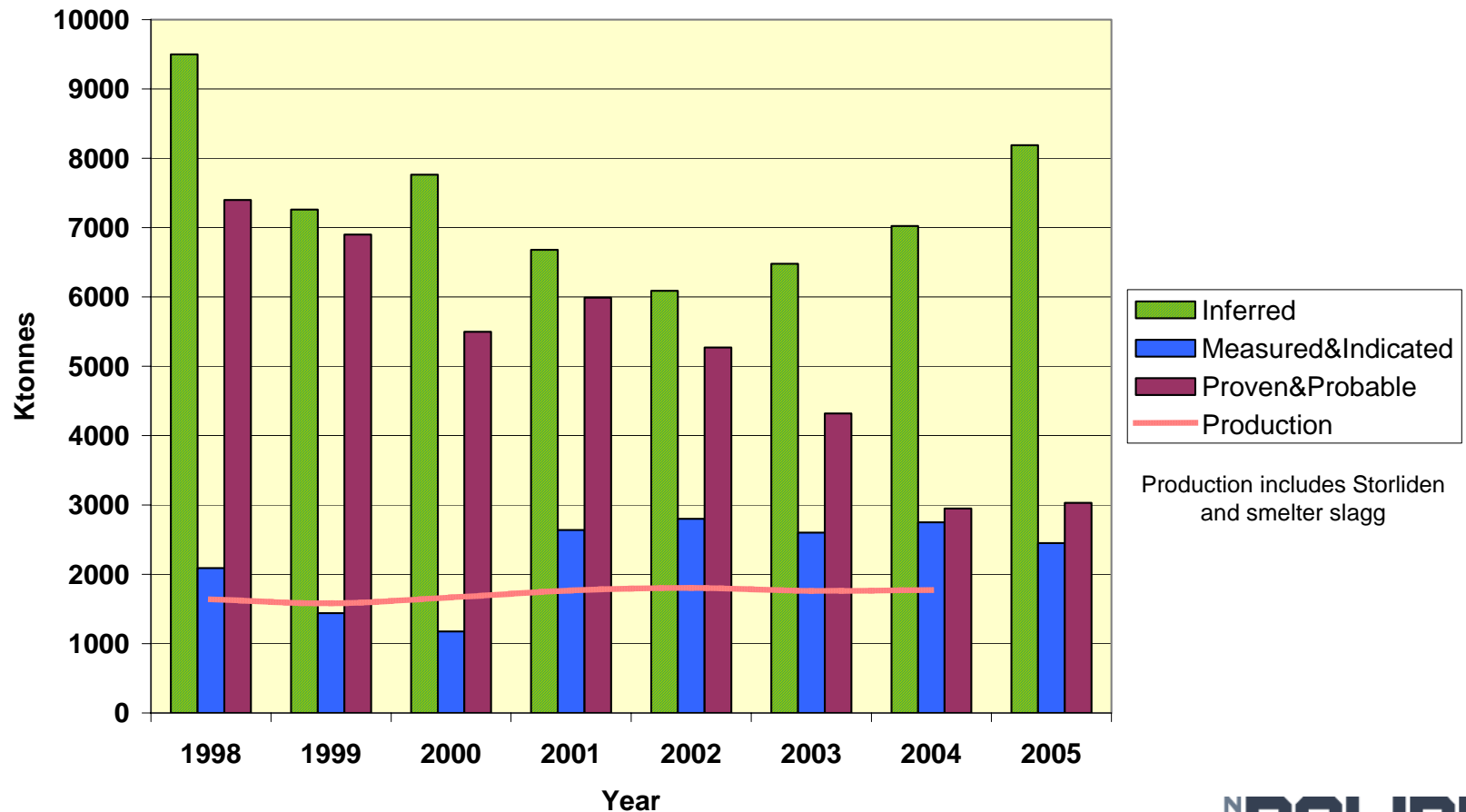


Garpenberg

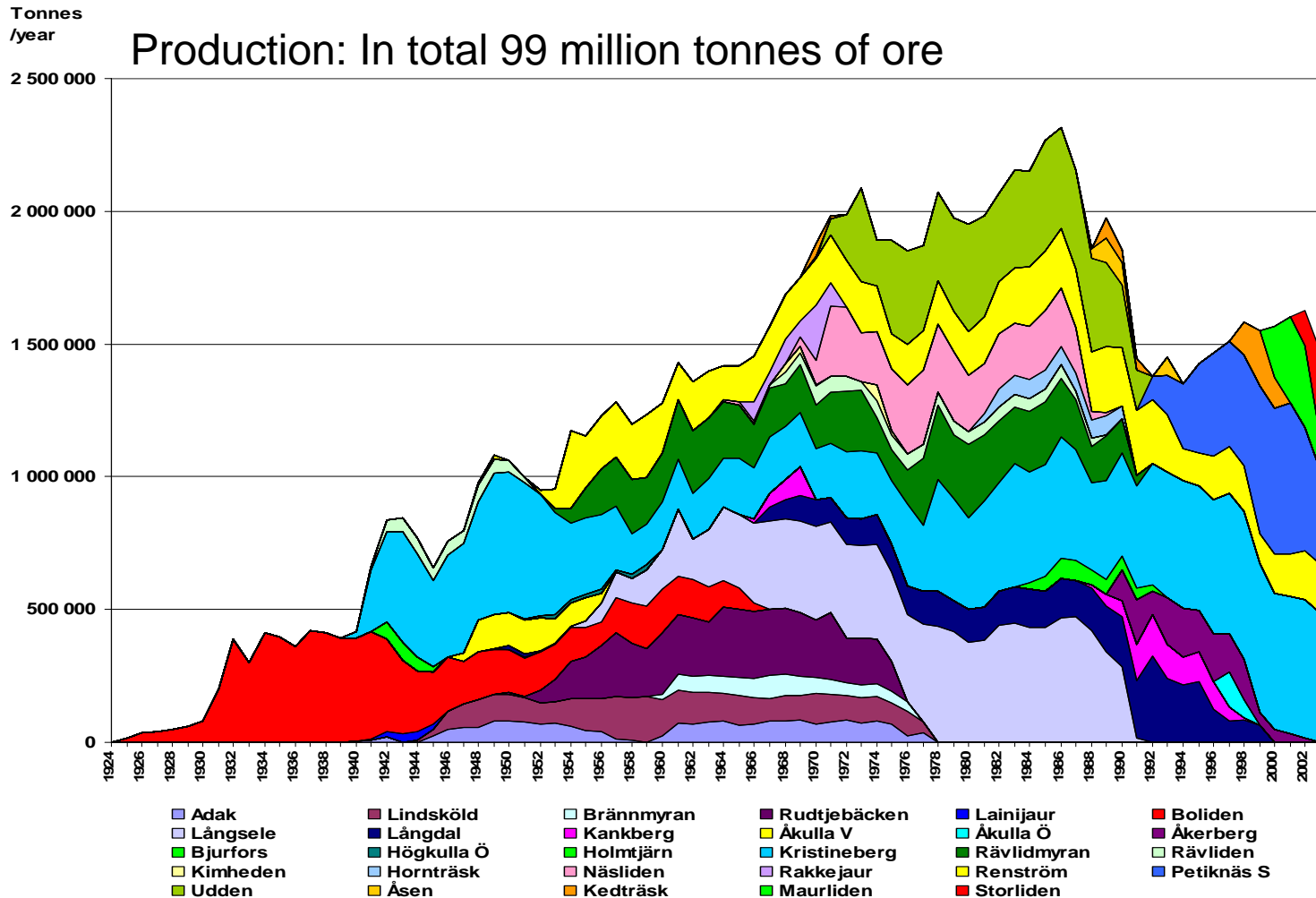
Resource & Reserve Development



Boliden Area Resource & Reserve Development



Production history from 29 mines in the Skellefte District 1925-2003



BOLIDEN

Ore Reserves & Mineral Resources

- **Aitik**
 - Ore Reserves > 12 years
 - Excellent Mineral Resources
 - Potential for production increase in a 10-year perspective
- **Boliden**
 - Limited Ore Reserves
 - Improving resources
 - Potential to maintain current production level in a 10-year perspective
- **Garpenberg**
 - Improving Ore Reserve
 - Excellent Mineral Resource position
 - Potential for production increase in a 10-year perspective
- **Tara**
 - Ore Reserves > 6 years
 - Good Mineral Resource inventory
 - Potential to maintain current production level in a 10 year perspective

