



KIRUNA IRON AB

THE NEW KIRUNA IRON COMPANY

Nordic Iron, Rail, Port, Pipeline &
Exploration Presentations

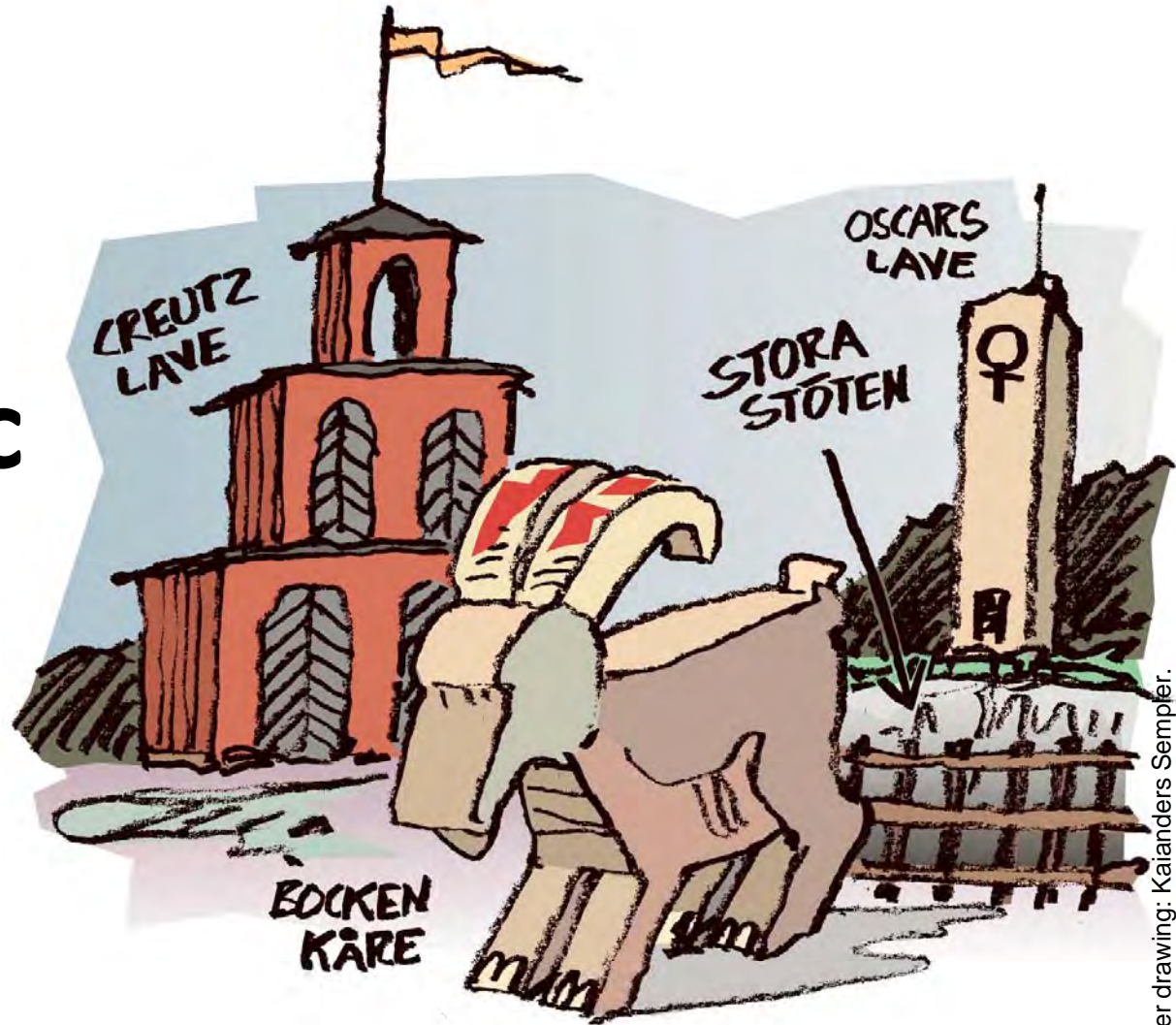
1. The Nordic Iron Market by Raw Materials Group
2. Kiruna – A Brief Introduction by GeoVista
3. Kiruna – A City in Transformation by Kiruna Kommun
4. Malmbanan by Trafikverket
5. Port of Lulea by Lulea Hamn
6. Welcome to Narvik by Port of Narvik
7. Pipeline Study by Raw Materials Group
8. Permits and Relations by GeoVista
9. Kiruna Winter Drilling 2011 by GeoVista

Kiruna Iron AB is a wholly owned subsidiary of ASX listed Scandinavian Resources Ltd (ASX:SCR).

For further information please visit www.scandinavianresources.com

Scandinavian Resources
September 5-6 2011

Iron ore in the Nordic countries – continuing boom !



Copper drawing: Kaianders Sempler.

Magnus Ericsson

**Raw
Materials
Group**

Agenda

- **Nordic region**
- **China**
- **Iron ore supply/demand**
- **Iron ore pricing**

Nordic mining boom



Manganese drawing: Kaianders Sempler.

Nordic mining projects

- Iron ore
 - Northland, LKAB, Northern Iron, Rana Gruber, Beowulf, Grängesberg, Scandinavian Resources, Nordic Iron, Dannemora
- Copper
 - Avalon, Boliden, Kopparberg Mineral, Altona, Nussir
- Gold
 - Agnico-Eagle, Dragon Mines, Gold-Ore Resources, Lappland Goldminers, Endomines, Nordic Mines, Botnia Exploration, Store Norske, Arctic Gold
- Other
 - Talvivaara, Continental Precious, Nickel Mountain, Blackstone, Belvedere, First Quantum, Anglo American, Nordic Mining, Outokumpu, Tertiary Minerals, Gold Fields, Sotkamo Silver, Titania

Source: Raw Materials Data.

Nordic iron ore 1

	Resource (Mt)	Grade (% Fe)	Category	System	Owner
Kiruna	993	46.6	Reserve	Jorc	LKAB
Sydvaranger	459	31.0	Reserve	Jorc	Northern Iron
Kiruna Area	412	39.9	Resource	Jorc	Scand. Res.
Malmberget	386	43.4	Reserve	Jorc	LAKB
Kaunisvaara	254	32.1	Reserve	Jorc	Northland
Rana	250	34.0	Reserve	?	L. Nissen
Ruotevare	140	39.1	Resource	Jorc	Beowulf
Grängesberg	120	57.0	Reserve	Non Jorc	Grängesberg Iron
Leveäniemi	110	47.0	Reserve	Jorc	LKAB
Hannukainen	110	35.1	Resource	Jorc	Northland
Kallak North	92	35.0	Resource	Jorc	Beowulf

Source: Raw Materials Data.

Nordic iron ore 2

	Resource (Mt)	Production 2010 (Mt)	Stage
LKAB	1593	25.3	Operating/Expansion
Sydvaranger	459	1.5	Operating/Expansion
Rana Gruber	250	1.2	Operating
Dannemora	31	na	Construction
Northland	773	na	Construction
Grängeberg Iron	163	na	Feasibility
Scandinavian Resources	412	na	Pre-feasibility
Beowulf	261	na	Pre-feasibility
Nordic Iron	70	na	Pre-feasibility

Source: Raw Materials Data Iron ore.

Capital intensity (MUSD/t)

Project	Total inv. MUSD	Mine & proc. MUSD	Cap. int. m&p	Cap. int. ex pellet	Cap. int. ex p &trans	Cap. int. total
Amapá	763	311	48	117	81	117
Bloom Lake	587	353	44	73	61	73
KéMag	3783	1234	56	138	88	172
Sydvaranger	100	87	30	35	35	35
Guelb el Aouj	1650	564	81	171	35	236
Ruoutevare	798	567	118	118	118	166
Kaunisvaara	617	600	120	123	123	123

Source: Raw Materials Group.

Operating costs

Project	Product	Capacity Mt/a	Total opex USD/t	Opex mining USD/t
Amapá	Pellet feed	6.5	37.4	6.49
Bloom Lake	Concentrate	8	24.8	1.76
KéMag	Pellet	15	21.8	5.6
	Concentrate	7		
Sydvaranger	Concentrate	2.9	32.8	2.38
Guelb el Aouj	Pellet	7	36.6	3.38
Ruotevare	Concentrate	10	41.4	9.3
Kaunisvaara	Pellet feed	5	38.6	7.6

Source: Raw Materials Group.



Manganese drawing: Kaianders Sempler.

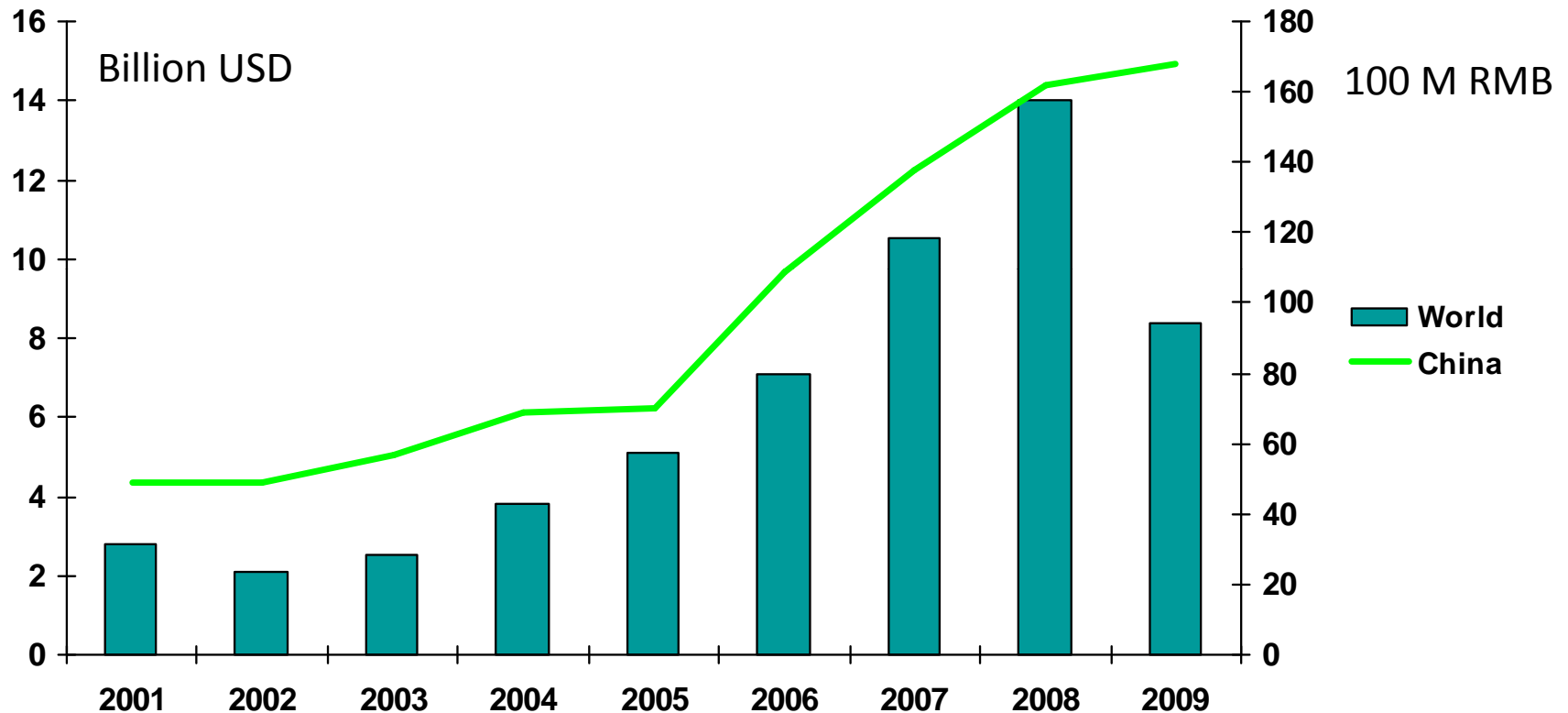
Nordic mining boom

- Many metals.
- All stages.
- Growing political interest.
- Excellent infrastructure.
- Costs - high but not prohibitive.
- R&D centre, leading universities.
- Cluster - European leader.



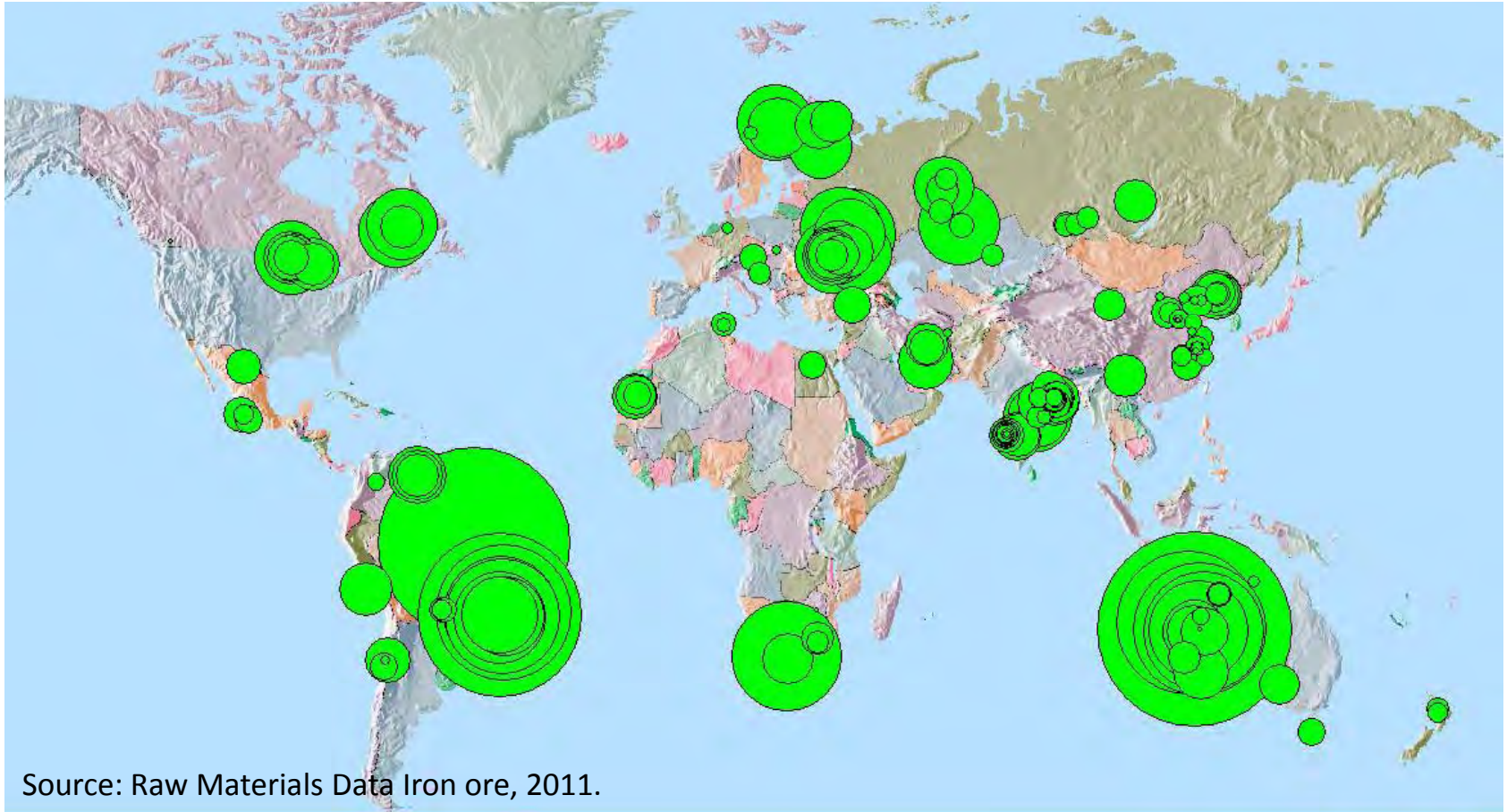
The role of China

Chinese exploration

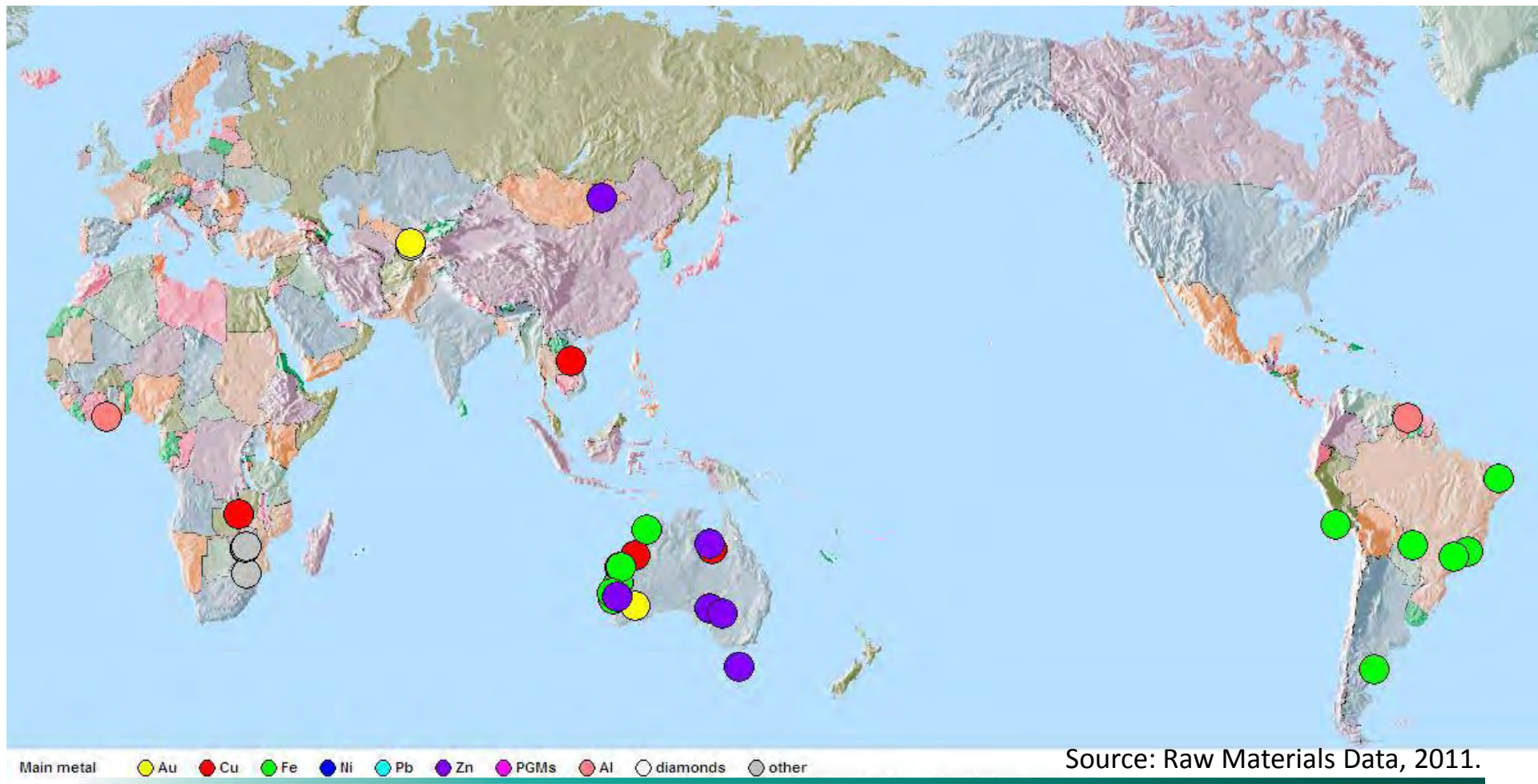


Sources: World MEG, China Ministry of Land and Resources, RMG.

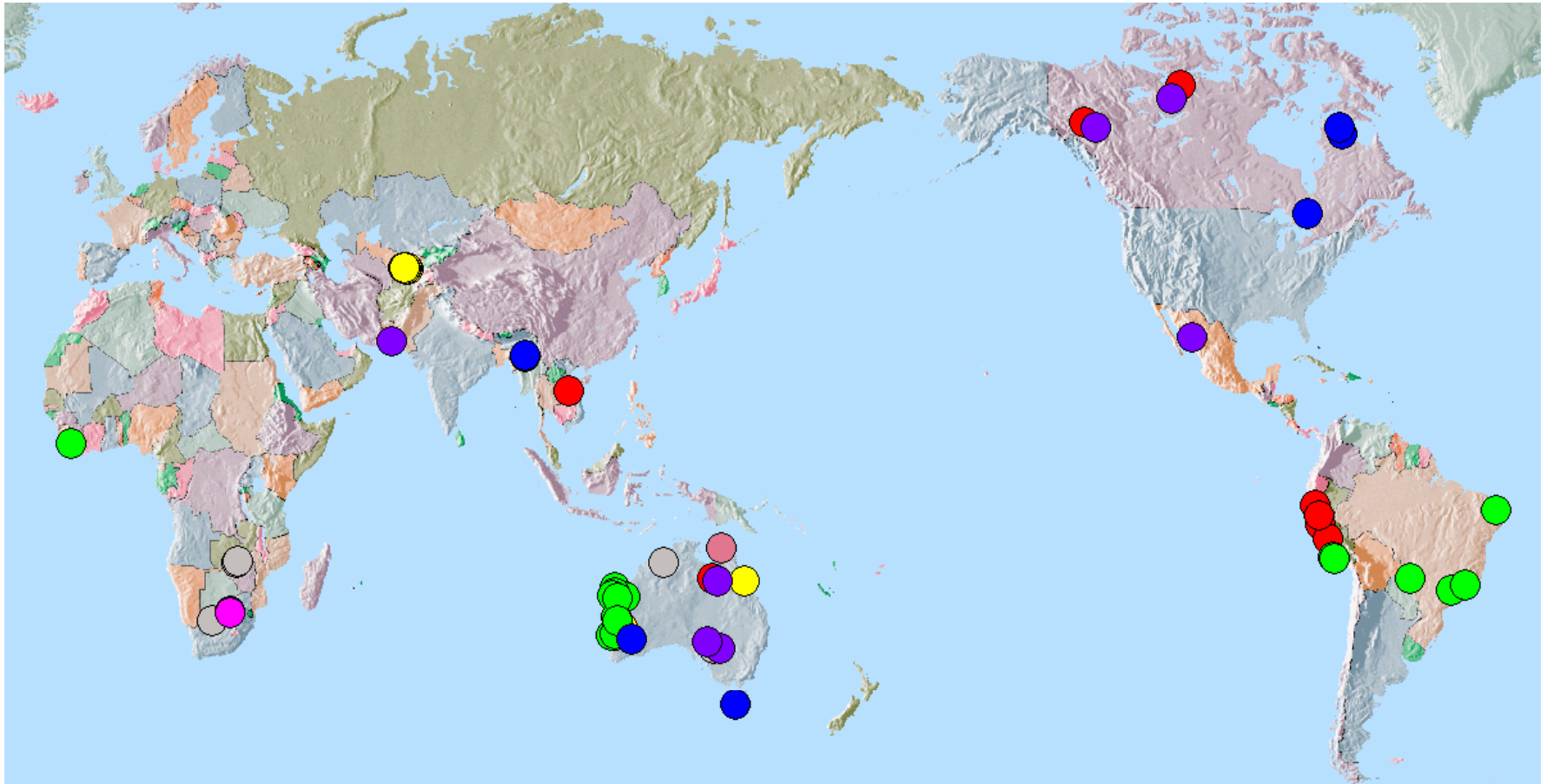
Global iron ore production



Chinese foreign operations



Chinese foreign projects



Main metal Au Cu Fe Ni Pb Zn PGMs Al diamonds other

Source: Raw Materials Data, 2011.