Field exploration 2005

Sweden - 25 drilling targets mainly in the Skellefte Field

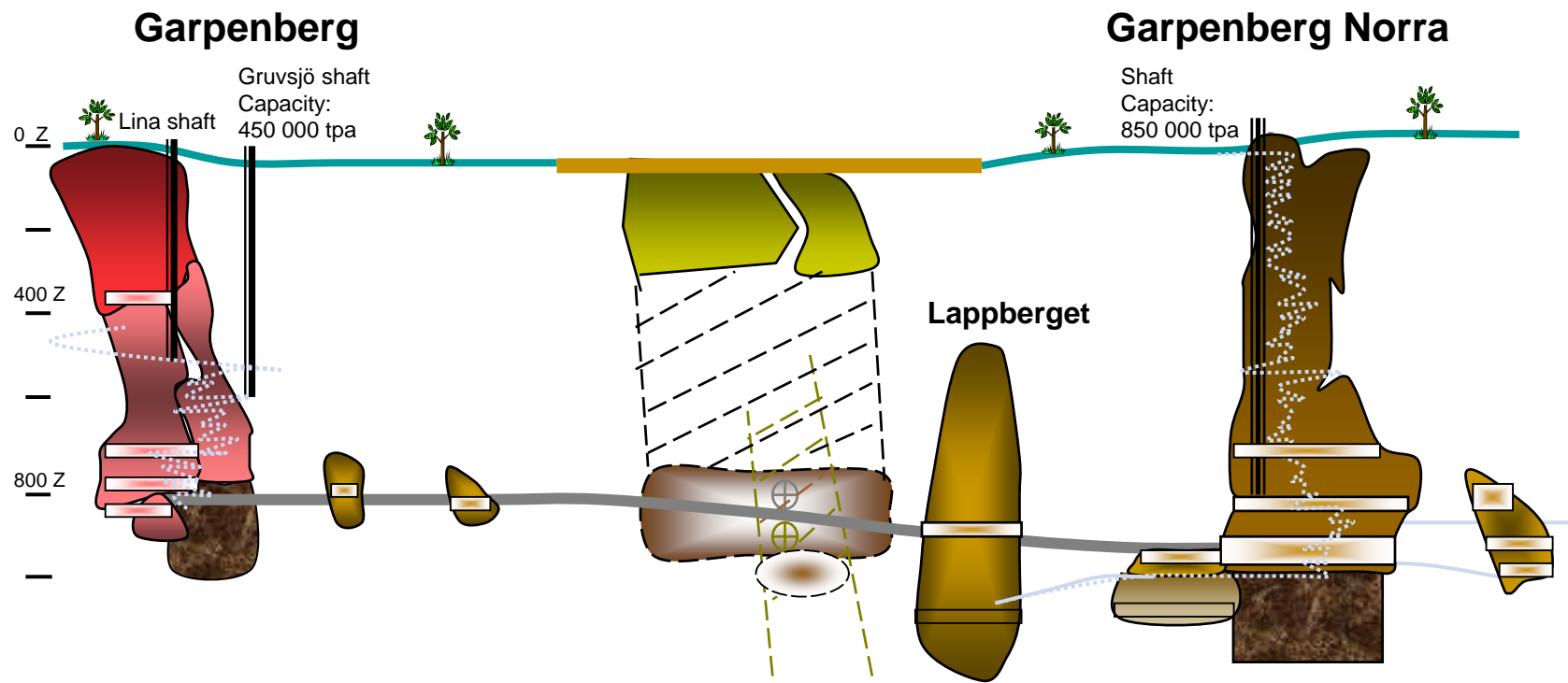
Exploration Permits covering 100 000 hectares

Joint Venture with Inmet in Bergslagen

Ireland- 18 drilling targets around Tara mine, South-eastern and South-western part of Ireland