Chinese FDI

- Foreign expansion slow - not continuous.
- Might increase in the future.
- Long term serious problem.
- Control over iron ore imports will remain in foreign hands.
- REE small problem in comparison.

The role of China



- Largest exploration country since 2010.
- Largest mining country but:
- Many small, high cost mines – starting to close small iron ore mines.
- Iron ore must be imported, preferentially Chinese owned goal 50 % 2015.
- Will not be reached!

Iron ore - demand/supply



REM drawing: Kaianders Sempler.

The Macro content

- Population growth, growth in demand for metals generally
- Emerging markets: BRICs and the next nine (Indonesia, Nigeria etc)
- China will be the engine of economic development
- The Chinese growth will, eventually, shift from investment driven to consumer driven
- India will grow but from a relatively small base

Steel demand: two key questions

- Where will China end up?
 - S. Korea: 974 kg/cap
 - USA: 203 kg/cap
- How fast will India grow?
 - As China 21 % /year (2000 – 2007)
 - Slower - faster

Sources: Worldsteel, RMG

Steel industry assumptions

	2007 production	2000-2007 growth rate	2010 production	2010-2020 growth rate	2020 production
EU27	210	1.2	175	0.5	184
CIS	98	4.1	105	2.5	134
North America	131	-0.3	110	1	115
South America	50	3	45	2	55
Africa	19	4.5	16	4	24
China	489	21.2	640	5	1042
Japan	120	1.7	107	0	107
Korea	51	3.3	55	2	67
Rest of Asia	136	7.5	120	6	195
Rest of world	39	1.7	38	1	42
Total	1,344	6.8	1,411	3.4	1,965

Restrictions in iron ore trade

- Exercised export duties
 - India: 10 % lump, 20 % fines
 - China: 10 %
 - Viet Nam: 20 %
 - Argentina: 10 %
- Exercised quantitative restrictions:
 - India: state trading enterprises
 - Malaysia: non-automatic export licence

Source: Universität Bonn

Vertical integration

% of total world iron ore production

	Market economies	CIS	China	Total
2009	11	7	4	22
2008	11	5	4	20
2007	12	9	5	24
2006	12	12	6	28
2005	12	12	6	28

Source: Raw Materials Data Iron Ore, 2011.

Iron ore - demand/supply



REM drawing: Kaianders Sempler.

- Demand increases albeit at lower pace.
- Supply constraints increasing.

Iron ore pricing

Selenium drawing: Kaianders Sempler.

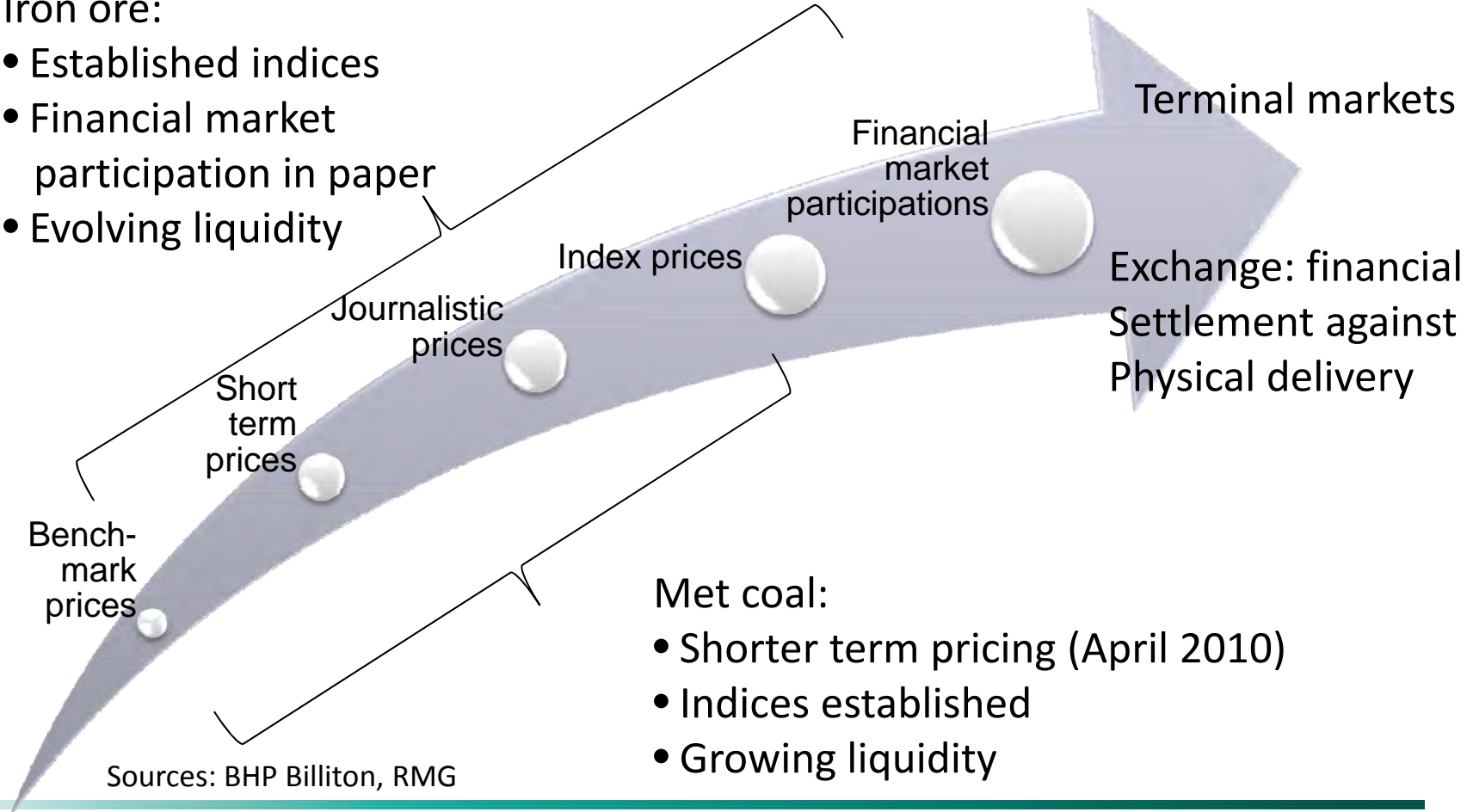


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Price mechanism

Iron ore:

- Established indices
- Financial market participation in paper
- Evolving liquidity



Met coal:

- Shorter term pricing (April 2010)
- Indices established
- Growing liquidity

Iron ore production costs

Type of mining	Efficient open pit	Difficult open pit	Efficient open pit	Difficult open pit
Costs (USD/t)	5-12	10-20	5-12	10-20
Type of ore	High grade DSO	High grade DSO	Beneficiation necessary	Beneficiation necessary
Costs (USD/t)	5-12	5-12	15-20	15-20
<hr/>				
Total range				
FOB (USD/t)	10-24	15-32	30-56 *	60-105 **
Freight to				
China (USD/t)	20-30	20-30	20-30	20-30
<hr/>				
Cost CFR				
China	30-55	35-65	50-85	80-135

* 3 t of crude ore/ton of concentrate

** 4 t of crude ore/ton of concentrate

Source: Jacques Astier, Mineral Economics 2011, forthcoming.

Iron ore pricing

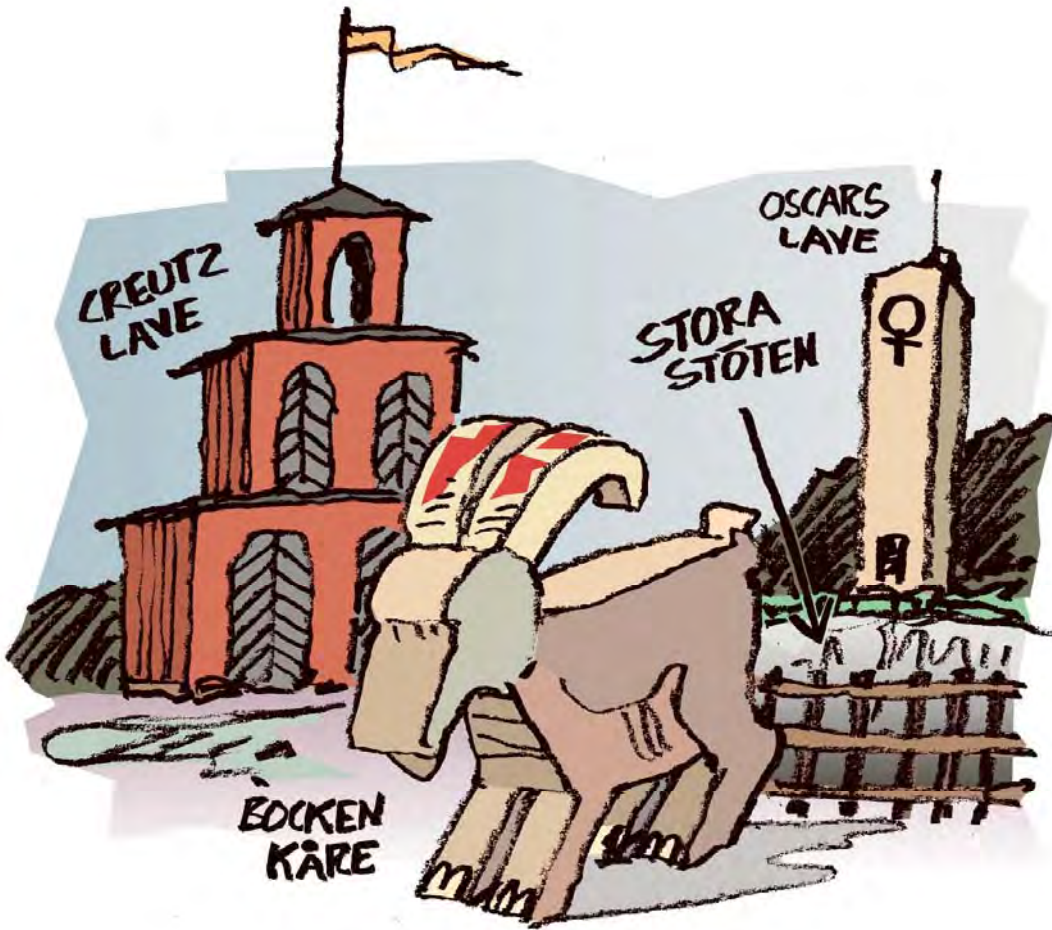
- Chinese cost situation key to future.
- Increasing volatility but high levels.

Selenium drawing: Kaianders Sempler.



THE MOON GODDESS
SELENE

Thank you



Copper drawing: Kaianders Sempler.

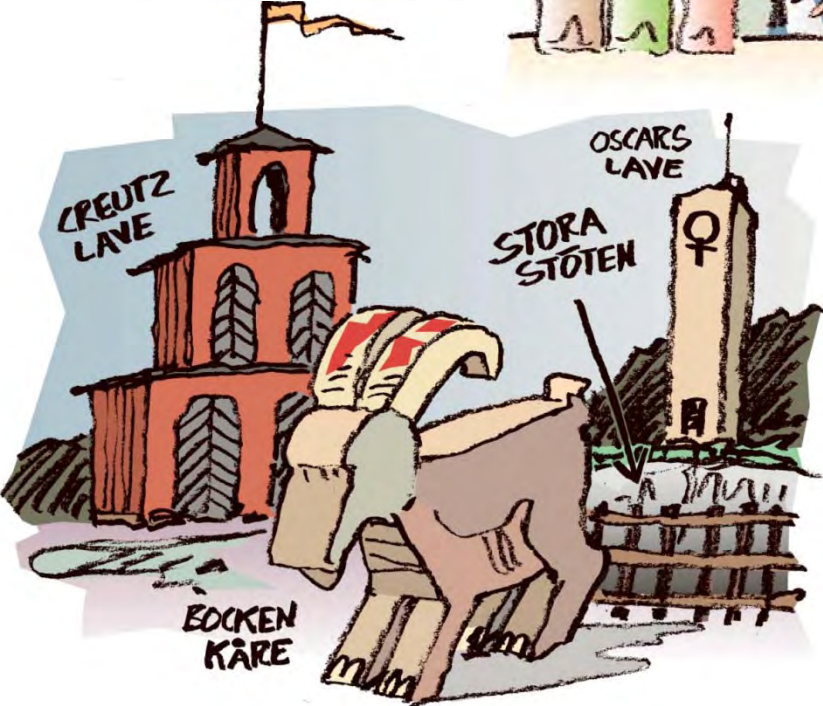
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www.rmg.se

**Raw
Materials
Group**



THE FELDSPAR MINE AT YTTERBY, 20 KM NORTHEAST OF STOCKHOLM.



BOCKEN KÄRE



THE MOON GODDESS SELENE

**Metals first isolated in Sweden/Finland
Please visit www.rmg.se**



KIRUNAIRON AB

THE NEW KIRUNA IRON COMPANY

Kiruna – a brief introduction

- Archeological findings have shown that the region around Kiruna has been inhabited for at least 6,000 years.
- It is located 145 km North of the arctic circle, resulting in a sub-arctic climate.
- The current population is just below 25,000.
- A copper mine was operated by the dutch brothers Momma in the 17th century at Gruvberget (Svappavaara). They became knighted Reenstierna as a result.



- The name Kiruna stems from the saami word Giron, which you would know as Rock Ptarmigan (*Lagopus muta*). Popular to hunt and quite delicious to eat.



View of Kiruna from Luossavaara



- The presence of iron ore has been known since the 17th century, but the location made commercial extraction impossible.
- A few attempts of mining were made in the 19th century and ore was transported by sleighs pulled by reindeers or horses.
- The quality of ore, rich in Phosphorus, prevented the use of pure Kiruna ore for steel making, mixing with ore from other sources was necessary.

- With the invention of the Thomas process, in 1878, the use of ore rich in Phosphorus became possible.
- It even resulted in a phosphate byproduct that could be converted to fertilizer.

- In 1884, a concession for a railway from Luleå to Narvik was granted to The Northern of Europe Railway Company.
- The provisional railway between Luleå and Malmberget was finished in 1888 and the first train left Malmberget in March.
- Around the same time, the English company went bankrupt and had to sell the line to the Swedish state for 8 MSEK, around half the amount initially invested.
- After a significant rebuild, the railway to Gällivare could be used again and iron ore was extracted at Malmberget by Aktiebolaget Gällivare Malmfält (AGM).

- The Luossavaara-Kiirunavaara Aktiebolag (LKAB) was founded in 1890.
- LKAB pressed for continuing Malmbanan (the ore railway) via Luossavaara and Kiirunavaara to the ice-free coast of Norway.
- The decision to build was finally taken in 1898. The railway came to Kiruna 15 October 1899 and the Swedish and Norwegian sections were joined 15 November 1902.
- LKAB was taken over by the Swedish Government in the 1950's.

An aerial photograph of Kiruna, Sweden, showing a city built on a green, hilly landscape. The city is densely packed with buildings and roads, with a large body of water visible on the left side. The surrounding area is lush green with some brown patches, possibly indicating mining or construction sites. The text "KIRUNA - A CITY IN TRANSFORMATION" is overlaid in large, white, bold letters across the top half of the image.

KIRUNA - A CITY IN TRANSFORMATION



A VAST AREA LOCATED ABOVE THE ARCTIC CIRCLE

20 000 km² with 23 000 inhab.

1,2 inhab. / km²

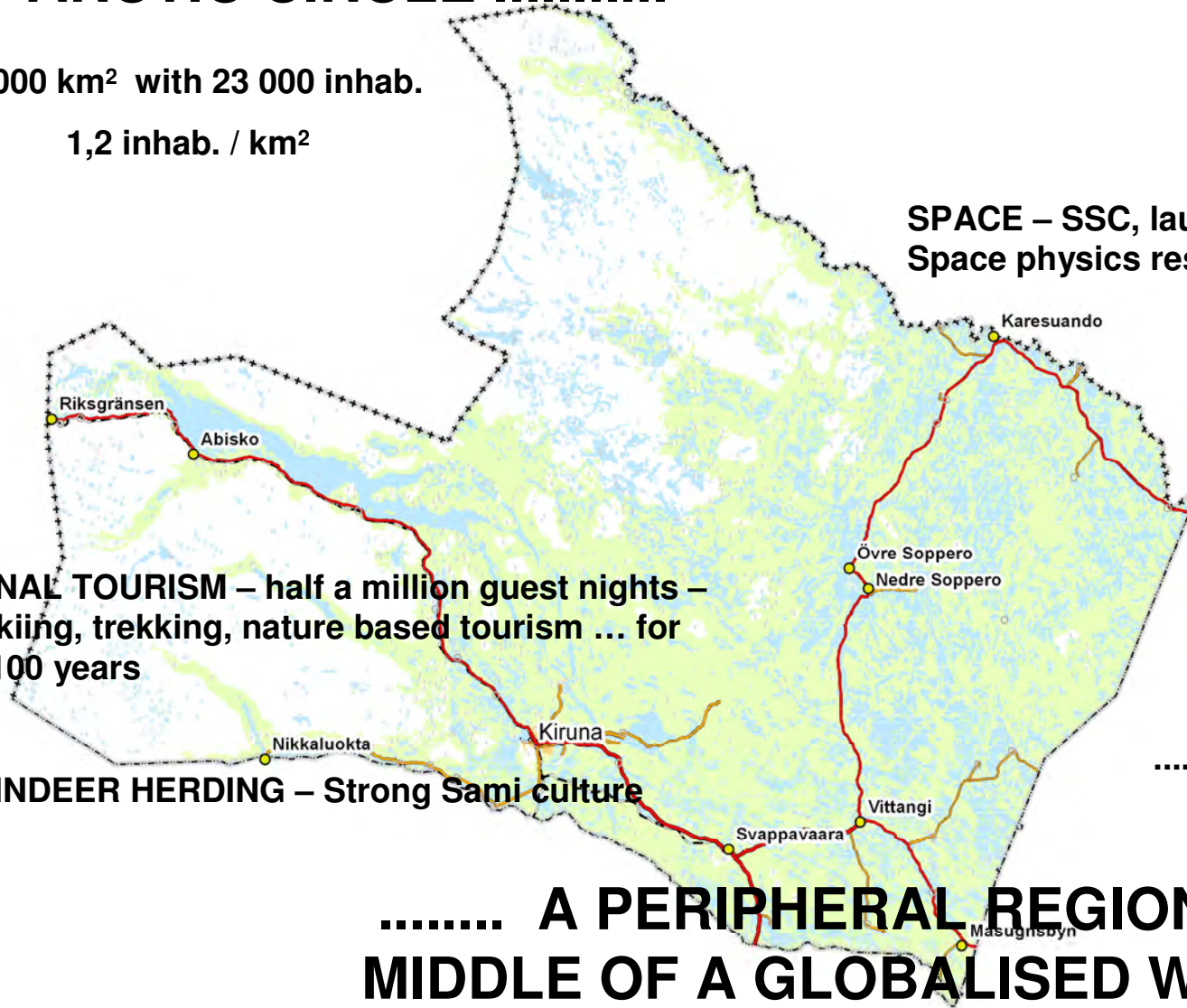
**SPACE – SSC, launching site,
Space physics research.....**

**INTERNATIONAL TOURISM – half a million guest nights –
ICEHOTEL, skiing, trekking, nature based tourism ... for
more than a 100 years**

REINDEER HERDING – Strong Sami culture

..... and MINING

**..... A PERIPHERAL REGION IN THE
MIDDLE OF A GLOBALISED WORLD**





TRANSFORMATION - KIRUNA 1920





85 YEARS LATER



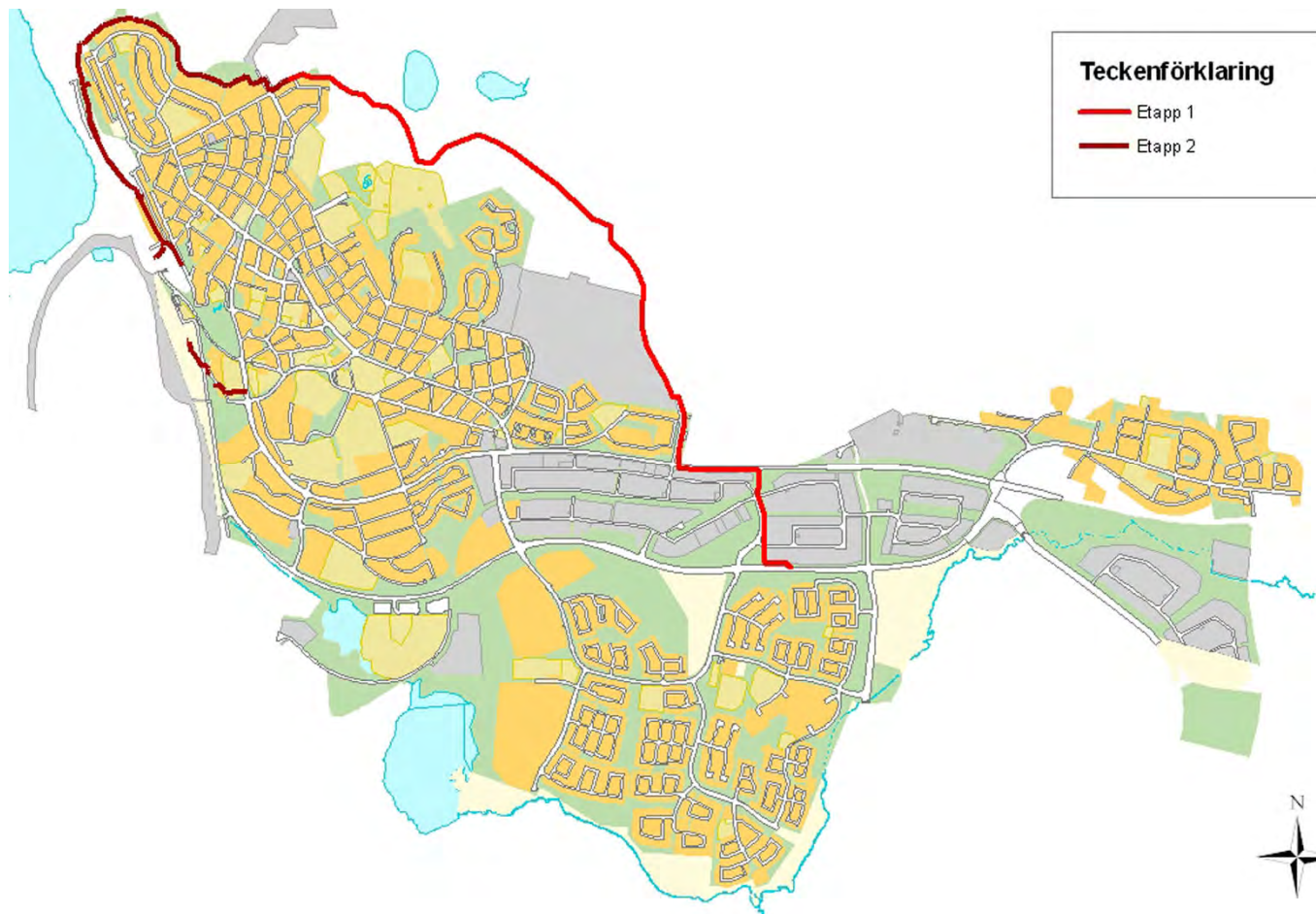
NEW ELECTRICITY DISTRIBUTION SYSTEM IS ESTABLISHED



photo: LKAB

MAIN SEWER SYSTEM

- Construction of a new main sewer is completed





RAILWAY

- **New route for the railway in Kiruna**
- **Construction started 2009 - to be finished by 2012**
- **New Assessment starts 2011 – aim is permanent location of railway station**

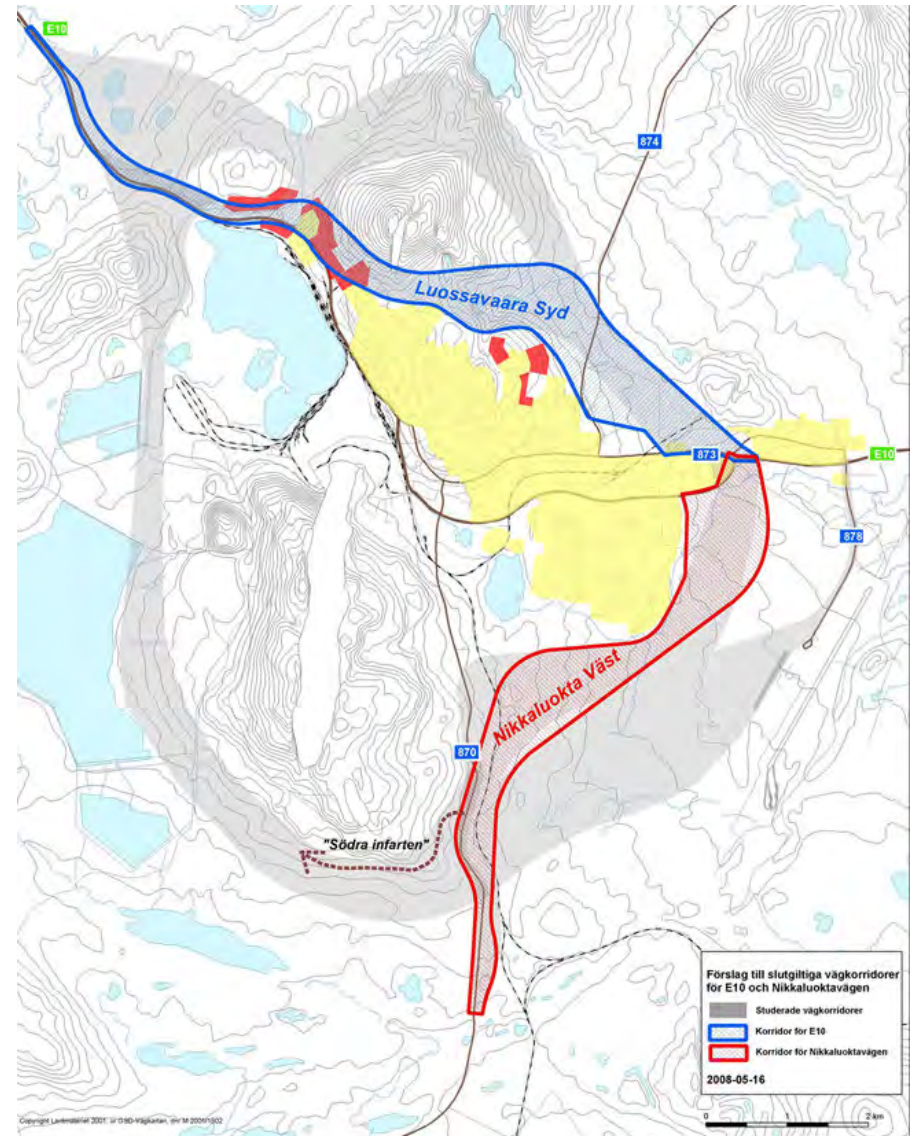




IN PREPARATION

ROADS

- **The main road E10 and road 870 to Nikkaluokta will be affected.**
- **New roads by - 2015**





Forecasts from LKAB





**PRESENT HOUSING AREAS FOR
FUTURE MINING IS DESIGNED AS A
PARK –
THE MINE CITY PARK**



NEW CITY HALL – NEW LOCATION 2016





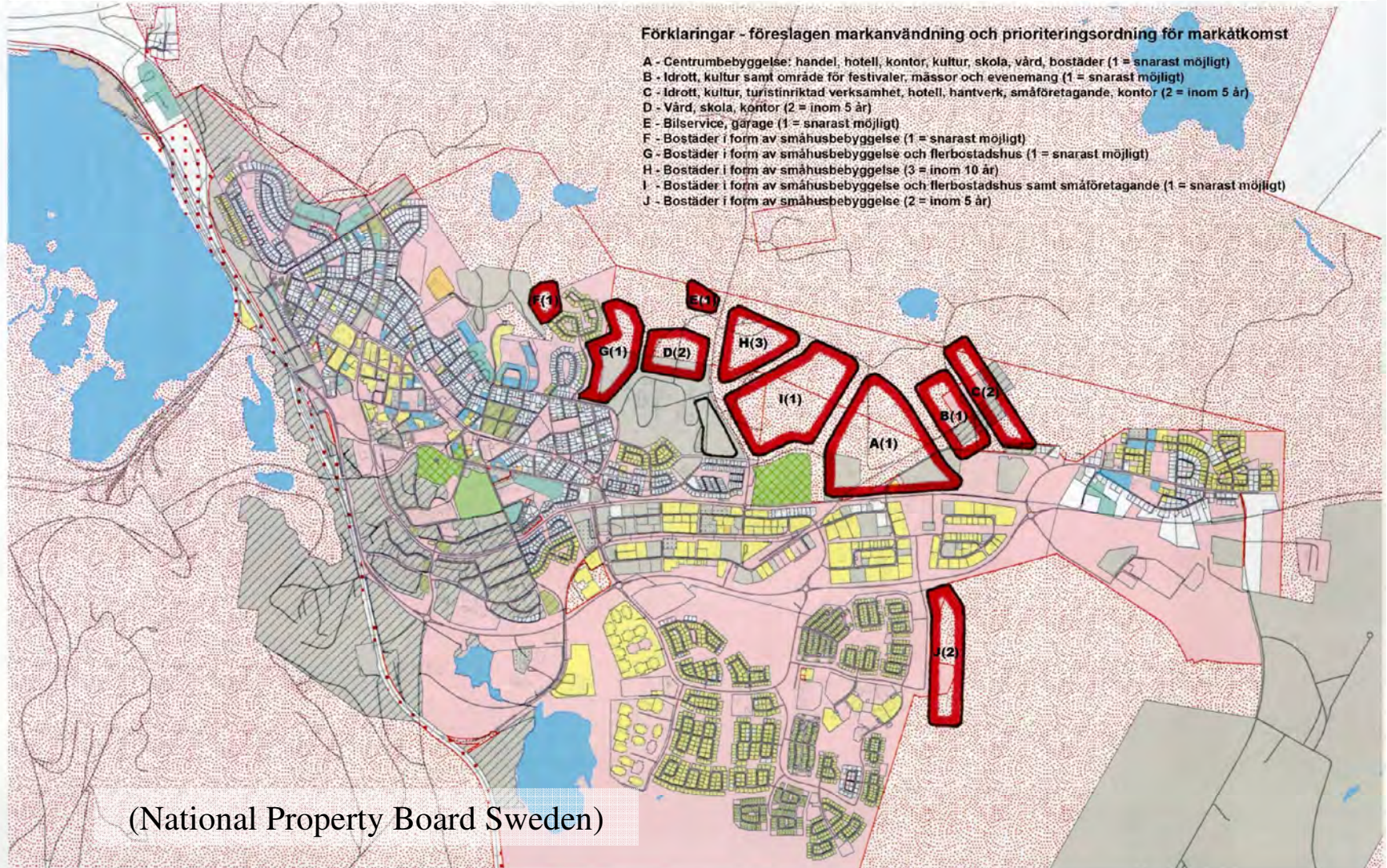
NEW CITY CENTRE - LOCATED IN THE EASTERN PART OF KIRUNA



LAND TO BE BOUGHT FROM THE STATE

Förklaringar - föreslagen markanvändning och prioriteringsordning för markåtkomst

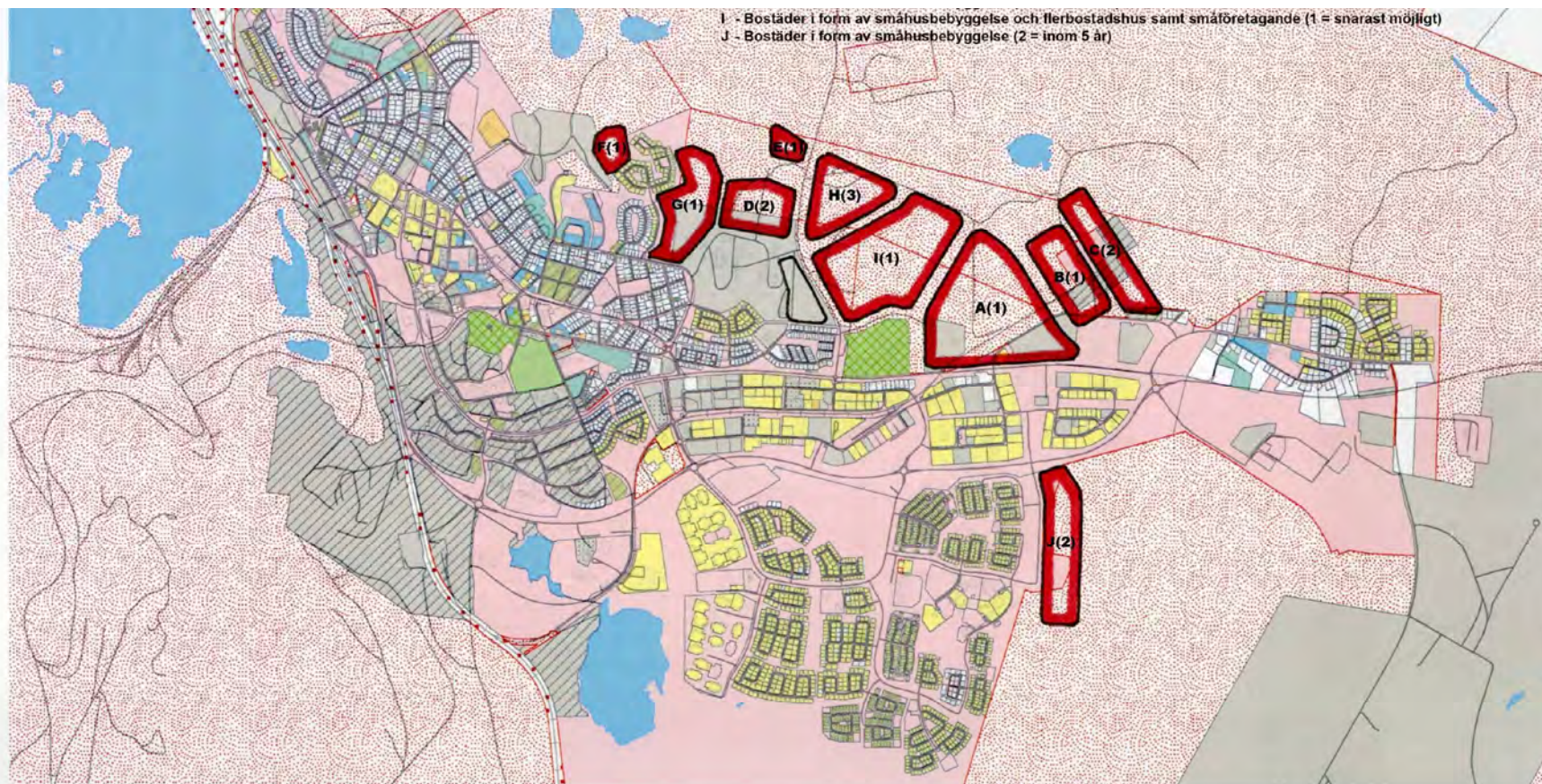
- A - Centrumbebyggelse: handel, hotell, kontor, kultur, skola, vård, bostäder (1 = snarast möjligt)
- B - Idrott, kultur samt område för festivaler, mässor och evenemang (1 = snarast möjligt)
- C - Idrott, kultur, turisticriktad verksamhet, hotell, hantverk, småföretagande, kontor (2 = inom 5 år)
- D - Vård, skola, kontor (2 = inom 5 år)
- E - Bilservice, garage (1 = snarast möjligt)
- F - Bostäder i form av småhusbebyggelse (1 = snarast möjligt)
- G - Bostäder i form av småhusbebyggelse och flerbostadshus (1 = snarast möjligt)
- H - Bostäder i form av småhusbebyggelse (3 = inom 10 år)
- I - Bostäder i form av småhusbebyggelse och flerbostadshus samt småföretagande (1 = snarast möjligt)
- J - Bostäder i form av småhusbebyggelse (2 = inom 5 år)



(National Property Board Sweden)

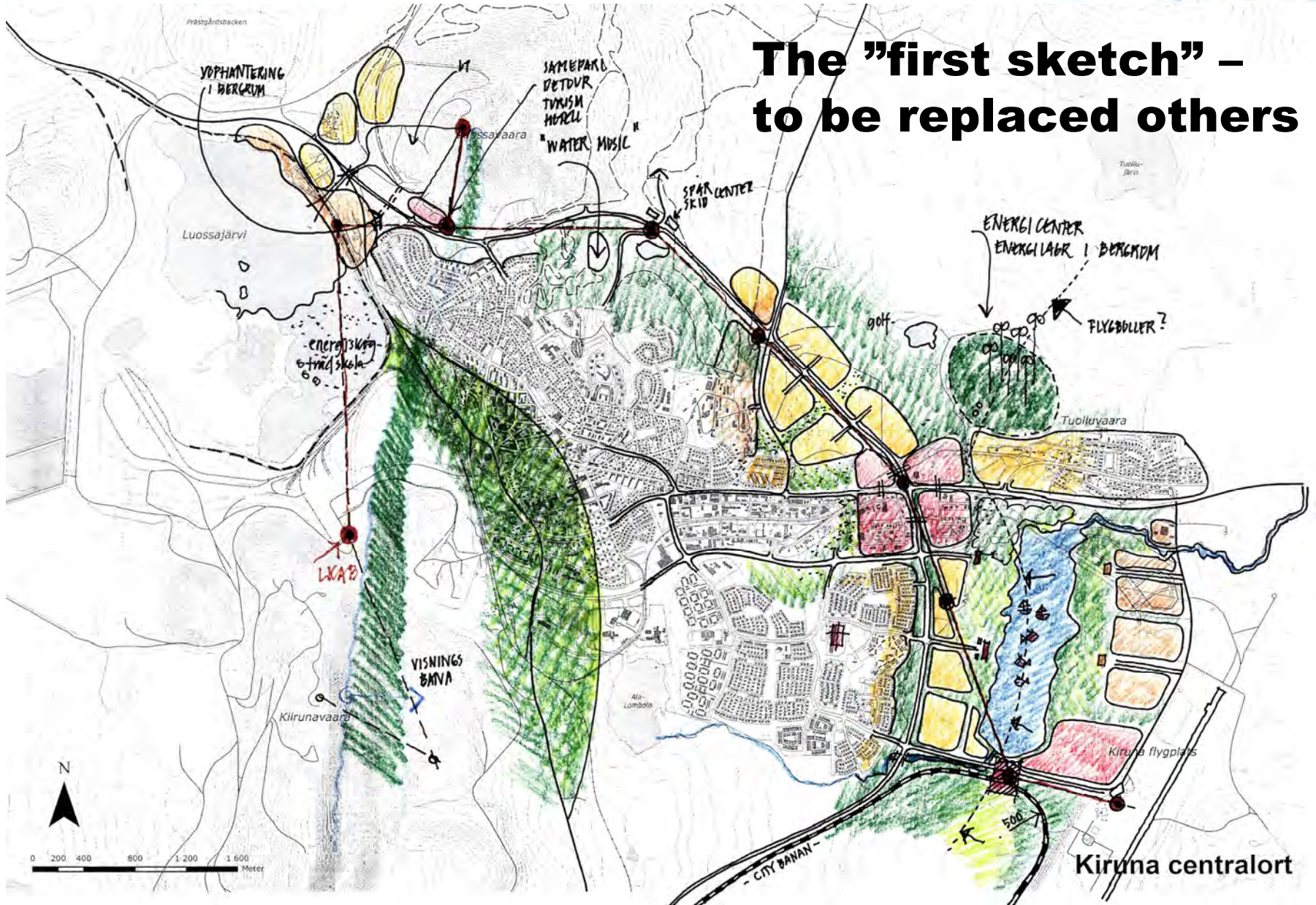


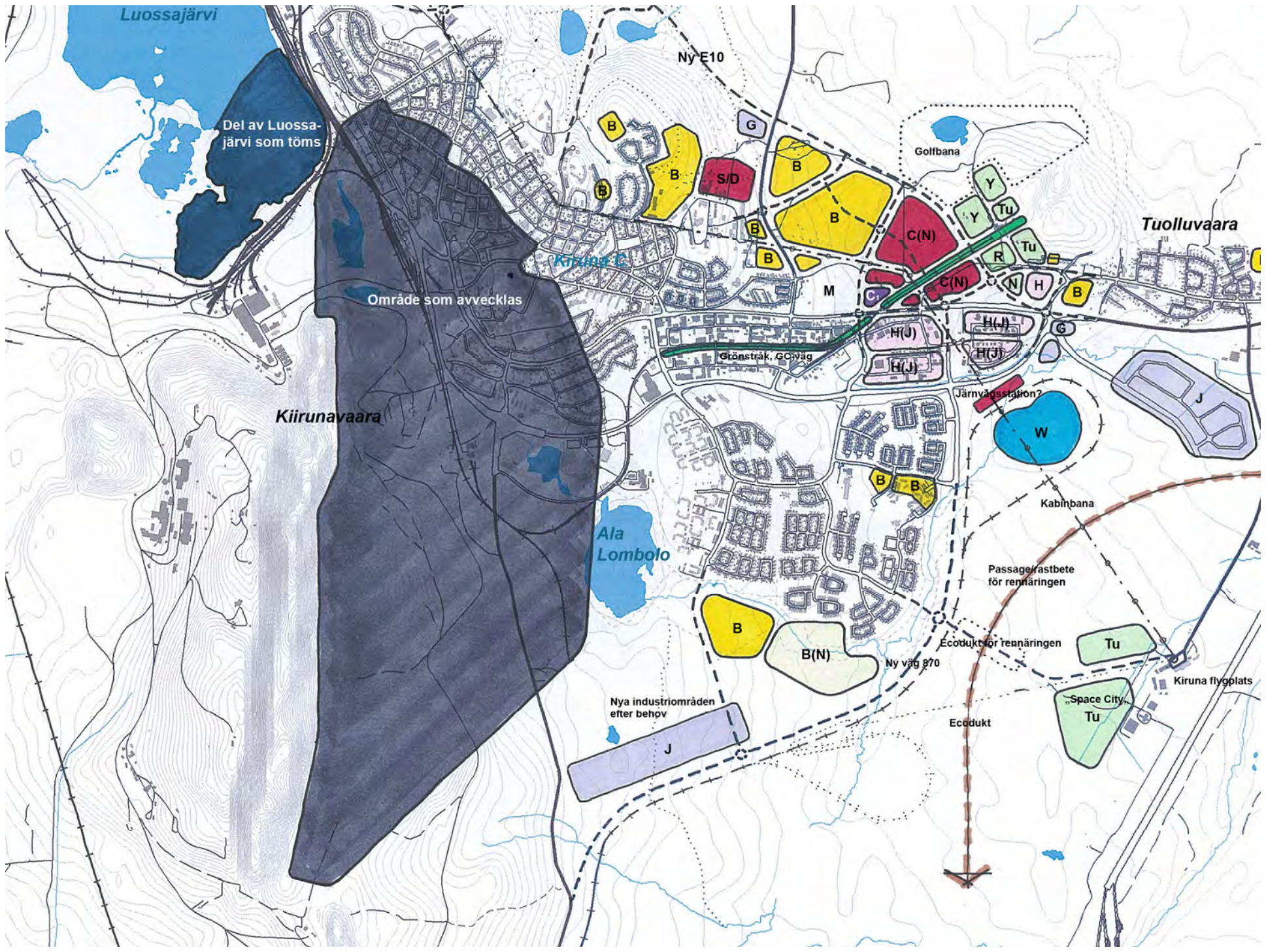
200 000 m² for housing
200 000 m² business/public buildings
is needed the next 20 years !





The "first sketch" – to be replaced others





Luossajärvi

Del av Luossajärvi som töms

Ny E10

Golfbana

Tuolluvaara

Område som avvecklas

Kiruna E

Kirunavaara

Grönstråk, GC-väg

Ala Lombolo

Järnvägsstation?