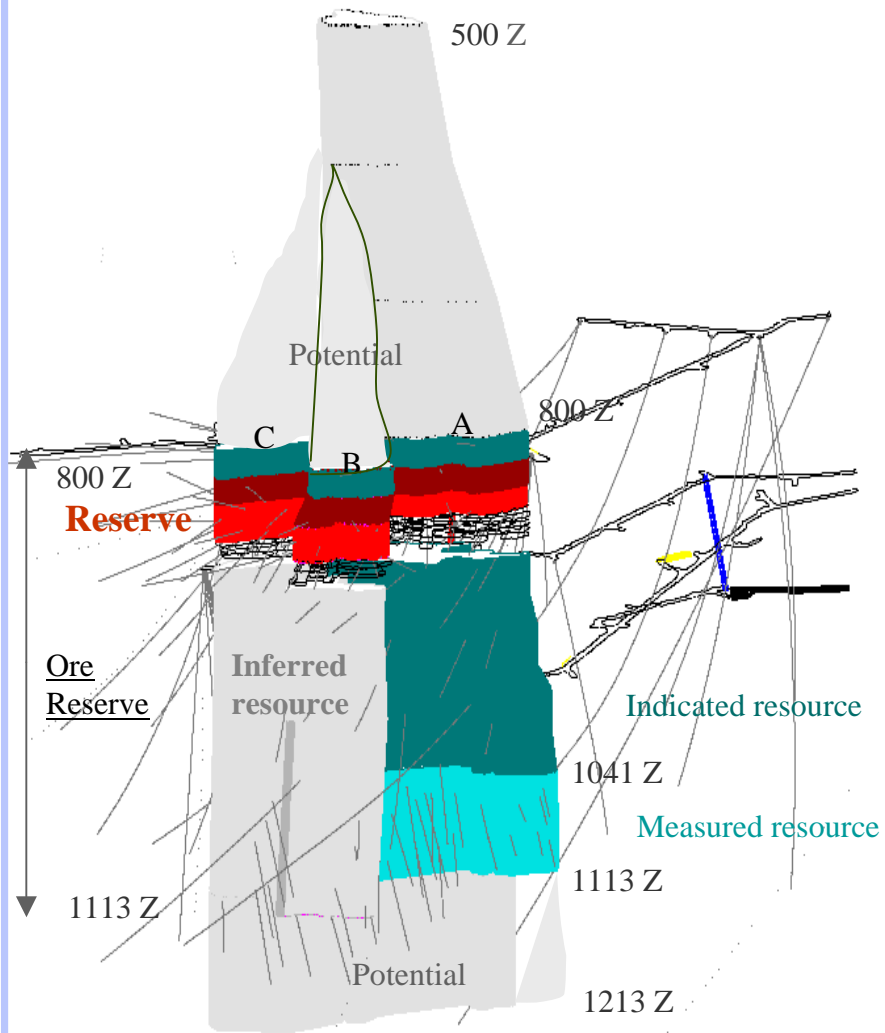
Exploration Permits covering 140 000hectares