Kabinbana

Passagerarstbete för rennången

Ecodukt för rennången

Ny väg 970

Ecodukt

Nya industriområden efter behov

Kiruna flygplats

Space City



Startsida

Startsida

- Barnomsorg och utbildning
- Bygga och bo
- Föreningsliv
- Kultur och bibliotek
- Miljö och natur
- Minoritetsspråk
- Näringsliv och arbete
- Om kommunen
- Politik och påverkan
- Räddning och säkerhet
- Sport och fritid
- Stadsomvandlingen
- Trafik, gator och parker
- Vård, stöd och rådgivning

Kommunkontakten

FELANMÄLAN

FRÅGOR

SYNPUNKTER

Omval 2011

Välkommen till Kiruna kommun



Nyheter

- 2011-05-04 13:33:00
Vad ska du göra när kommunen rekommenderar att dricksvattnet ska kokas?
- 2011-05-04 09:25:00
Uppmaning att koka dricksvattnet i Vittangi
Vi uppmanar nu alla som nyttjar vatten i Vittangi att koka allt vatten
- 2011-05-03 10:02:00
Äntigen öppnar vi Actic!
- 2011-05-03 11:30:00
Utställning om Mumintrollen
- 2011-05-03 10:47:00

Snabblänkar

- [Aktuella upphandlingar](#)
- [Busstider](#)
- [Bygglov](#)
- [Lediga jobb](#)
- [Skoterleder 2011](#)
- [Stadsbiblioteket](#)
- [Webbkameror](#)
- [Återvinningscentraler](#)

Nyhetsbevakning

- 2011-05-05 08:26
[Fler nya aruvor planeras](#)
- 2011-05-05 08:22
[Minnesord Benqt Rönnerberg](#)
- 2011-05-05 07:44
[Nya stadshuset kan byggas vid kyrkogården](#)
- 2011-05-05 07:19
[Gratisbussar ska få fler att åka buss](#)

» [Fler artiklar](#)

Enkäter och kvalitetsdeklarationer

NYA

Malmbanan, presentation for Kiruna Iron AB

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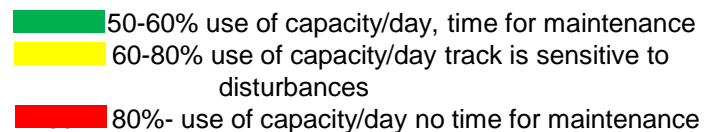
TRAFIKVERKET

Capacity 2011, malmbanan

- The capacity on Malmbanan is very strained.
- low punctuality and it's difficult to add more trains with todays infrastructure



Capacity on malmbanan
,spring 2011
(source: Governmental comission)



Increased capacity according to national plan 2015

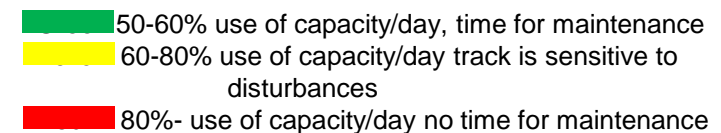
- Increase in iron ore shipments Luleå - Riksgränsen by 80% from 2010 to 2020, most before 2015.
Norrtåg will start december 2011.
Only a few measurements in existing plan, new passing stations and extension of existing ones
- New prognos from LKAB, NRAB and Norrtåg 2015
→capacity utilized over 100% in parts of Kiruna-Narvik and Gällivare-Boden

”New money”

- will allow us to extend passing stations earlier than planned so that the capacity better meets the demand
- Capacity study, Governmental Commission
 - time frame, 2012-2021
 - In the longer perspective, 2050



Capacity on malmbanan 2015
(source: Governmental
comission)

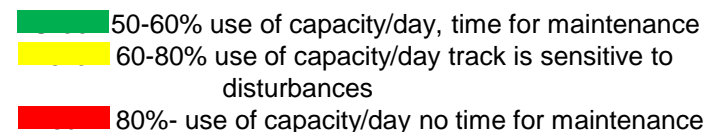


Capacity

- Prognos gives that most of the iron ore transportation are going from Kiruna to Narvik, LKAB and NRAB.
- Capacity is slightly better from Kiruna to Luleå, where short trains are easier to adapt to the infrastructure



Capacity on malmbanan 2015
(source: Governmental
comission)



Terminal and connection to public railway

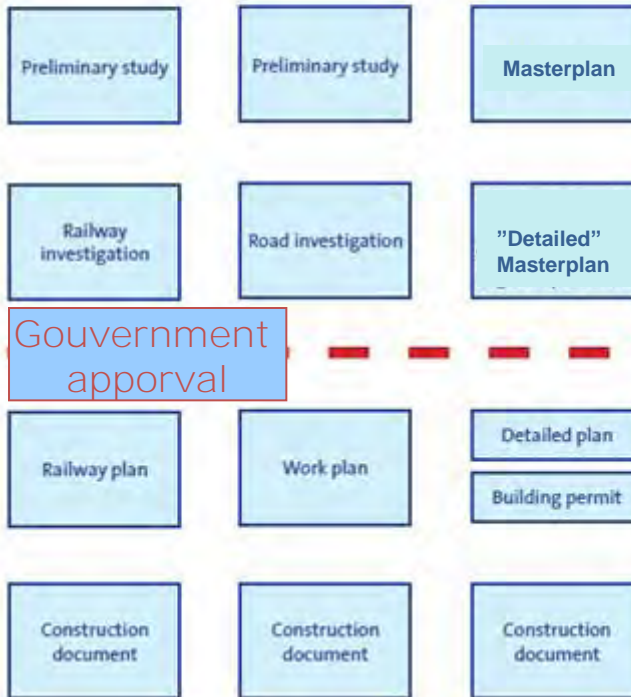
- Technical demands from Trafikverket for the connection
 - Turnouts, signaling system etc.
- The new actor will construct and own the terminal
- Agreement between Trafikverket and the new Actor for connecting to public railway
 - Commissioner of building project
 - Cost sharing
 - etc.

Planning process for new railway

Planning processes in Sweden

Railways The Construction of Railways Act	Roads The Road Act	Other land use The Planning and Building Act
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Public
interests



Gouvernement
apporval

Individual
interests

”Getting on the track” 1(2)



Permits for railway undertakings

- The Swedish Transport Agency may grant permits to companies that wish to operate traffic on the Swedish railway infrastructure

Authorisation for railway infrastructure

- A permit from the Swedish Transport Agency is required in order to operate and administer infrastructure

”Getting on the track” 2(2)

- Application for capacity is made at the Swedish Transport Administration. The Network Statement describes the infrastructure and capacity.
 - Kiruna Iron AB, or operator for Kiruna Iron AB, can apply for capacity when they got the required permits.
- Each year a new timetable is constructed. The timetable is sent to different actors for consultation.
 - If Kiruna Iron AB has applied for capacity the company is involved in the process of getting capacity on equal terms as others actors.
- Potential conflicts is tried to be solved in dialogue and compromises with the actors.
- In a few occasions there has been problem with solving the conflicts. In this occasions the line can be declared congested (overloaded). The Swedish Transport Administration makes the priority using the guideline of the transports socioeconomic effect.

Port of Luleå

65° N 22° E



Presentation to
Kiruna Iron AB



General

- Swedens single largest port for dry bulk handling
- Top 5 among swedish ports wrt tonnage handled
- DWT 55 000 tonnes (11,8 mtrs)
- Annual goods turnover appr 9 mn tonnes
- Called by approx 700 vessels/yr
- Secured all-year access
- Regular destinations mainly within Baltic Sea region



Site Overview



Goods handling today

- Bentonite
- Biopellet
- Burnt lime
- Coal
- Coke
- Dolomite
- Ferrous alloys
- Iron ore
- Limestone
- Manganese slag
- Petrol
- Tar oil
- Pig iron
- Various



Quays - Victoria

Goods -	Coal
	Coke
	Biopellet
	Bentonite
	Pig iron
	Dolomite
Quay Length	770 m
Max depth	11m
Load rate	Varied
Turnover	3,2 m/tonnes



Quays - Other

Sandskär

Goods	Iron ore
Quay Length	250m
Max depth	11m
Load rate	6000 ton/hr
Turnover	5-6 m/tonnes

Others

Uddebo	Petrol
Strömören	Tug, pilots, CG
Cementa	Cement



Capability & capacity

Current situation

- Land transportation by rail/truck
- Manual off-load
- Storing on dock
- Loading by crane

Challenges

- Capacity constraints
- Not optimized efficiency

Long term technical solution

- Rail-road transportation on dock
- Automated off-load (conveyer)
- Conveyer-system
- Silo-storage?

Challenges

- Infrastructure investments
- Infrastructure lead time
- Volume ramp-up
- Designated quay?



New possibilities...

Purpose fit container system

- Easy handling
- Minimize dust problem
- Effective logistics



In short...

The Port of Luleå welcomes Kiruna Iron AB and their future operations on-site. The Port is ready, willing and able to accept provide from Kiruna Iron AB and will work towards reaching a Memorandum of Understanding to formalise the relationship



Questions?



Welcome to Narvik



- **Scandinavian Resources**

Finn Sneve
Operational manager
The Port of Narvik
Norway



← Railtrack

The Herringfleet at the port of Narvik in 1901







Port of Narvik

THE LARGEST TRANSIT PORT IN NORTHERN NORWAY – A STRATEGIC CARGO LINK BETWEEN EAST AND WEST



Havna 1957





Port of Narvik

THE LARGEST TRANSIT PORT IN NORTHERN NORWAY – A STRATEGIC CARGO LINK BETWEEN EAST AND WEST

World Gala ved LKAB's kai 5

Største båt i
Narvik

Lastet
241.500
tonn
malm





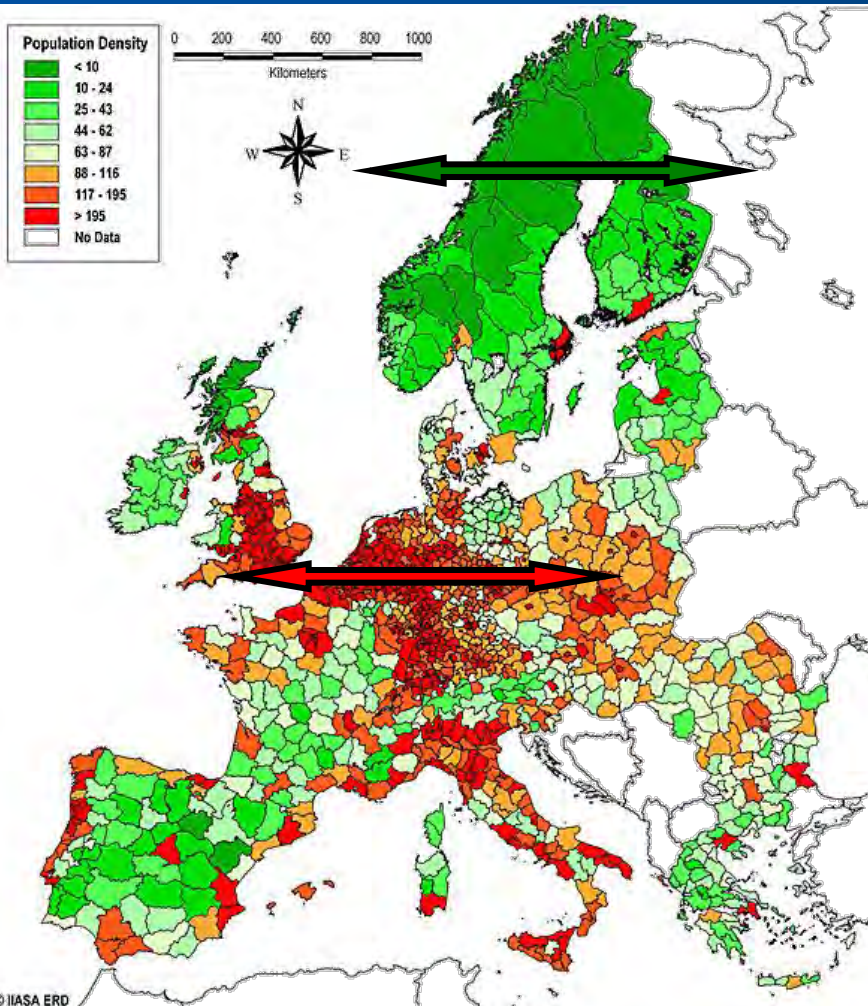
”Prinsendam”







The world is changing.... Congestion is a threat...



Northern Europe
Connection to TSR
> Not congested

European Continent
Connection to TSR
> Congested

- Bulk traffic
- Coastal traffic
- Feeder transport
- Container traffic
- 42 ton container crane
- Ro-Ro ramp
- Container trucks
- Mobile cranes
- Warehouse facilities
- Cold storage
- Container wash facilities
- Container park
- Maintenance
- Railway tracks to the end of the quay
- E6 and E10

The port of Narvik is authorized as an ISPS port, security level 1.



A GLOBAL TRADING ROUTE – LA ROUTE DU COMMERCIAL MONDIAL

N.E.W. THE NORTHERN EAST WEST (N.E.W.) FREIGHT CORRIDOR



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Vil ha tog Kina-Narvik

Utenriksministeren vil ha jernbane fra Kina til Narvik. Han vil kutte grensehindre mot Russland slik at samarbeidet kan bli like enkelt som i Norden.

ODD INGE SKJÆVESLAND

(Først publisert: 21.08.06 Oppdatert: 21.08.06 kl. 00:07)

Når Regjeringens strategiplan for nordområdene kommer til høsten, er et av målene at Norge skal utvikle naboforholdet til Russland like godt som det vi har til våre nordiske naboer.

- Det skjer ikke i morgen, men vi må kunne ha visjonen at transportlinjene som stoppet opp på hver side av grensen under den kalde krigen blir trukket helt igjennom. Det gjelder bl.a. muligheten som jernbanelinjen helt fra Asia til Narvik gir, sier utenriksminister Jonas Gahr Støre (Ap) til Aftenposten.

Ulike skinner.

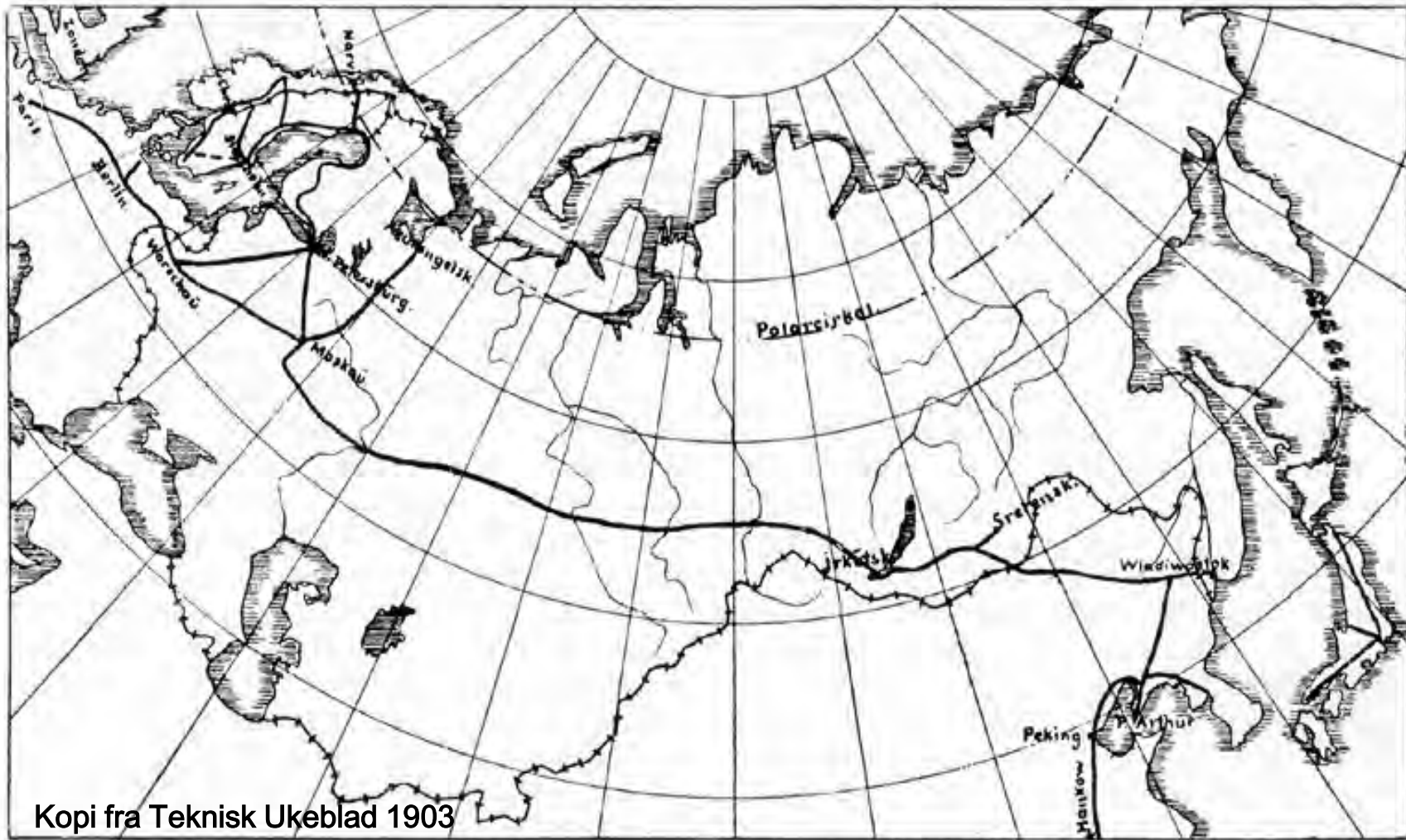
Det ligger allerede jernbaneskinner mellom Norge og Asia. Problemet er at skinnene ikke er like på hele strekningen, bl.a. er det forskjell på norsk og russisk standard. Behovet for



Utenriksminister Jonas Gahr Støre legger frem strategiplan for nordområdene i høst. (Foto: DAG W. GRUNDSETH)

KINA-NARVIK-USA

The Norwegian Minister of Foreign Affairs, Mr. Jonas Gahr Støre, wants train solution from China to USA via the Port of Narvik.



Den 6. Mars 1903 uttalte Direktøren for Statsbanernes baneafdeling A. Fleischer: ”...banens vidstrakte forbindelser, tør give vore nordlige landsdele et fremstød i merkantil og industriel henseende af vidtrækkende betydning...”

An aerial night photograph of a port city, likely Narvik, Norway. The city is illuminated with lights, and a large red and white container ship is docked at a pier in the harbor. The surrounding area is dark, with some greenery visible on the hillsides.

Container cargo transportation on the TSR via the sea ports: Current state and new opportunities. Interaction of ports and stevedoring companies with railways and freight forwarding companies.

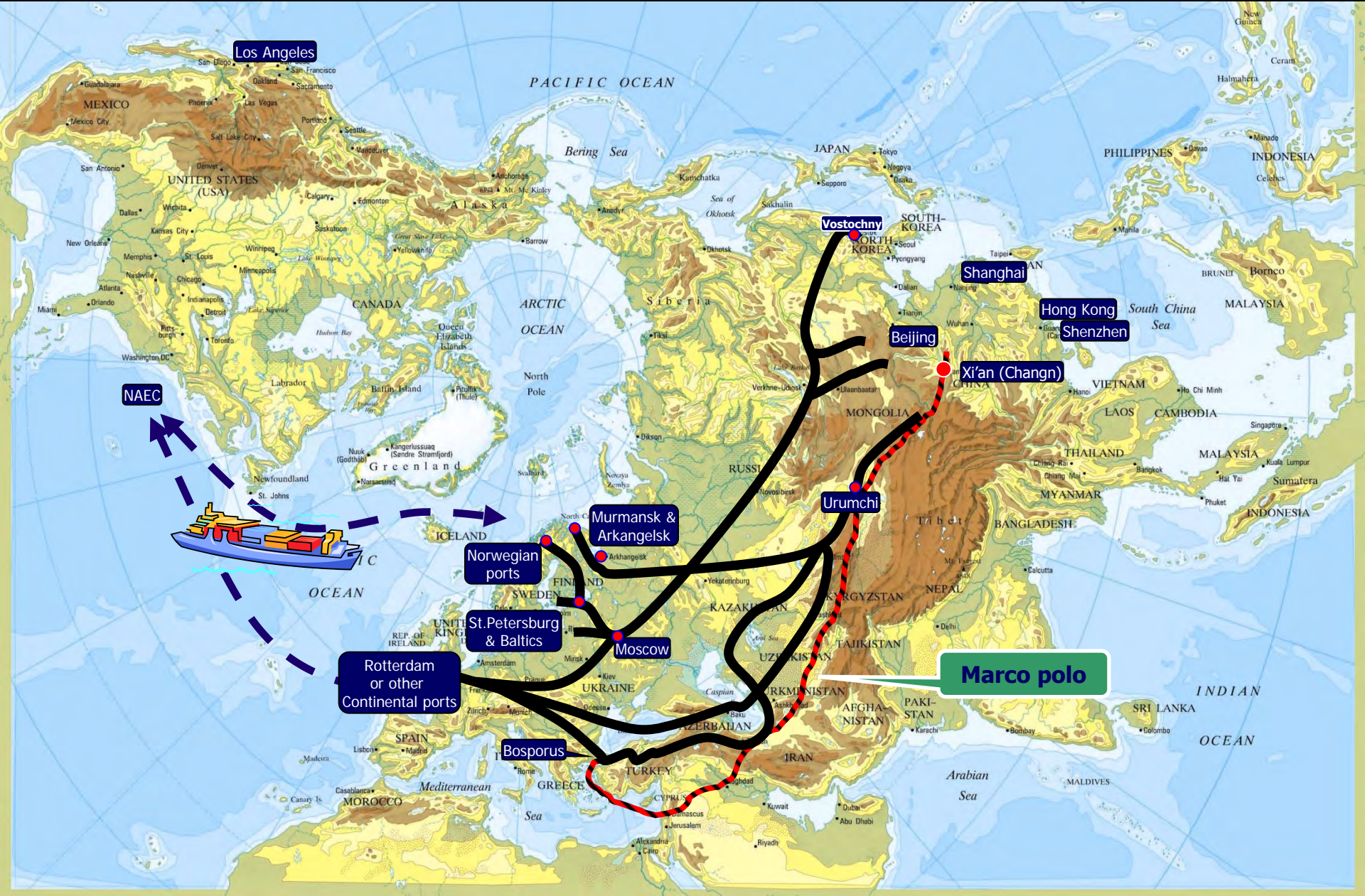
N.E.W. - North East West Freight Corridor.

**Rune J Arnøy
Port Director**

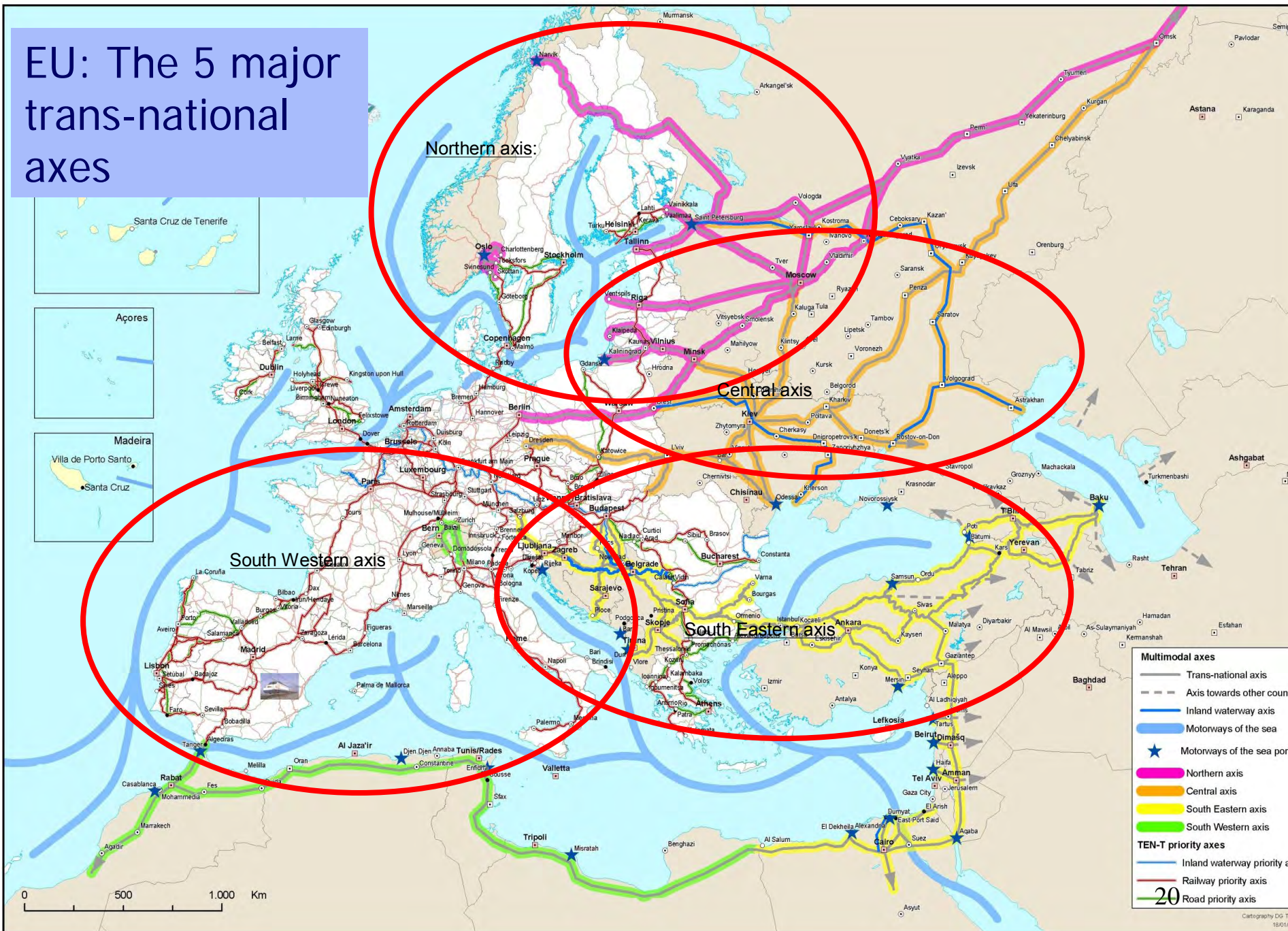
The Port of Narvik, Norway

CCTT 19th. General Assembly, Bratislava, Slovakia

Main EurAsian Railway Connections -global trade lanes

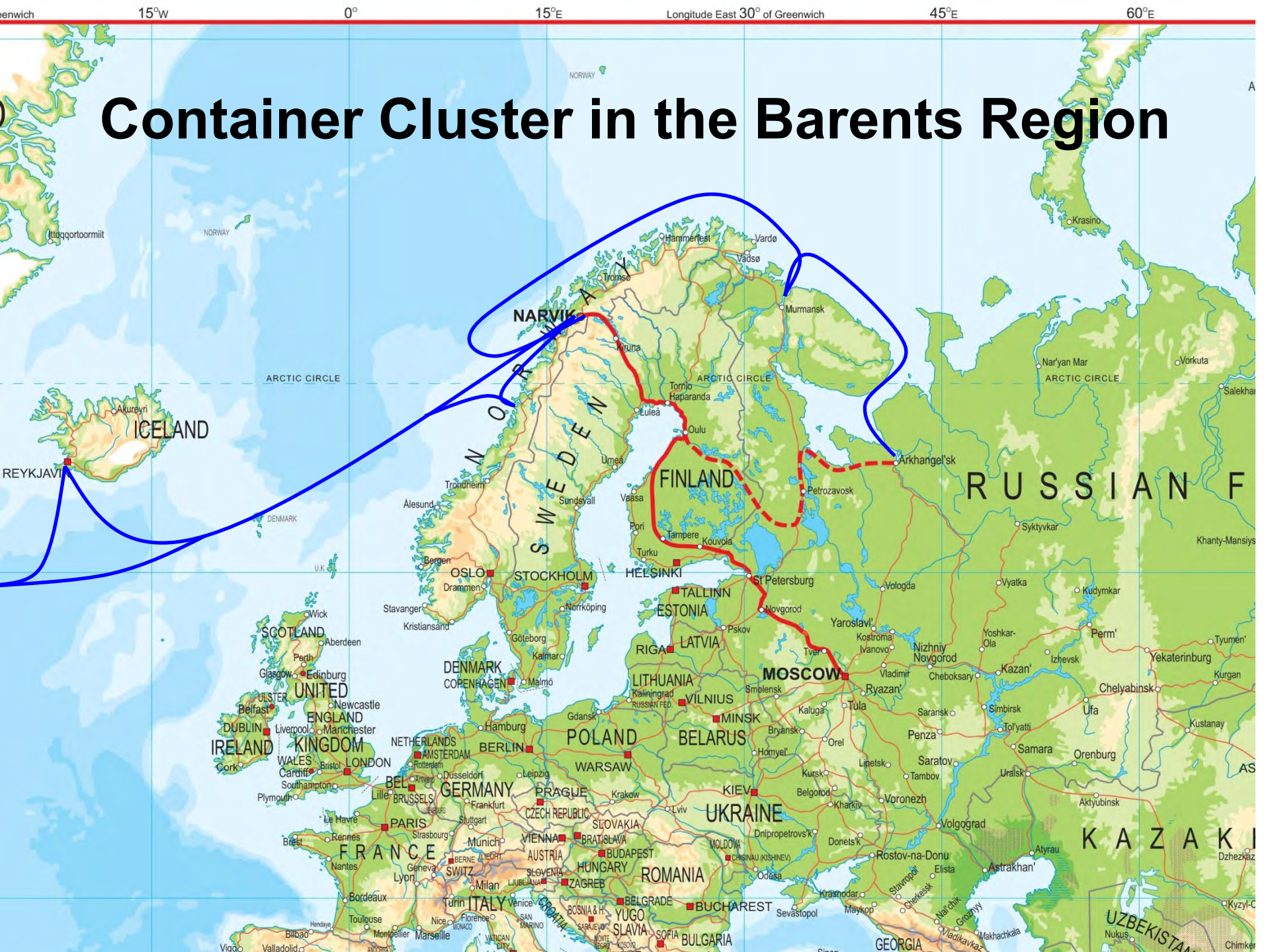


EU: The 5 major trans-national axes



- Multimodal axes**
- Trans-national axis
 - - - Axis towards other continent
 - Inland waterway axis
 - Motorways of the sea
 - ★ Motorways of the sea port
 - Northern axis
 - Central axis
 - South Eastern axis
 - South Western axis
- TEN-T priority axes**
- Inland waterway priority axis
 - Railway priority axis
 - Road priority axis

Container Cluster in the Barents Region





Transit Port

RAIL | ROAD | SEA



- Bulk traffic
- Coastal traffic
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Expansion THE TRANSIT PORT – STEP BY STEP

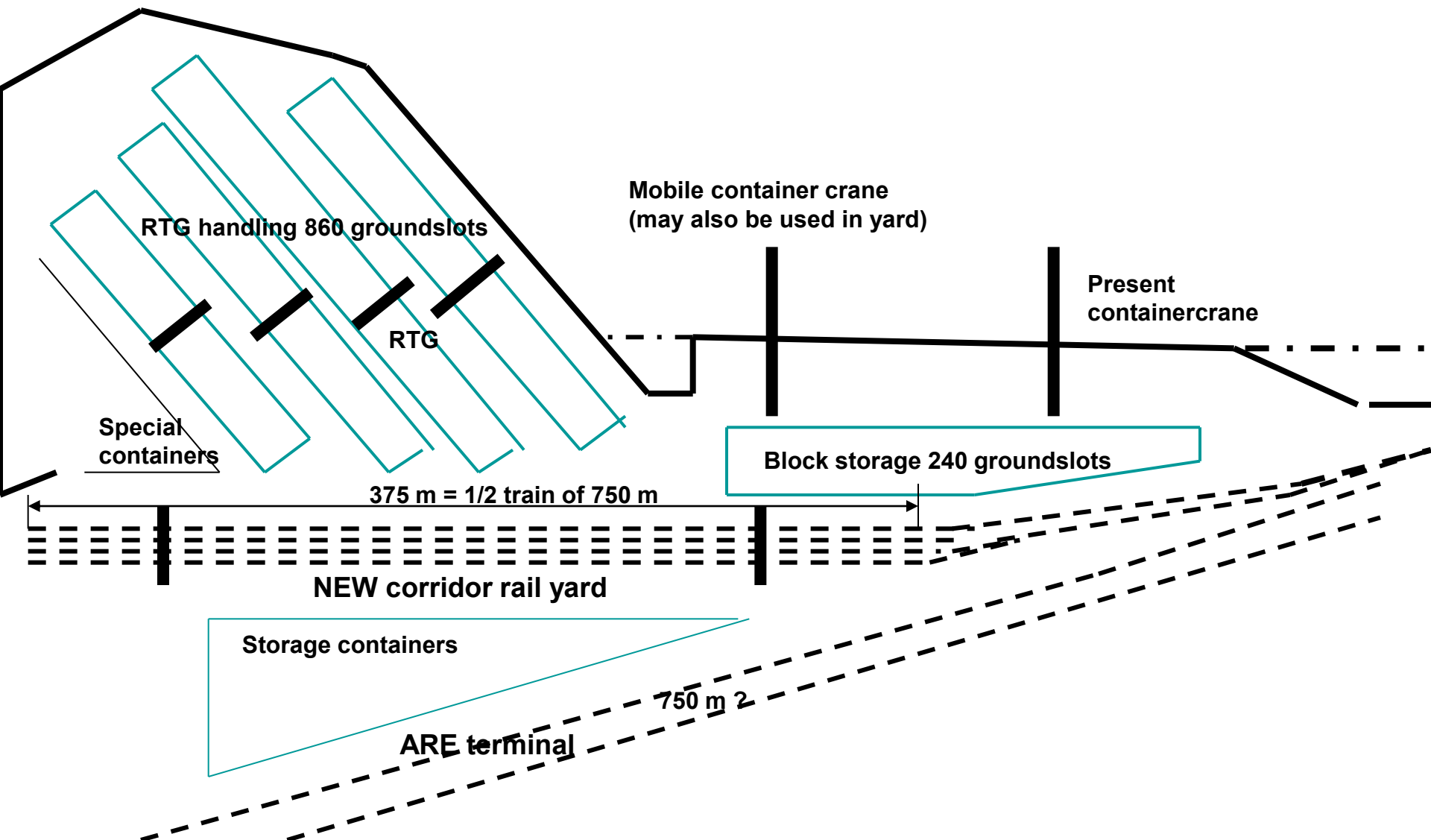


- Bulk traffic
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The Narvik Container Terminal after land reclamation



Regarding Narvik,
the most important development factor,
is the transportation of iron ore.

100 years of cooperation says it all:

Kiruna needs Narvik
and
Narvik needs Kiruna

But what about the future in mining?
And is there any other transport alternatives by road, rail or ports?

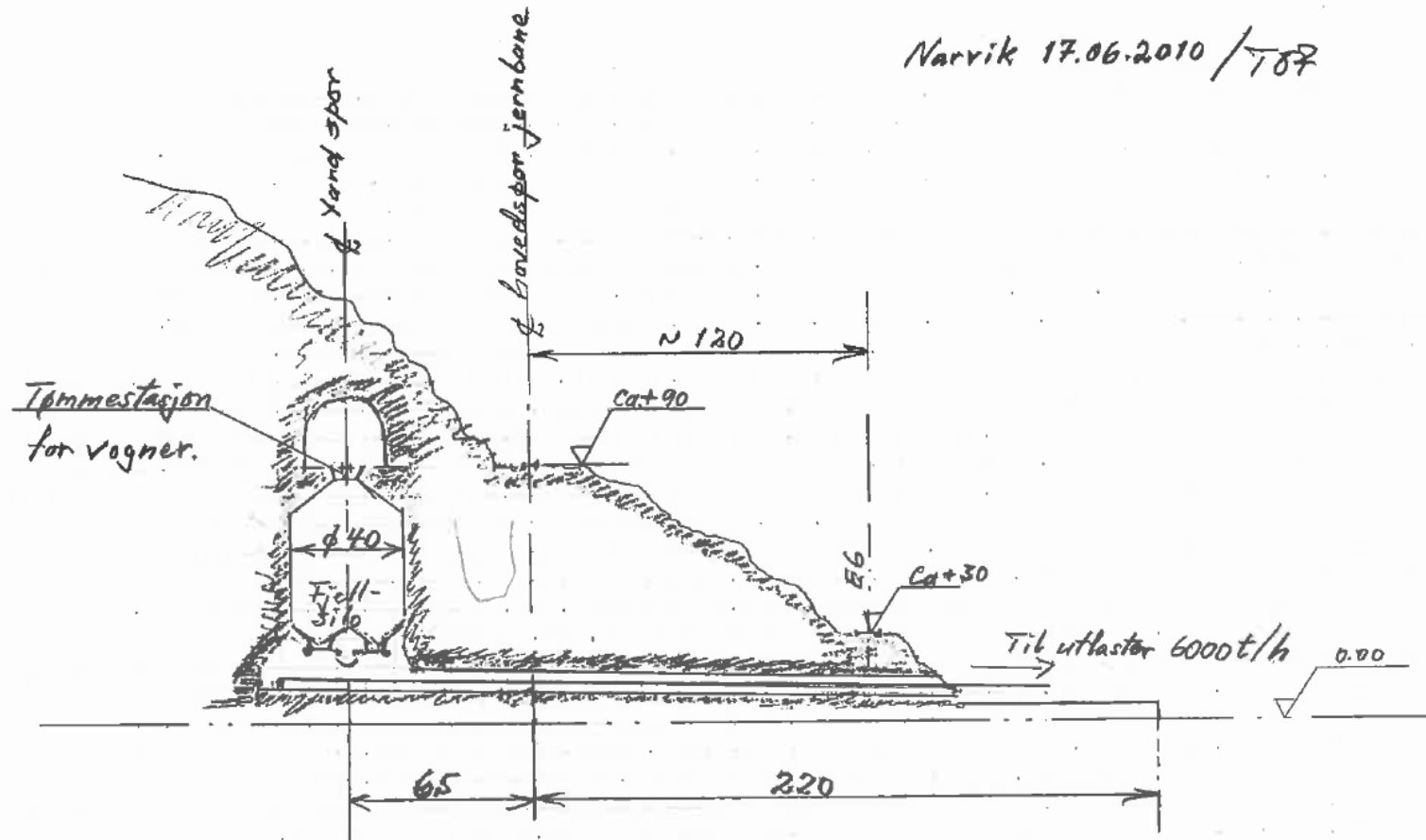


NORTHLAND

EXPLORATION • DEVELOPMENT • PRODUCTION



Grunnstadvika - Jernbaneterminal i fjell



Arrangement - Grunnstadvika

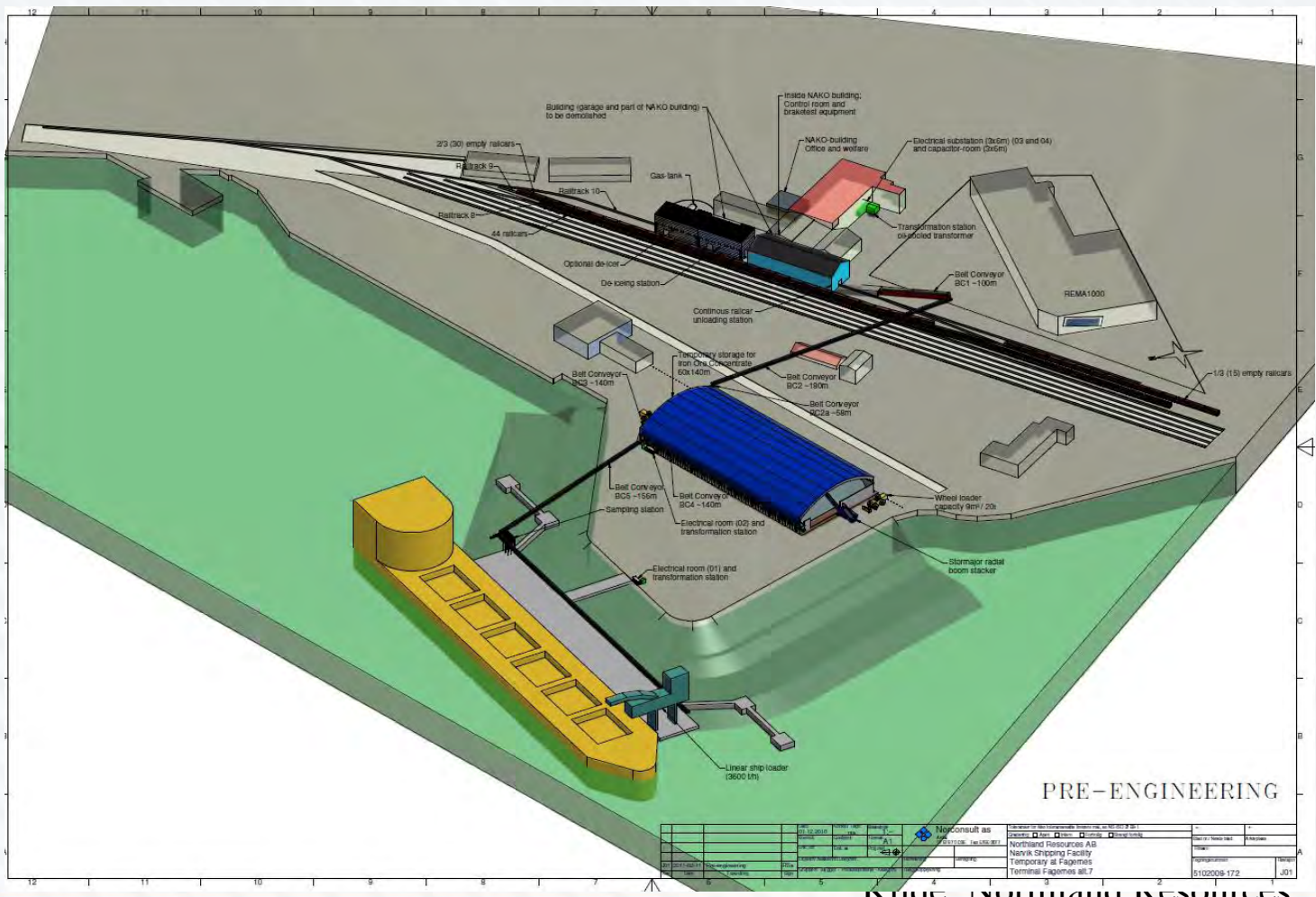
Snitt

M = 1:2000





Narvikterminalen – gods og malm



PRE-ENGINEERING

Northland Resources AS Narvik Shipping Facility Temporary at Fagernes Terminal Fagernes alt.7		51020006-172	J01
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LKABs utviklingsplaner



VIL ØKE: LKABs konsernsjef Lars-Eric Aaro (innfelt) vil ikke love Northland Resources plass på LKAB-anlegget i Narvik. Men gruvegiganten planlegger å øke malmskipningen over Narvik kraftig. (Foto: LKAB)

Haster mot 40 mill tonn

LKAB vil øke skipningen over Narvik og Luleå til 40 millioner tonn malm i året - så fort som mulig.

Espen Eidum
espen.eidum@fremover.no

Det kom fram da LKABs konsernsjef Lars-Eric Aaro stilte til netprat på lkabframtid.com mandag.

Ikke fått noen henvendelse
Med bakgrunn i Northland Resources planer om å skipe sin malm ut over Narvik via egen malmhavn, stilte Fremover spørsmål om LKAB ville kunne slippe Northland til på sitt anlegg i Narvik. Til det svarte Aaro:

«Vi har ikke fått noe spørsmål verken fra Northland Resources eller Narvik kommune om å få bruke LKABs anlegg i Narvik, så jeg vet ikke mer om dette spørsmålet enn det jeg leser i dagspressen».

40 millioner tonn

Aaro kan heller ikke si noe om hvordan LKAB vil stille seg til saken om en henvendelse skulle komme, men påpeker:

«Vi på LKAB arbeider for fullt med å øke LKABs leveranser fra dagens 26-27 millioner tonn i året, og vi skal så fort som mulig opp på 40 millioner tonn pr år over våre to malmhavner i Narvik og Luleå». LKAB har nylig avsluttet et rekordsterkt første halvår, men Aaro tror etterspørselen kan få en knekk i hjemmemarkedet før 2010 er omme:

Splittet

«Bildet er noe splittet. Vårt hjemmemarked Europa får nok et svakere andre halvår 2010 enn første halvår, mens 2011 i helhet er vanskelig å si noe om. Kina kommer fortsatt til å gi gass, i en noe lavere takt enn tidligere, men likevel sterkt i et globalt perspektiv». Hva gjelder prisene, tror Aaro at pellets vil komme bedre ut enn fises, uten at han vil gi noen absolutte tall her og nå.

Trenger mer råmalm

Aaro peker på at jernmalm av bra kvalitet bare finnes i begrenset omfang i Kina, noe som dermed betyr at landet er avhengig av malminnport i stor skala.

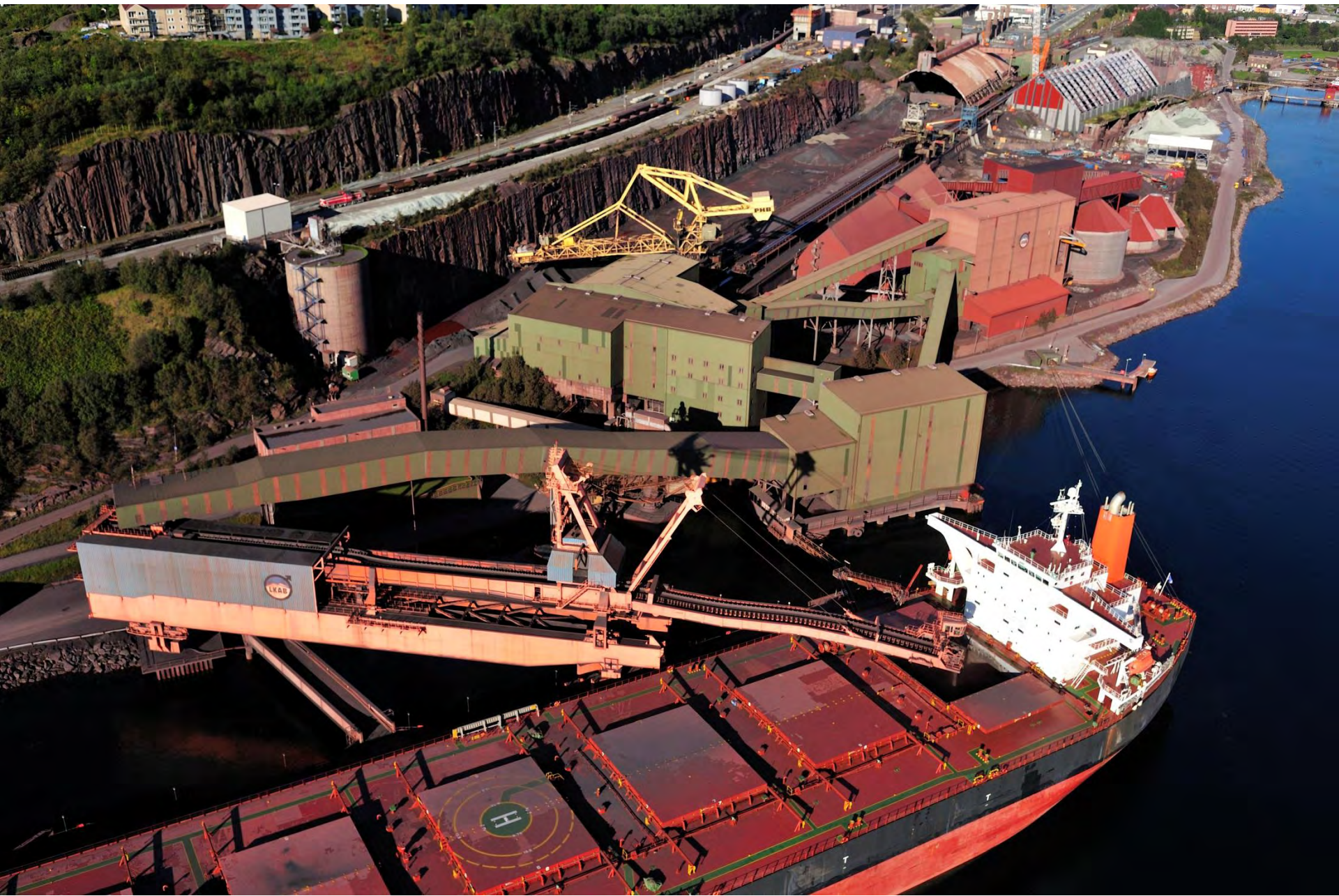
«Kina har kommet halvveis i sin ekspansjon mot å behøve like mye stål pr person som i Vesten», sier Aaro i nettpreten.

Men skal LKAB ta en større bit av det kinesiske markedet, trenger selskapet tilgang på merråmalm.