Garpenberg: Successful mine-site exploration



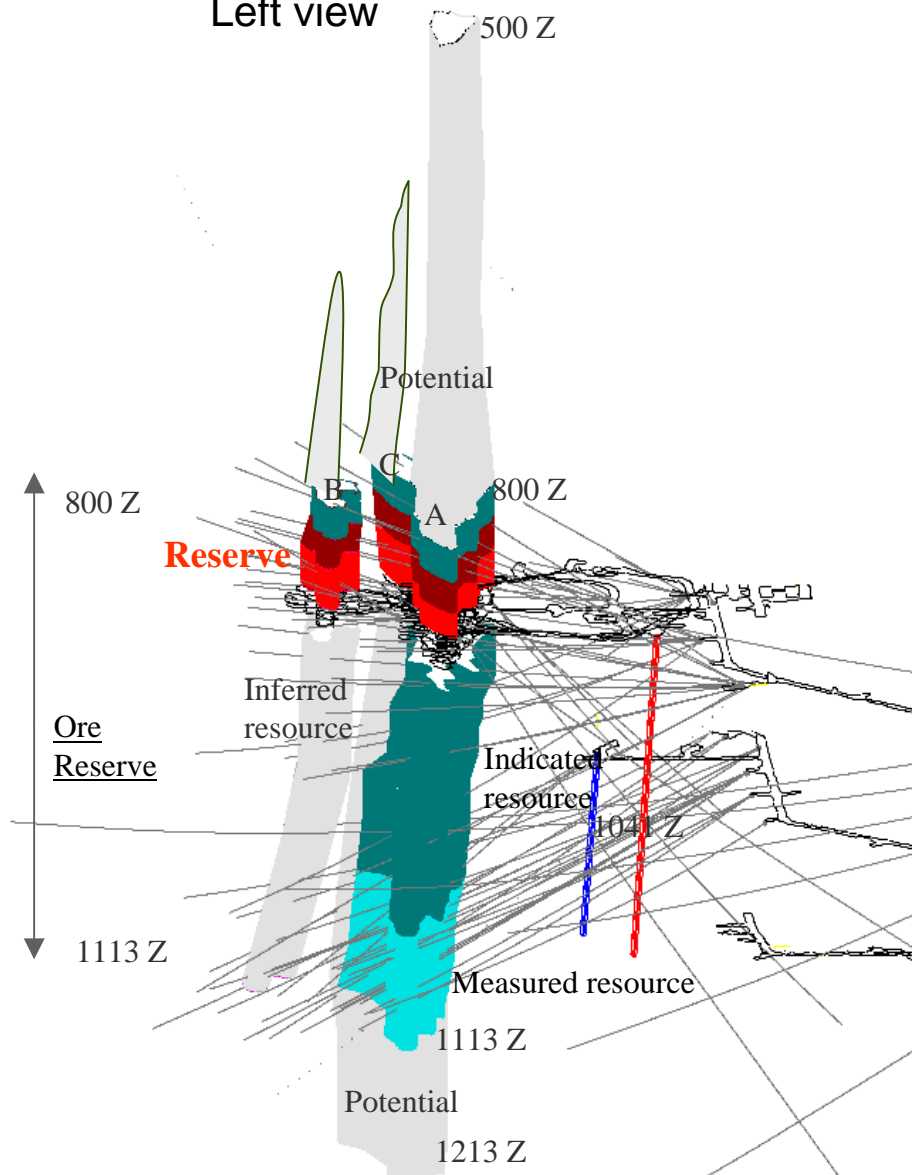
Lappberget

Front view



Lappberget

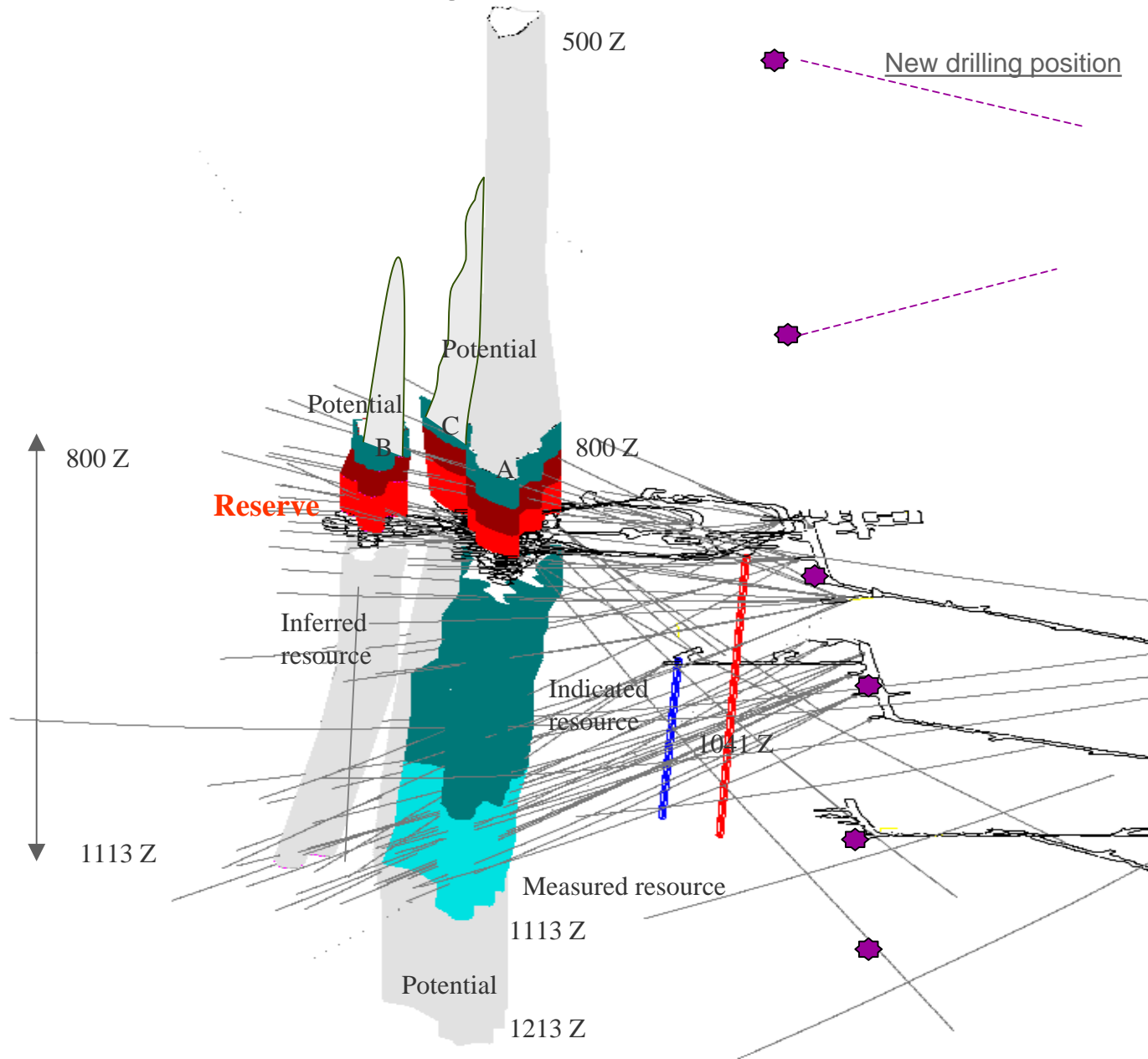
Left view



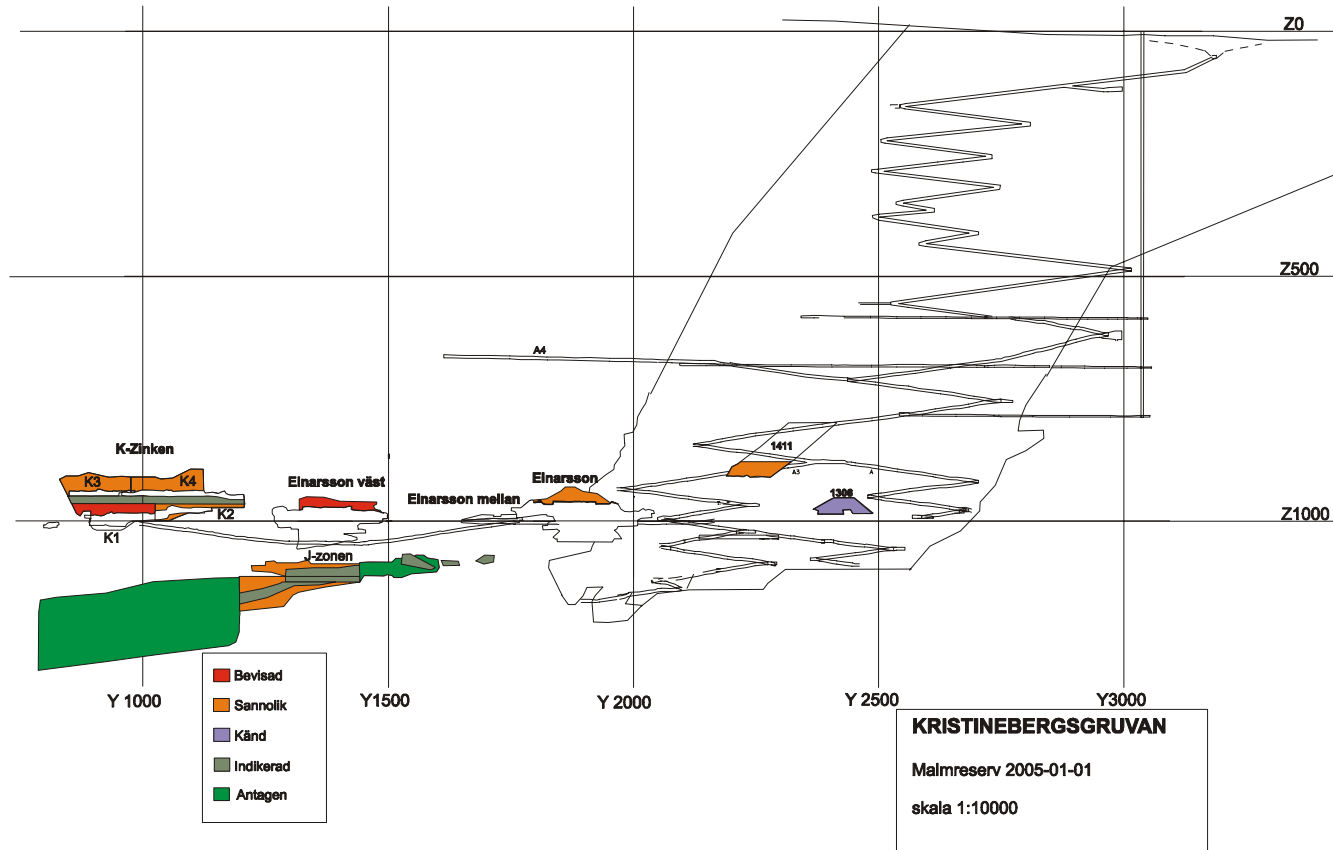
Lappberget – Ore Reserve 2005-01-01

BOLIDEN

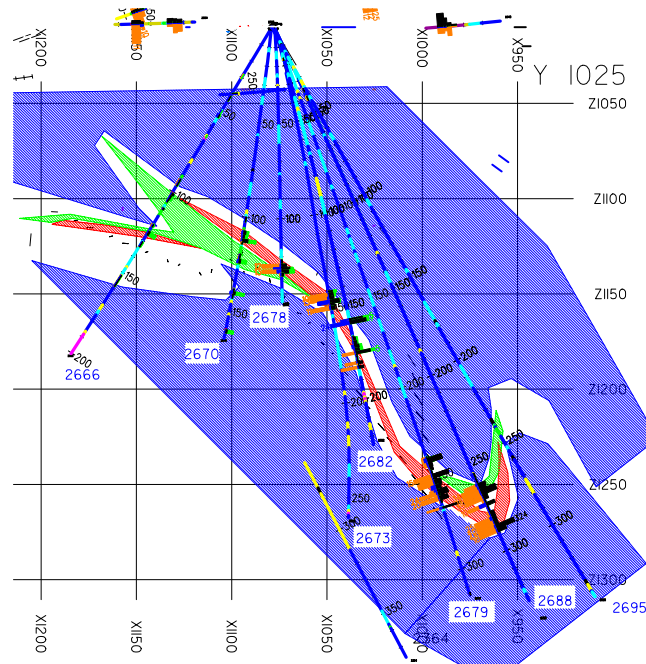
Lappberget - ore reserve 2005-01



Kristineberg / J-zon

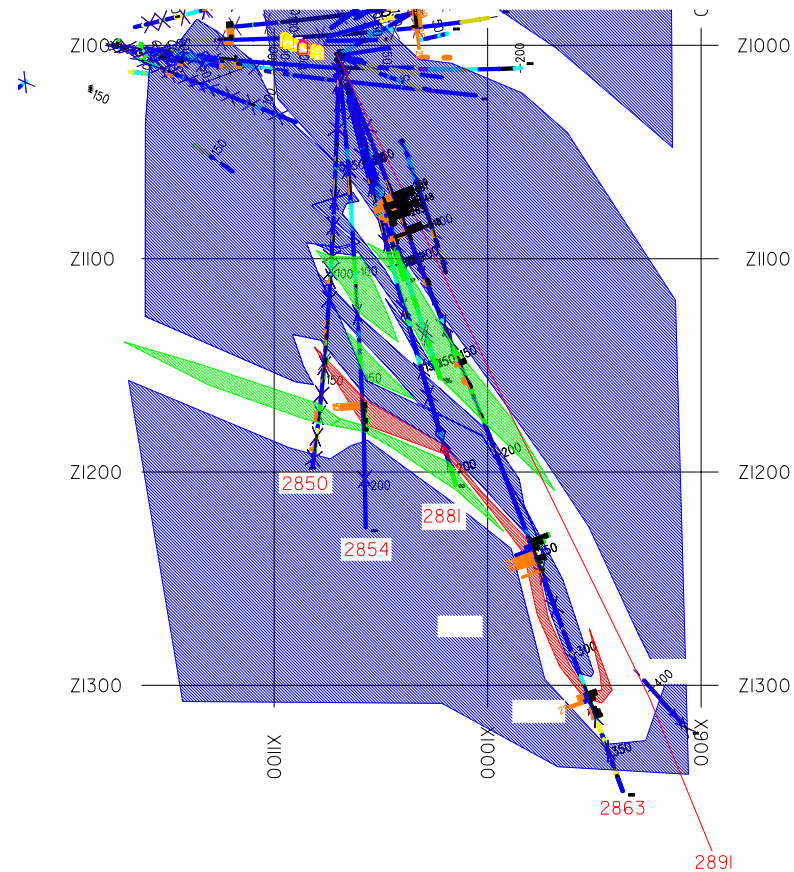