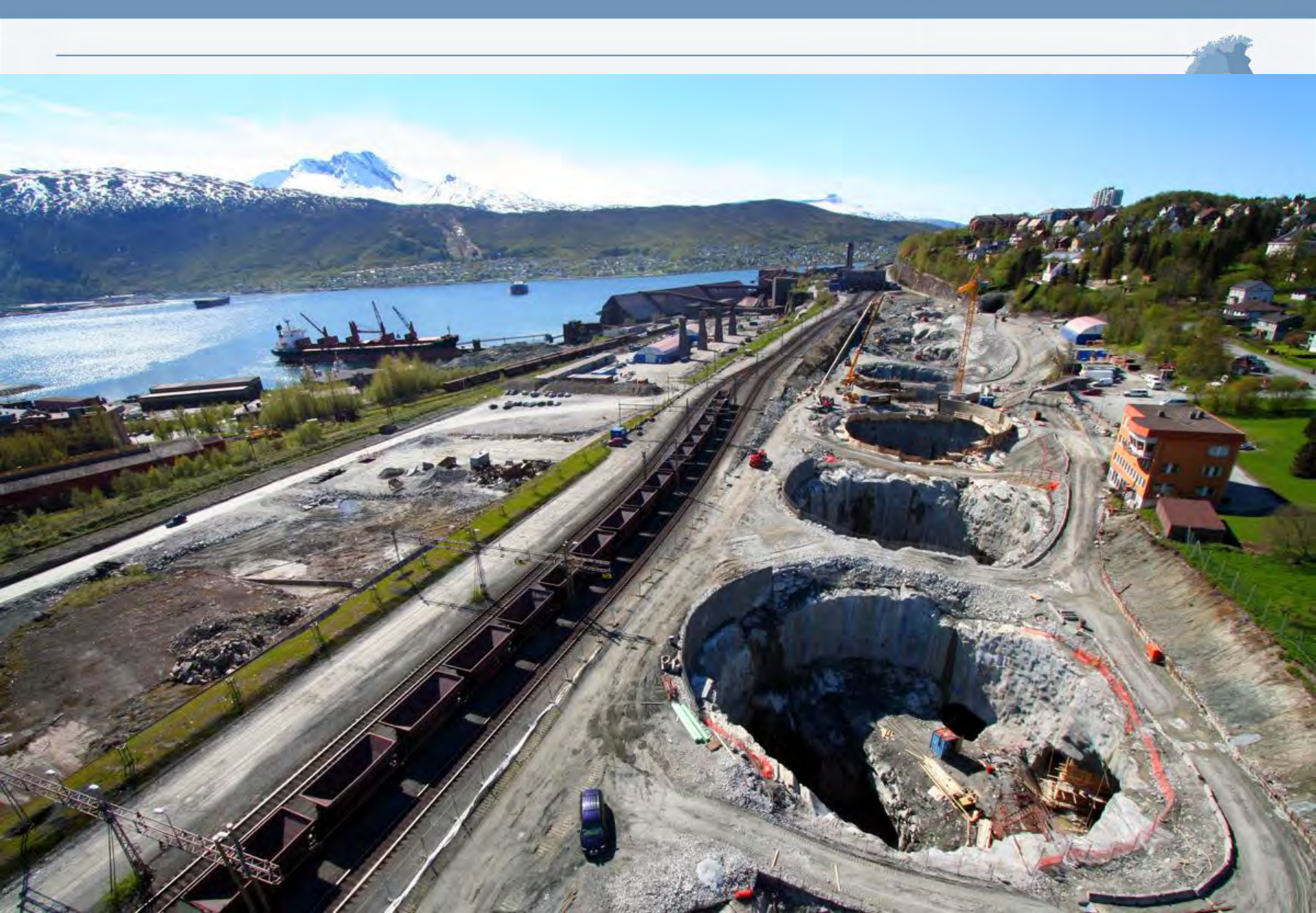
Via Narvik

LKABs strategiplan for de nærmeste årene inkluderer en aktivitet kalt «LKAB 37». Strategien innebærer at kapasiteten på ralmmbanen mellom produksjonsstedene og Narvik/Luleå skal stykes for å kunne ta unna mellom 35 og 40 millioner tonn jernmalmsprodukter i året. Mellom 30 og 33 millioner tonn skal gå via Narvik, ifølge delårsrapporten.

Samtidig fortsetter utviklingen av gruve i Kiruna.









Jernbaneverket

Malm, mer malm og mer enn malm..





Hvilke jernmalnvolumer bør vi planlegge for og hva betyr det? Annen trafikk kommer i tillegg!

Selskap	I dag (2011)	2015	2020
LKAB	18 mt	28 mt	34 mt
Northland	0	5	7
Scandinavian	0	0	5
Andre	0	0	4
I alt	18 mt	33 mt	50 mt

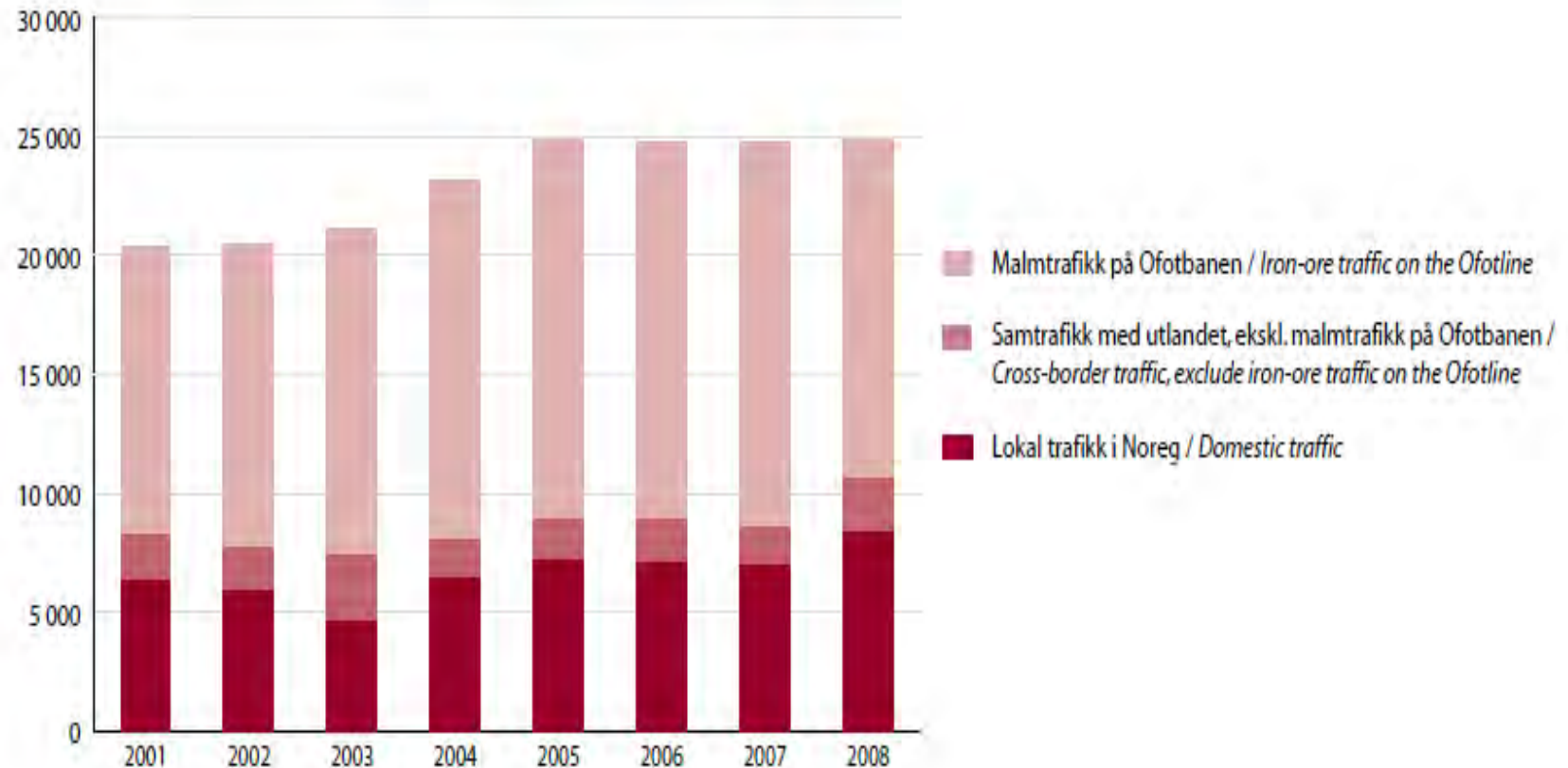
For kontakt;

Narvik Havn KF / Port of Narvik – tel. + 47 50370 eller post@portofnarvik.com eller www.portofnarvik.com



Ofotbanen – ca 60% av godstrafikken

Togtransport i tonn (1000) / Tonnes transported by rail (1000)



**Thank you
and
welcome
to
Narvik.**



Pipe line study - prel. results 1

- 180 km, peak at 130 km.
- 5 alt 10 Mt concentrate capacity.
- 2.7 alt 4.5 Mm³ water pumped.
- Pipe line to be buried to avoid freezing.
- Tunnel for 35 km to avoid under pressure.
- No permitting considerations made.

Pipe line study - prel. results 2

Capacity	5 Mt/a	10 Mt/a
CAPEX	152 MUSD	177 MUSD
OPEX	2.8 MUSD/a	6.6 MUSD/a



KIRUNA IRON AB

THE NEW KIRUNA IRON COMPANY

Kiruna winter drilling project 2011

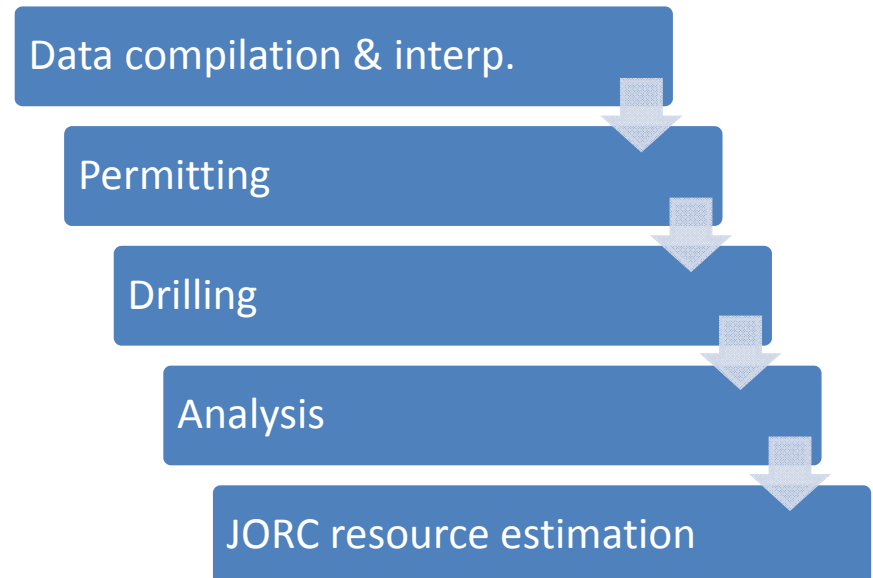
Permits and Relations

By Hans Lindberg, GeoVista

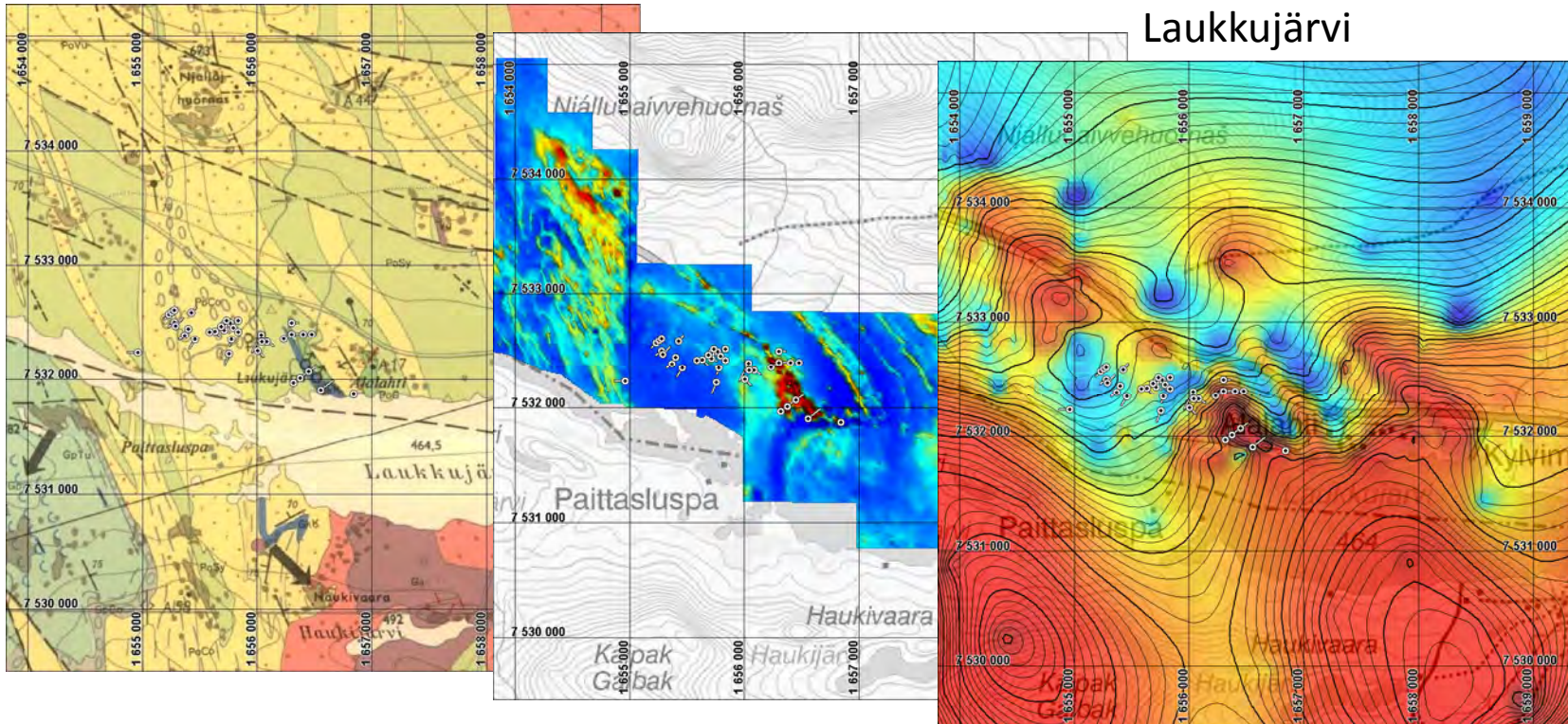
The project was conducted by Kiruna Iron AB in co-operation with:

- GeoVista
- Protek, Styrud
- Many others ...
- And important input from local stakeholders ...

The plan was to have an Updated mineral resource estimate by the end of July, 2011

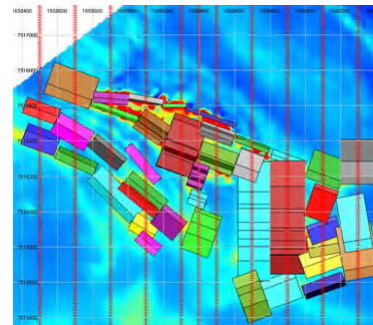
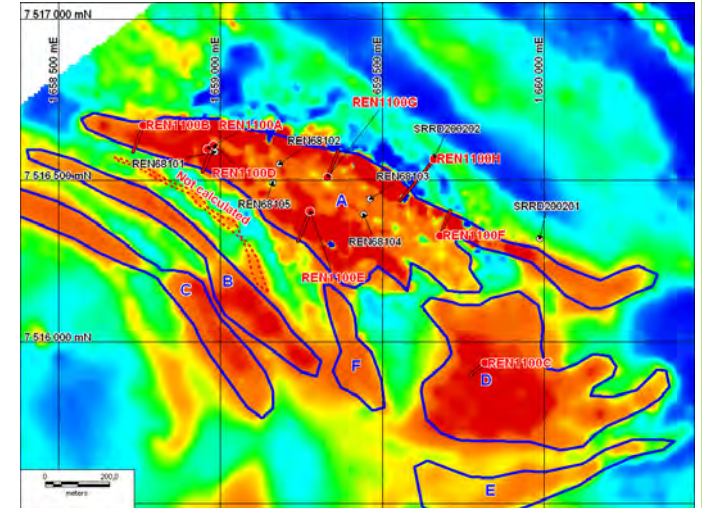
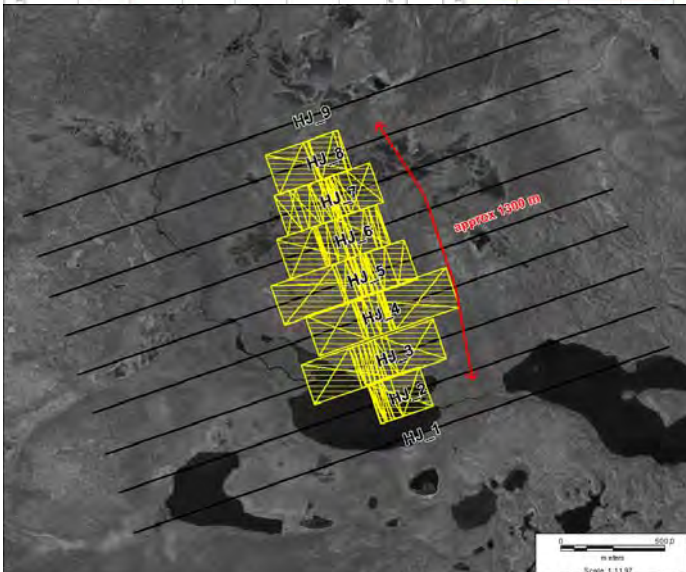
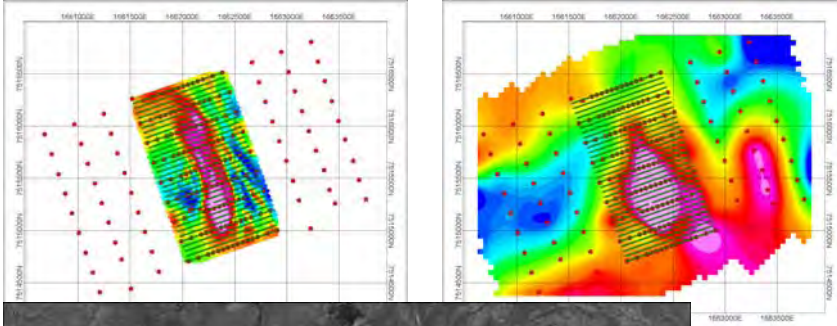


- Locating and compiling old data
- Verification of coordinate systems
- Digitizing geological information
- Locating drill collars in 1 metre snow, -30°C
- Iterative process, due to short time frame

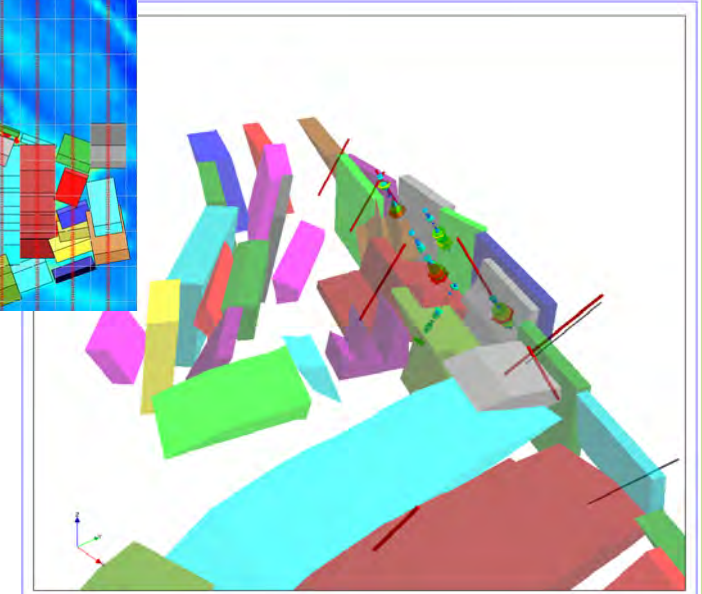


- Geophysical modelling
- Modelling of tonnage and grade
- Preliminary resource modelling

Harrejaure

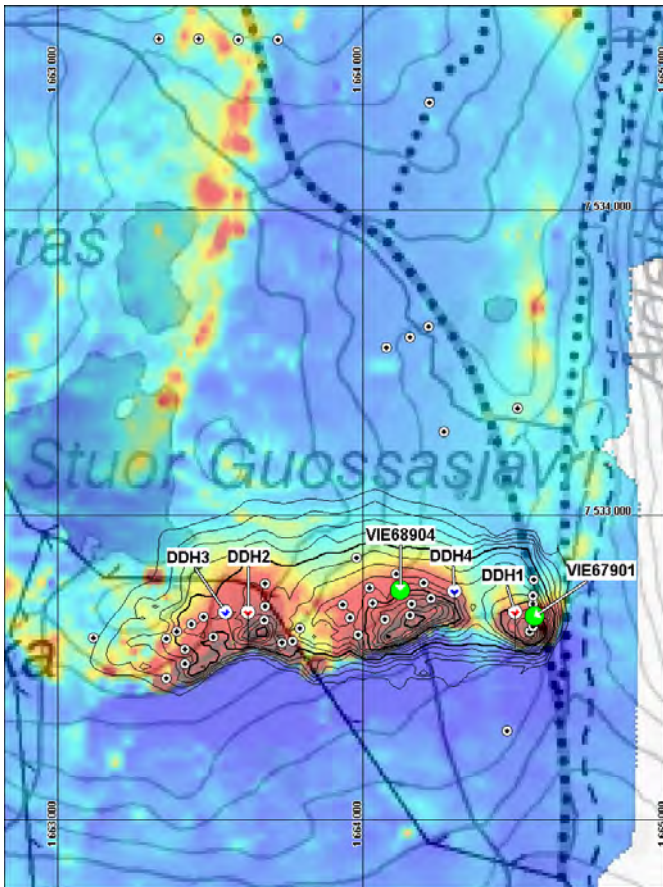


Renhagen

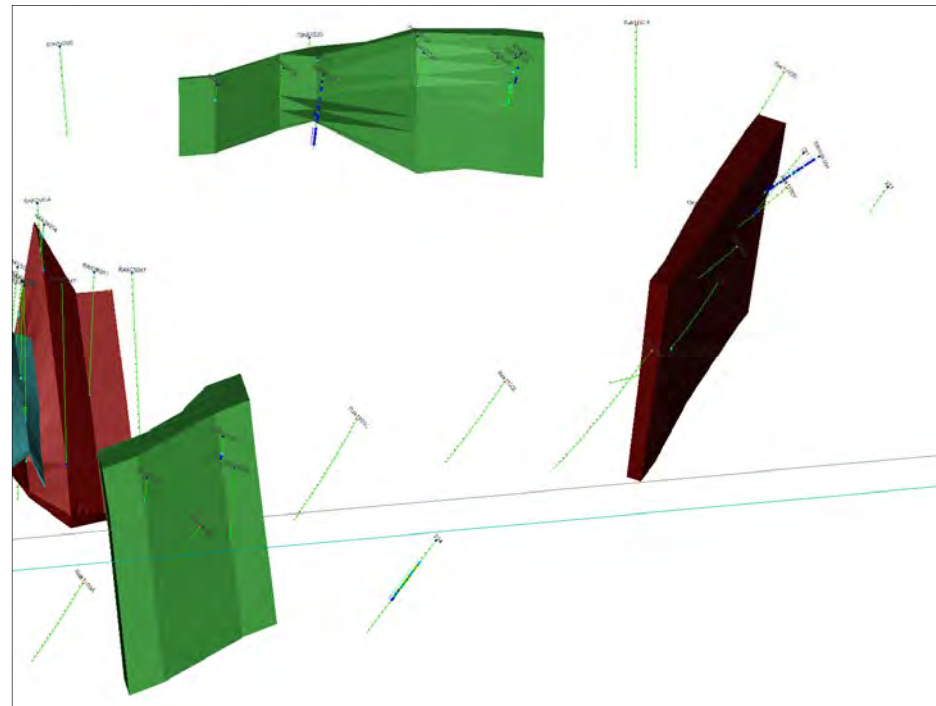


- TWIN holes to verify old resource estimates
- Exploration holes to increase tonnage

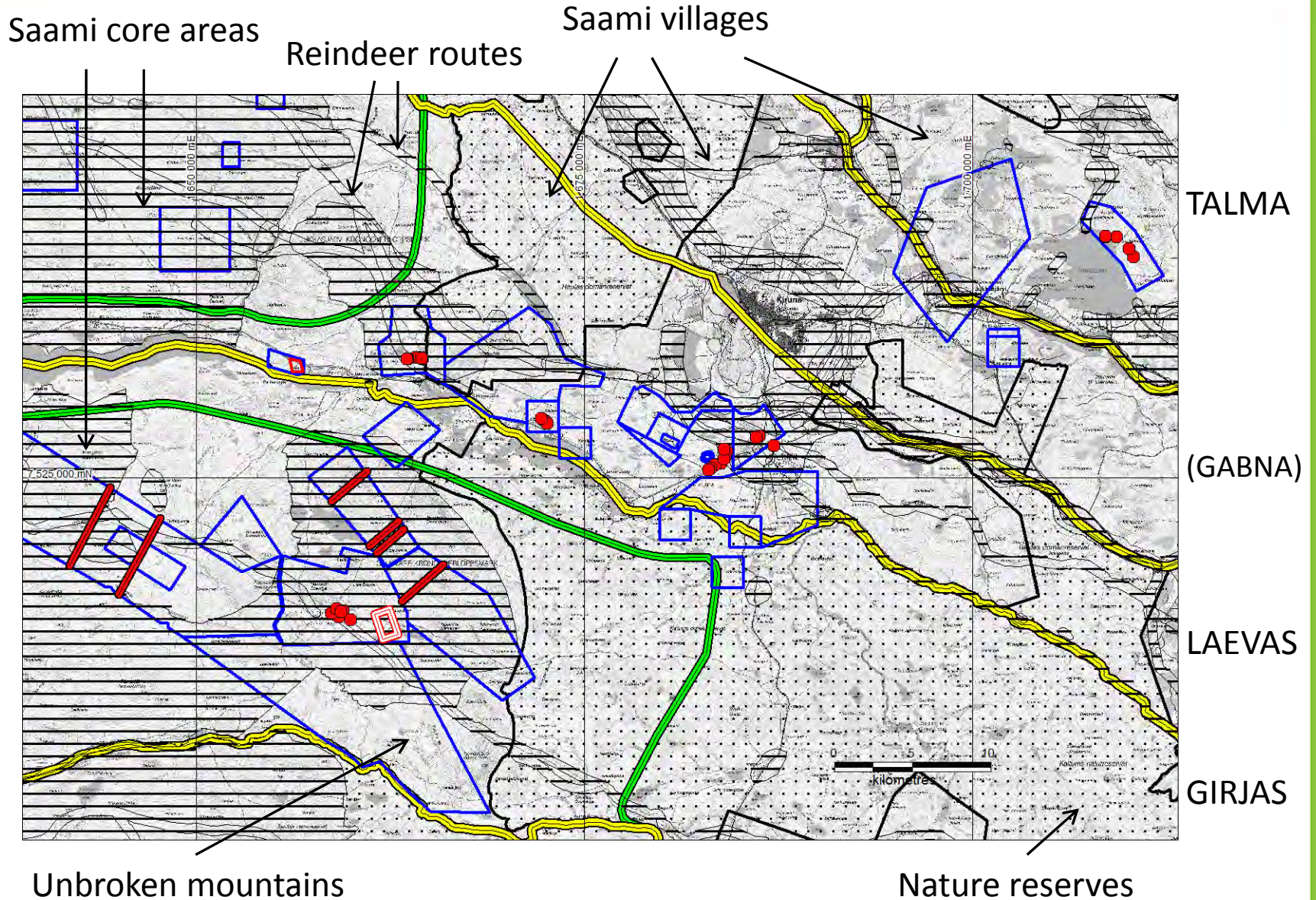
Vieto



Rakkurijärvi



Permitting – various interests



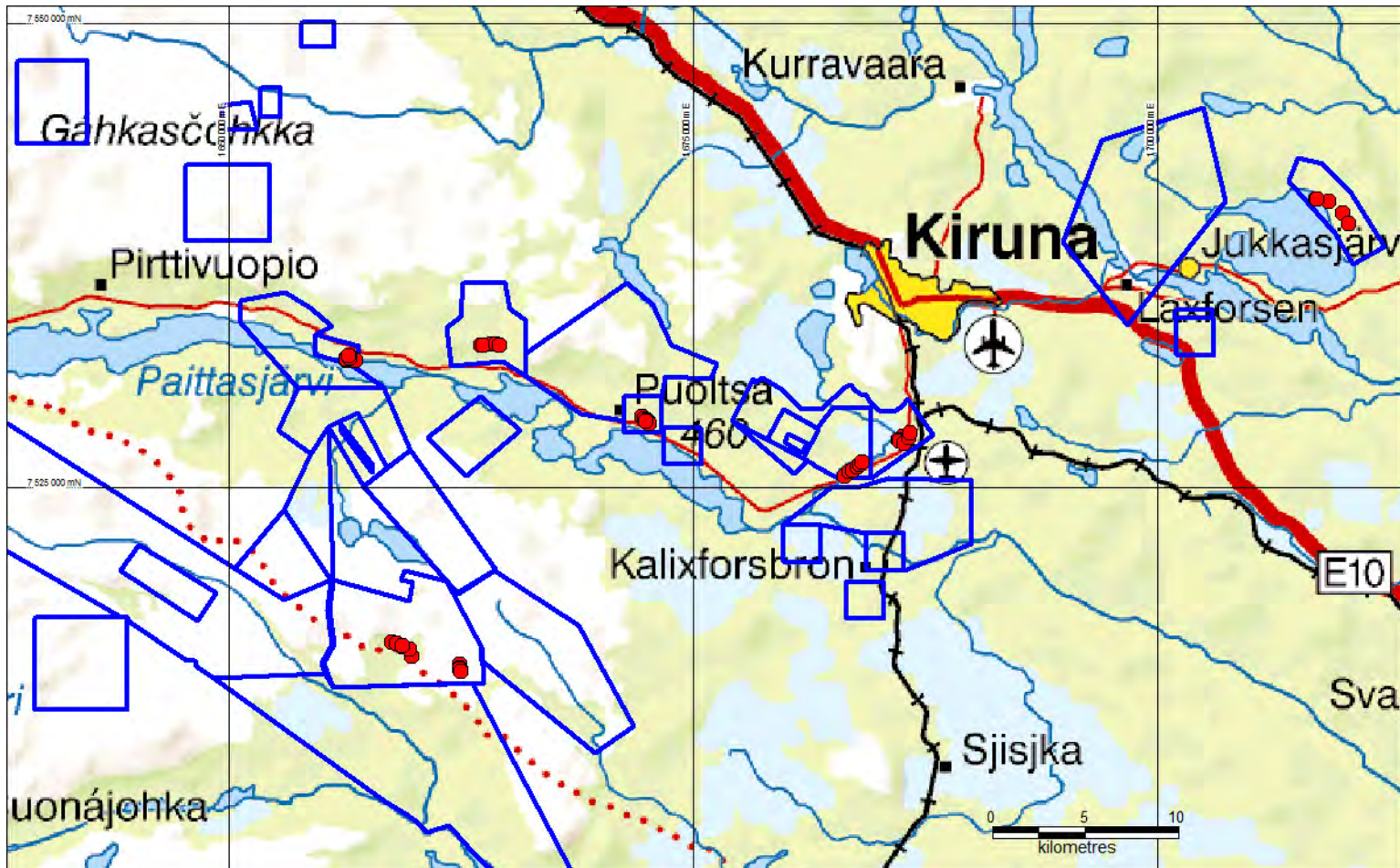
Permitting – who to communicate with

- **Inspector of Mines (IOM)** Permit
Approved exploration license
Swedish entity
Security for damage and encroachment reimbursement
Various other conditions
Special permit close to roads etc.
- **County Administration Board (CAB)** Consultation, Permit
Conditions to protect the nature
Conditions to protect cultural monuments
Permit for work in certain areas (some nature reserves, mountains, rocket range, etc.)
Terrain driving permit
- **Landowners** Work plan
Agreement to conduct the planned work (what, where, when)
Agreement to work close to houses
- **Owners of right – saamis, house owners, road authority, etc.** Work plan
Agreement to conduct the planned work (what, where, when)
Agreement close to roads, in saami areas, in city planned areas and where others are effected
- **Other interests** Agreements
How can the work be conducted with minimal disturbance on other interests in an area

What controls drilling progress & priorities

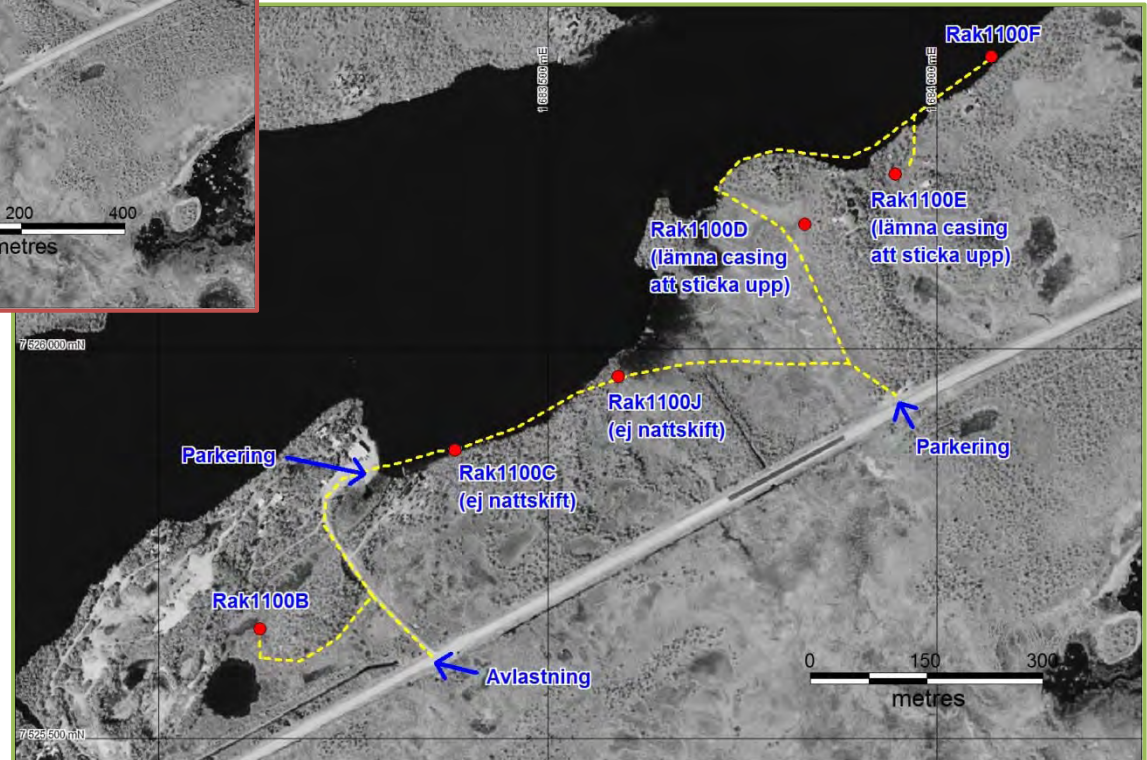
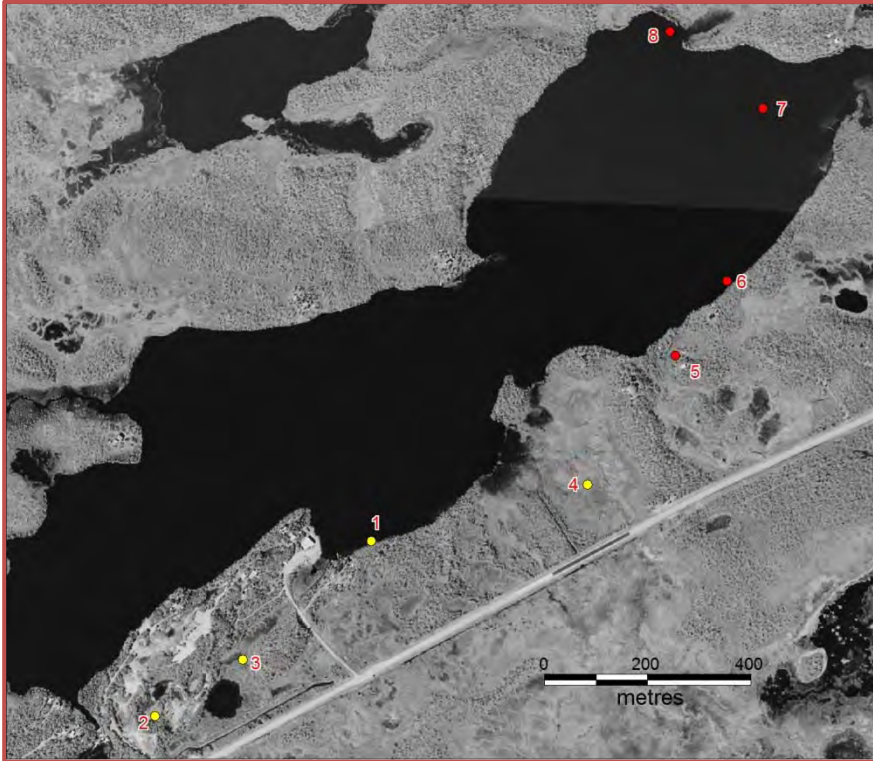
- Exploration license expiry dates (IOM)
- Exploration license work commitment (IOM)
- Nature concerns (CAB)
- Terrain driving (CAB)
- Working in unbroken mountains (CAB)
- Work plans (Landowners, owners of right)
- Reindeer herding (Saamis)
- Ground conditions (all above)
- Weather (all above, people, machinery)
- Meeting JV requirements (\$ spent, licenses extended)
- Availability of rigs and crews (??)
- ... apart from the obvious technical and economical aspects !!

Drilling has been conducted at Renhagen, Harrejaure, Laukkujärvi, Vieto, Puoltsa, Rakkurijärvi, Rakkurijoki och Sautusvaara.



Example - drill planning Rakkurijärvi

Preliminary planning – drill holes



Decided holes – after input from local stakeholders

- **Drilling commences**
All conditions are compiled in a drill folder located on each rig
Environmental control programme according to Swedish industry standard (Svemin)
Startup meeting with the drillers on site
Photographs of sites before drilling commences



Summering av villkor
för
prospekteringsborrning
inom undersökningstillståndet
Rakkurijärvi nr 1
(Mars 2011)

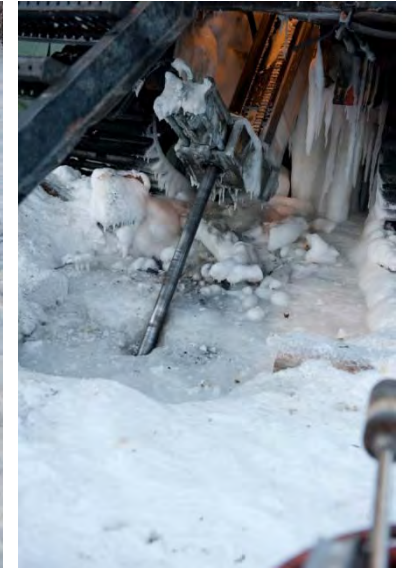


Kiruna Iron AB, Kiruna Iron Project
Northern Sweden

Version 2.0

4 Mars, 2011

- Coordination of knowledge during drilling
Control of HSEC during drilling
Photographs of sites before and during drilling
Continuous contacts with saamis and others



Vieto



Control after drilling



- Final controls
 - Cleaning of drill sites
 - Photographs of sites after drilling
 - Continuous contacts with saamis and others



Rak11003 (J)

Hole to be plugged





Luleå 2011-08-01

Arbetsplatskontroll inom Kiruna Iron AB's borrhningar vid Rakkurijärvi

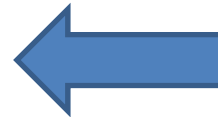
Plats: Rakkurijärvi, söder om Kiruna
Tid: Tisdag 28 juni, 2011
Syfte: Slutkontroll av körvägar och borrhplatser efter borrhning av hålen Rak11001-11006, borrade av Protek
Kontroll: Hans Lindberg, GeoVista AB

Inledning: Borrhningen vid Rakkurijärvi skedde under februari till mars 2011 med två riggar från Protek. Arbetet avslutades en av de första dagarna i april, enligt löfte till ägare av sommarstugor för att minimera störning under vårvintern.

Kontrollen har omfattat inspektion av körvägar till, från och mellan borrhålen samt avstädnig, kapning av casing, montering av lock samt eventuella spill vid varje borrhplats. Den har haft som syfte att vara en slutgiltig kontroll av det genomförda borrhprogrammet i området.



Figur 1. Borrhål som borrats. Kontroll har skett av alla borrade hål som ligger på land, dvs. Rak11001, Rak11003-5. Hålen Rak11002 & Rak11006 borrades på sjön.

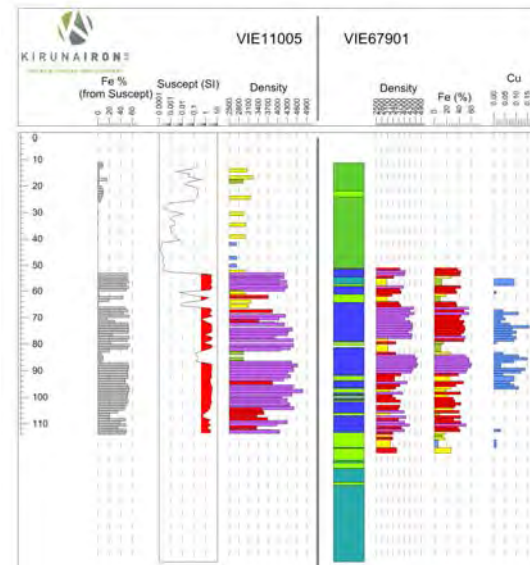


Final cleaning of the drill sites
Control of damages



Repair of damages
Reimbursements to landowners
Plugging of holes
Verification of performance, contacts with local stakeholders

- Core logging
- RQD
- Susceptibility measurements
- Sectioning and cutting of core
- Density measurements
- Analysis
- Hole reports
- Data to database



Datum	JL	SS	CA	TL	HI	HL	HT	OM	ME
2011-03-07		X	X						
2011-03-08		X	X						
2011-03-09		X	X						
2011-03-10		X							
2011-03-11		X							
2011-03-12		X							
2011-03-13		X							
2011-03-14		X	X						LK
2011-03-15		X	X						LK
2011-03-16		X	X						LK
2011-03-17				X					LK
2011-03-18				X					S
2011-03-19				X					
2011-03-20				X					
2011-03-21	?				X				S
2011-03-22	?				X				S
2011-03-23	X				X				
2011-03-24	X				X				
2011-03-25	X								
2011-03-26	X								
2011-03-27	X			X		X			
2011-03-28	X			X		X			LK
2011-03-29	X			X		X			LK
2011-03-30	X			X		X			LK
2011-03-31	X	X							LK
2011-04-01	X	X							
2011-04-02	X	X							
2011-04-03	X	X							
2011-04-04	X	X							
2011-04-05	X	X							
2011-04-06	X	X							
2011-04-07	X	X							
2011-04-08	X	X							
2011-04-09	X								
2011-04-10	X								
2011-04-11	X		X						LK?
2011-04-12	X		X						LK?
2011-04-13	X		X						LK?
2011-04-14	X		X						LK?
2011-04-15	X		X						
2011-04-16	X		X						
2011-04-17	X								
2011-04-18	X				X				
2011-04-19	X				X				
2011-04-20	X				X				
2011-04-21	X				xs				
2011-04-22									
2011-04-23									
2011-04-24									
2011-04-25									
2011-04-26							?	?	
2011-04-27									
2011-04-28									
2011-04-29									
2011-04-30									
2011-05-01									

- Strong co-operating team
- Good support from Damian, Olof and Amanda
- Necessary with a flexible approach
- The tight timeline is a challenge – but rewarding
- Good relations being built with other stakeholders (... we think)
- Tonnage and grade are high priority
- High priority is also set on long term relationship with stakeholders

When the next Iron Mine in Kiruna is to be opened ...

we will know how our community relations have worked

Hans Lindberg / GeoVista AB



KIRUNA IRON AB

THE NEW KIRUNA IRON COMPANY

Kiruna winter drilling project 2011

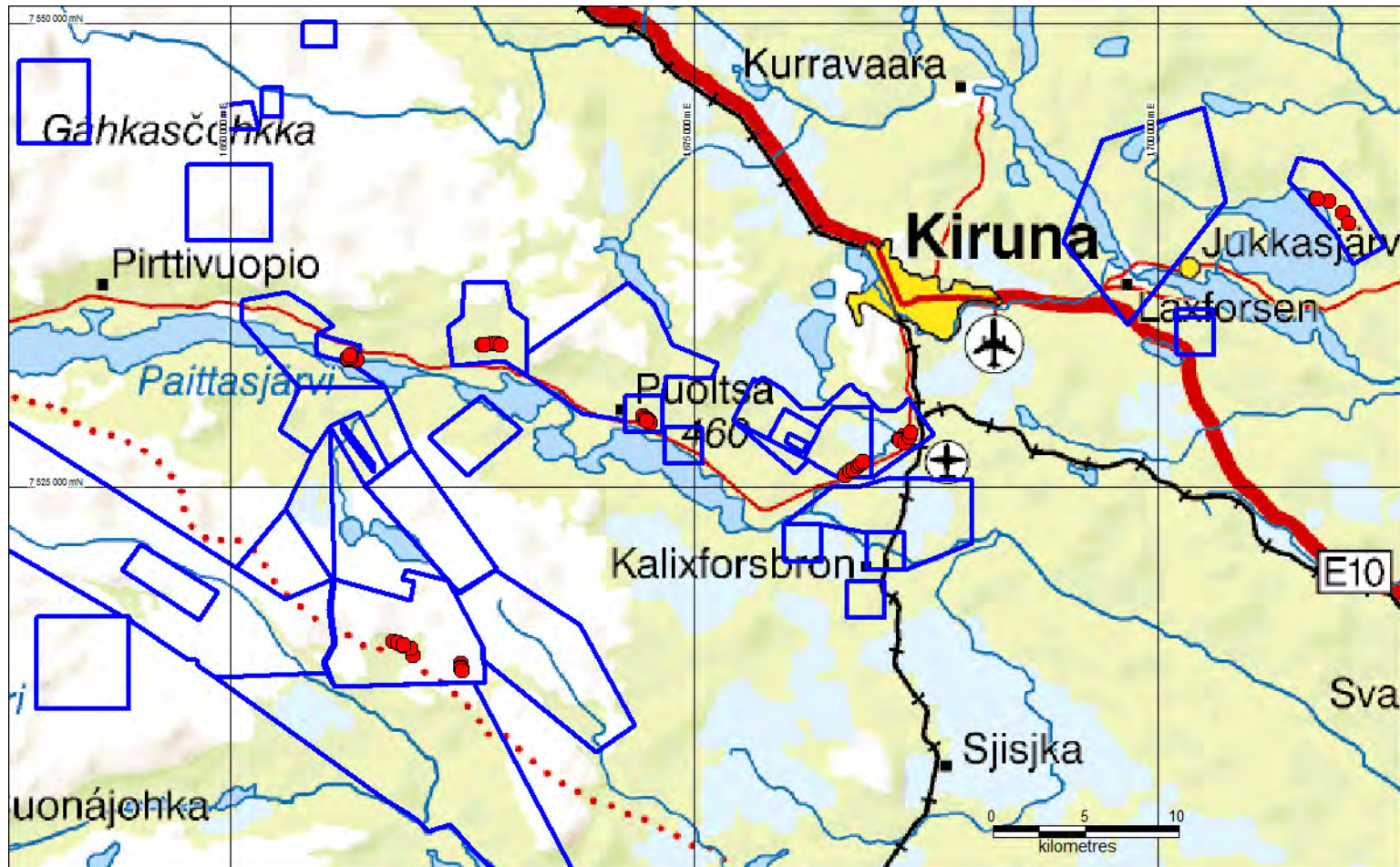
How did we come out, what were the results?