Kristinebergsgruvan: Profil 1025



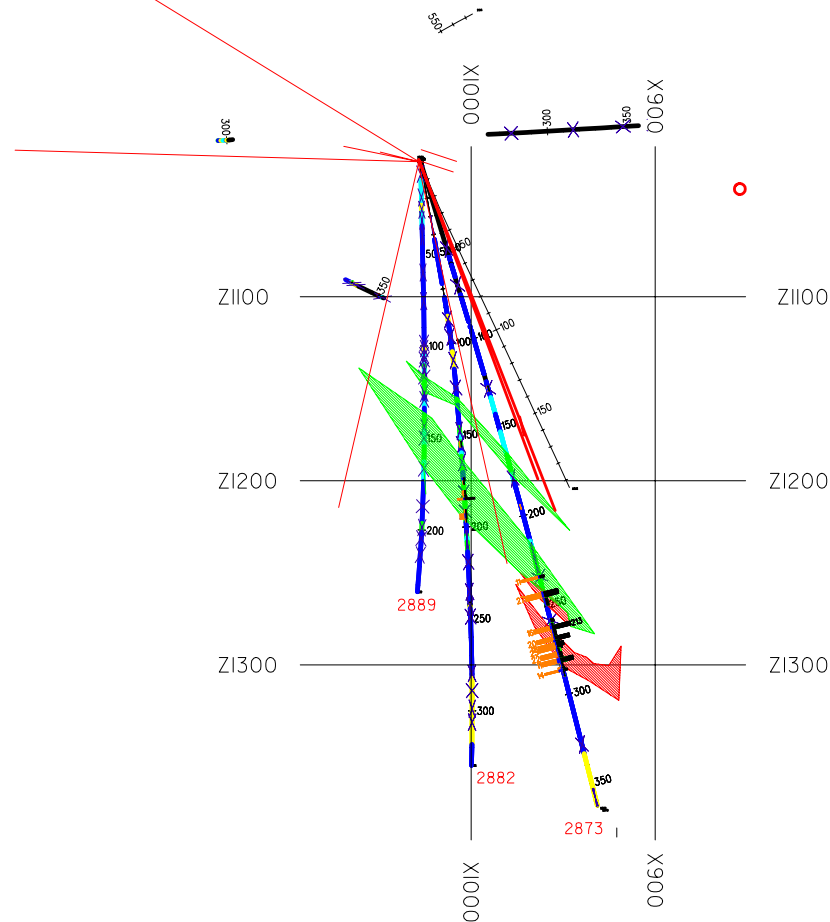
BORRHÅL	PROFIL	FRÅN	TILL	LÄNGD	AU	AG	CU	ZN	PB	S
2666	1025	Svag mineralisering, geofysisk övre kant								
2670	1025	111.50	113.05	1.55	0.43	57	3.51	1.11	0.03	35.6
2678	1025	123.85	128.50	4.65	2.06	64	2.20	9.99	0.15	45.0
2673	1025	141.65	147.20	5.55	2.37	57	1.68	9.33	0.19	41.9
2679	1025	257.90	262.20	4.30	0.50	85	0.22	18.30	0.72	28.8
2682	1025	157.25	160.10	2.85	16.51	157	6.07	2.73	0.04	22.2
2682	1025	171.25	176.15	4.90	0.73	68	2.71	2.16	0.10	39.0
2688	1025	280.70	289.30	8.60	0.55	129	0.09	34.85	1.35	31.3
2695	1025	241.60	246.05	4.45	0.03	3	0.04	14.70	0.00	14.9

Kristinebergsgruvan: Profil 850



BORRHÅL	FRÅN	TILL	LÄNGD	AU	AG	CU	ZN	PB	S
2850	Svag mineralisering.								
2854	161.20	164.15	2.95	0.60	35	0.78	15.40	0.13	42.70
2863	68.80	76.90	8.10	0.14	359	0.11	5.02	1.66	10.21
2863	242.55	253.95	11.40	1.87	80	1.58	11.13	0.29	40.86
2863	319.25	323.90	4.65	1.75	76	0.95	11.30	0.11	35.72
2876	71.15	77.75	6.60	0.17	391	0.03	3.57	1.98	8.82

Kristinebergsgruvan: Profil 700



BORRHÅL	FRÅN	TILL	LÄNGD	AU	AG	CU	ZN	PB	S
2873	242.90	245.60	2.70	0.80	155	0.02	27.00	2.46	19.10
2873	261.80	282.25	20.45	0.56	83	0.66	12.16	1.38	28.34
2882		Svag mineralisering							
2889		Svag mineralisering							