By Thomas Lindholm, GeoVista

The scopes of the project was to:

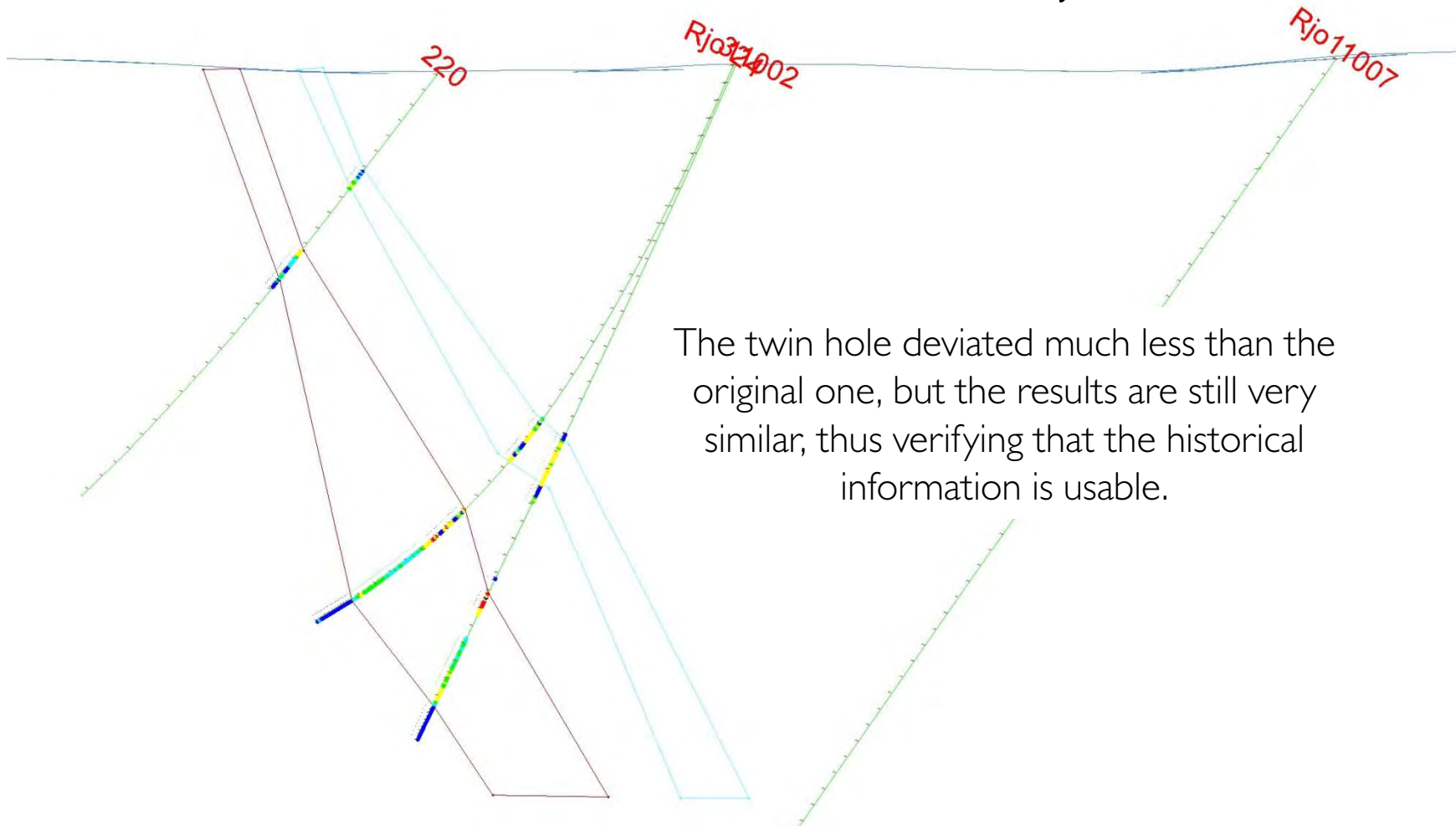
- Confirm the usability of historical information by twin hole drilling, re-survey of collar locations, re-logging old drill core etc.
- If possible, increase tonnage by drilling new holes and thus extending the size of the deposits.
- A corporate goal of 200-250 Mton of JORC classified mineral resources was set for end of July, 2011.

Drilling has been conducted at Renhagen, Harrejaure, Laukkujärvi, Vieto, Puoltsa, Rakkurijärvi, Rakkurijoki och Sautusvaara.



Evaluation of drilling results

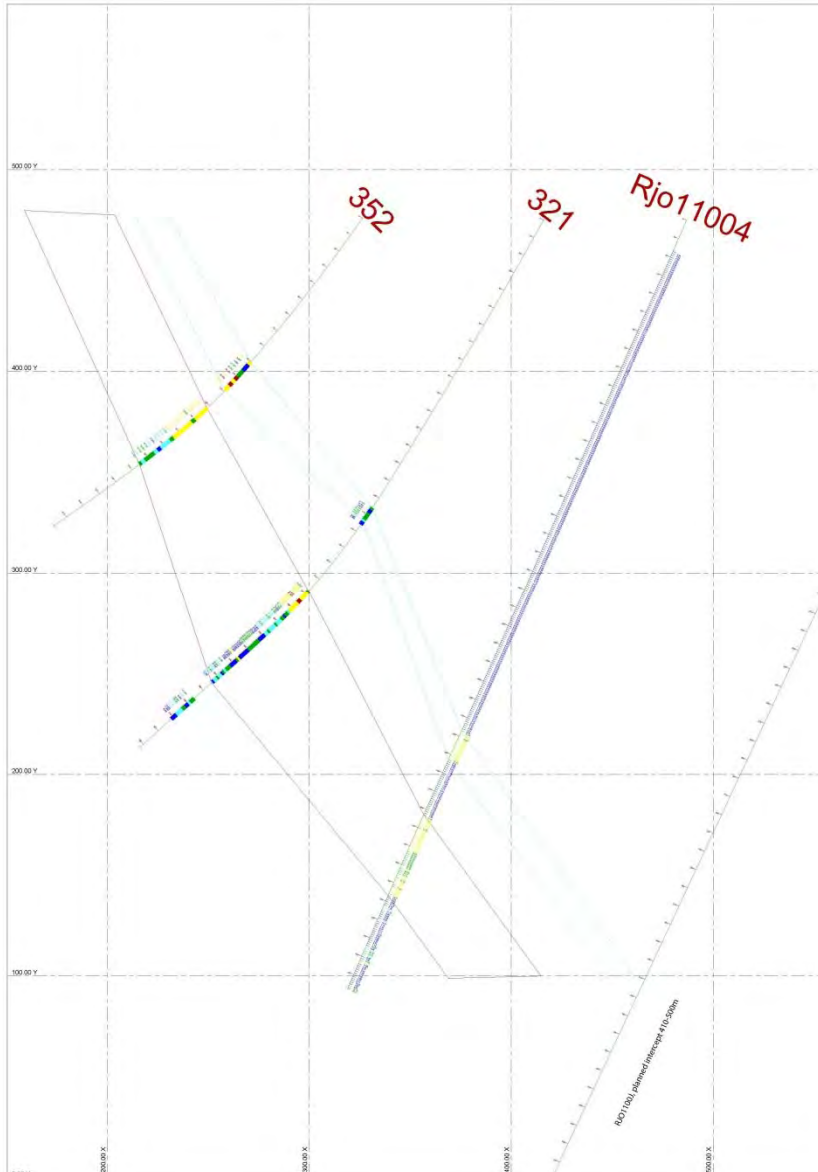
Example of twin hole on Rakkurijoki



The twin hole deviated much less than the original one, but the results are still very similar, thus verifying that the historical information is usable.

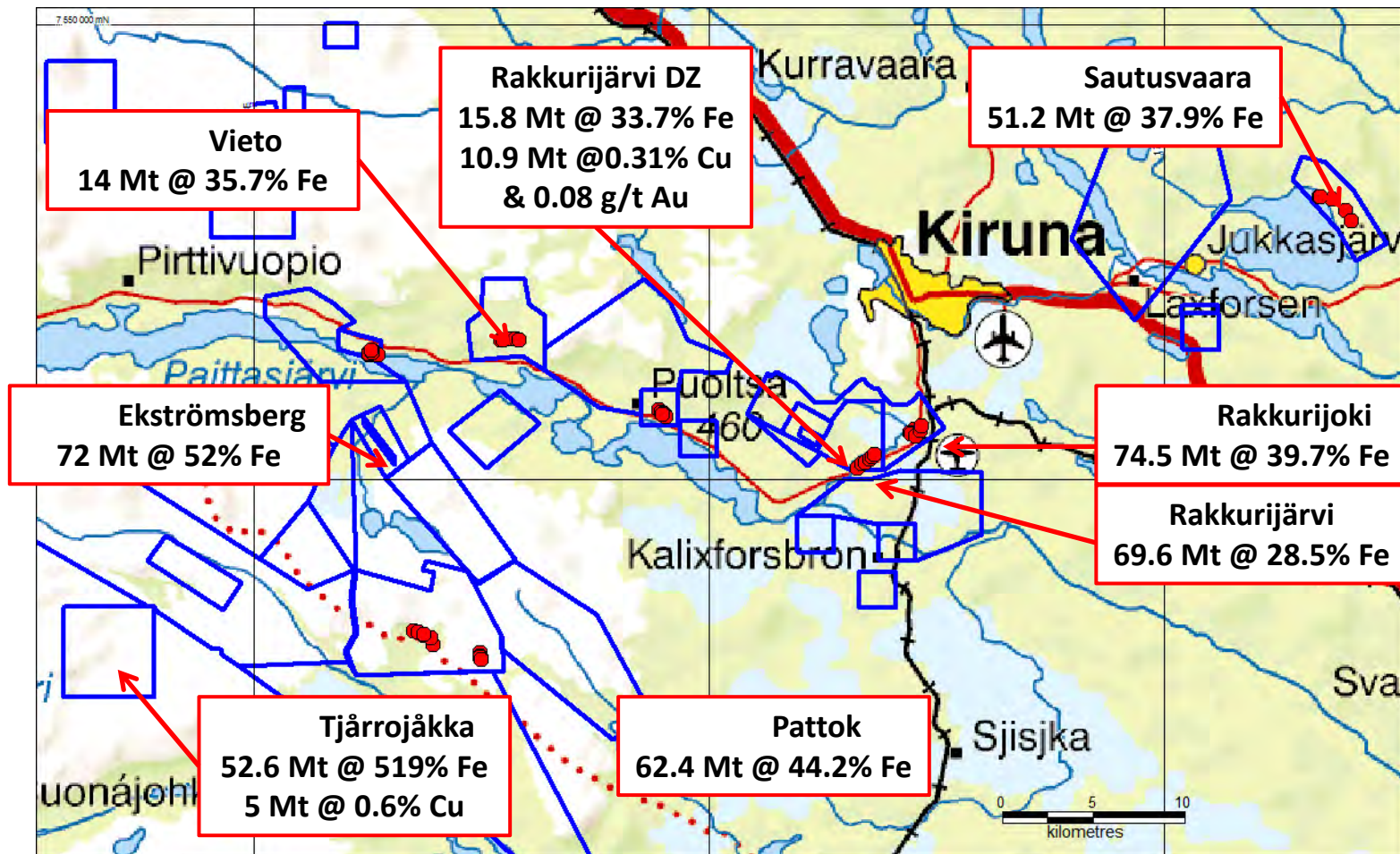
- All surveys are done using RTK GPS, providing a superior position control, normally with a "better than 10-15mm" as the maximum error.





- Drillhole Rjo11004 confirms the downward continuation of the deposit.

Refer full JORC resource table on next page

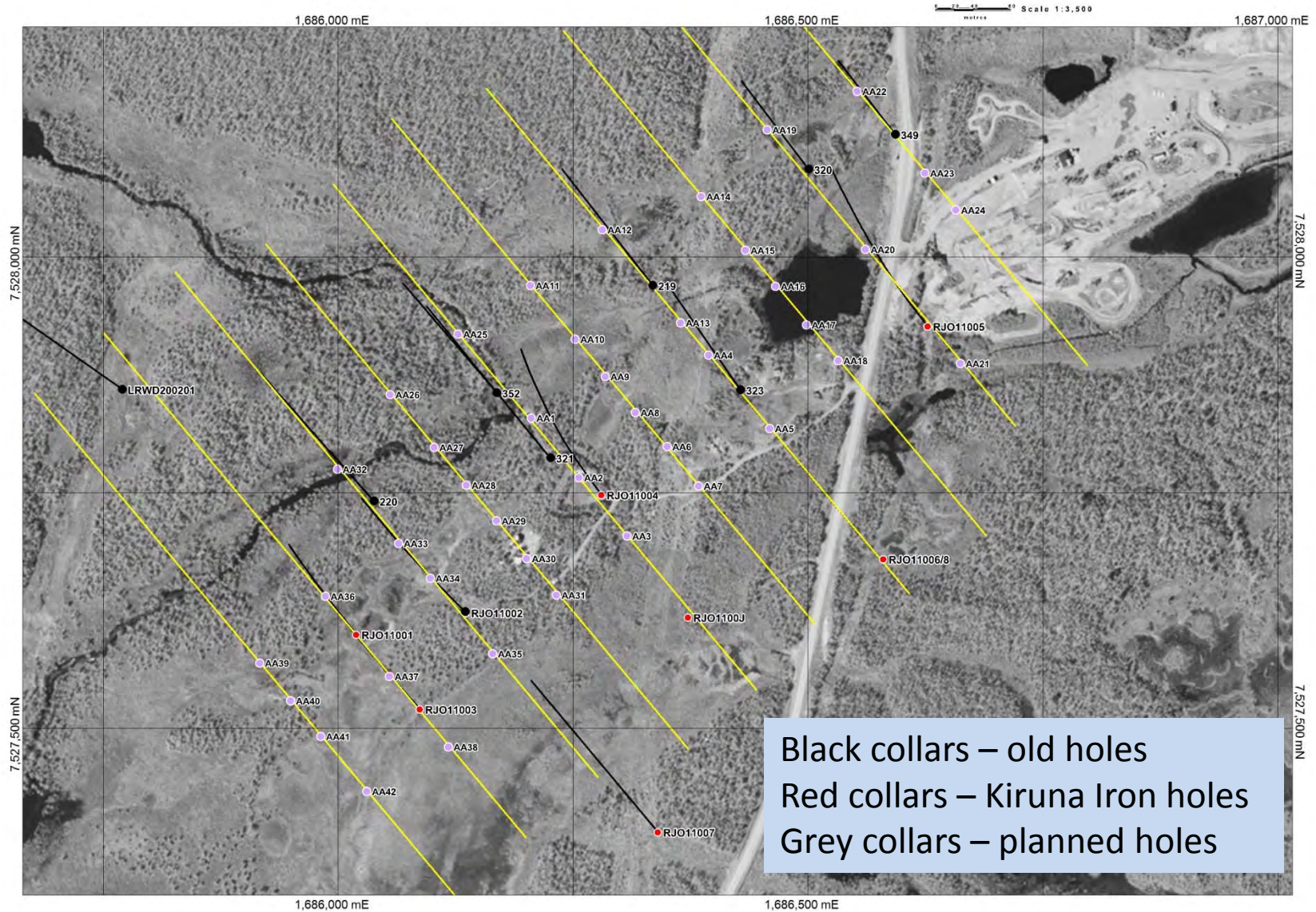


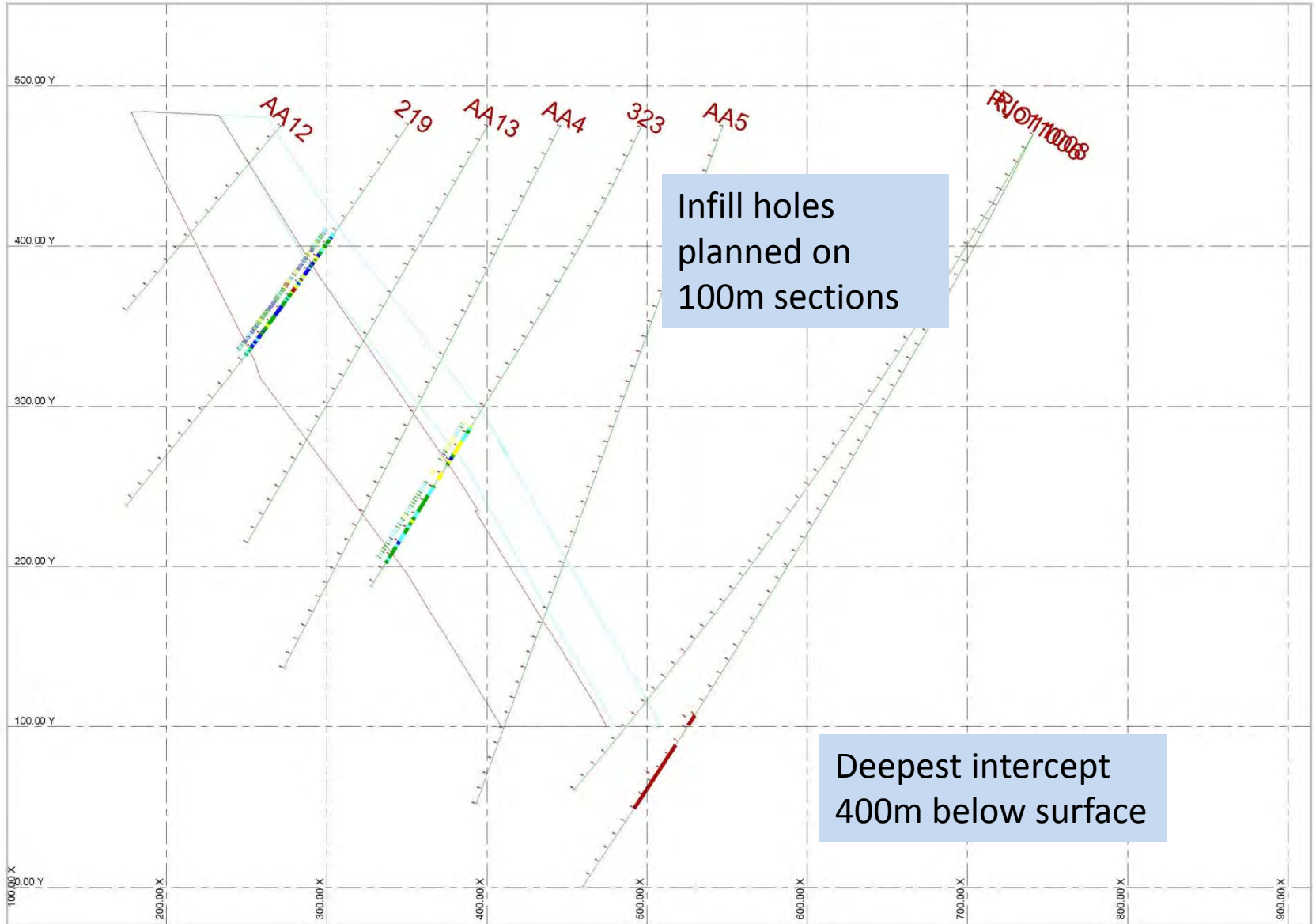
JORC Compliant Mineral Resource Tables				2011-07-27
Indicated				
Prospect	Mt	Fe (%)	P (%)	S (%)
Sautusvaara South	32.0	37.4	0.06	1.63
Sautusvaara North	11.4	39.7	0.09	0.44
Ekströmsberg	30.4	52.0	N.A.	N.A.
TOTAL	73.8	43.0	--	--
Inferred				
Prospect	Mt	Fe (%)	P (%)	S (%)
Rakkurijärvi	69.6	28.5	0.07	0.93
Rakkurijoki	74.5	39.7	0.28	0.89
Discovery Zone	10.9	38.7	0.05	0.95
Tributary Zone	4.9	28.6	0.05	1.08
Sautusvaara South	6.8	26.6	0.09	1.82
Sautusvaara North	1.0	44.8	0.05	0.46
Vieto	14.0	35.7	0.14	1.46
Ekströmsberg	41.6	52.0	N.A.	N.A.
Tjärrojåkka	52.6	51.0	N.A.	N.A.
Pattok	62.4	44.2	1.96	N.A.
TOTAL	338.3	39.0	--	--

JORC Compliant Exploration Targets		
Prospect	Tonnage range (Mt)	Grade range (% Fe)
<i>Puoltsa</i>	30-40	33-36
<i>Harrejaure</i>	10-20	40-45
<i>Laukkujärvi</i>	4-8	30-35
<i>Renhagen</i>	20-30	30-35
<i>Altavaara</i>	10-20	23-30
<i>Paljasjärvi</i>	40-60	30-40
<i>Leppäjoki</i>	5-8	35-45
<i>Tjåorika</i>	15-30	45-55
<i>Åkosjegge</i>	10-15	23-30
TOTAL	150-230	30-40

The JORC Exploration Targets have been subjected to diamond drill testing, ground geophysics and interpretation by the Geological Survey of Sweden reviewed by Mr Thomas Lindholm, of GeoVista AB. The potential quantity and grade of the exploration targets is conceptual in nature, there has been insufficient interpretation to define a JORC Mineral Resource and it is and it is uncertain if further interpretation will result in the determination of a JORC Mineral Resource.

- An Environmental Impact Assessment (EIA) has been initiated in the Rakkurijoki-Rakkurijärvi area.
- Metallurgical testwork has been initiated with material from drillcore.
- Further drilling, to upgrade resource classification is or will be planned shortly.





Competent Persons Statements

The information in this document that relates to JORC Exploration Targets is based on information reviewed by Thomas Lindholm of GeoVista AB, Luleå, Sweden acting as an independent “Competent Person”. Mr. Lindholm is a member of the Australasian Institute of Mining and Metallurgy (Member 230476). Mr Lindholm is qualified to be a Competent Person as defined by the JORC Code on the basis of training and experience in the exploration, mining and estimation of mineral resources of gold, base metal and iron deposits. Mr Lindholm consents to the inclusion in the report of the matters based on the information in the form and context in which it appears.

The mineral resource estimate for Rakkurijärvi, Rakkurijoki, Discovery and Tributary Zone is effective from 27 July 2011 and has been prepared by Mr Thomas Lindholm, MSc of GeoVista AB, Luleå, Sweden acting as an independent “Competent Person”. Mr Lindholm is a fellow member of the Australasian Institute of Mining and Metallurgy (Member 230476). Mineral resources of the Rakkuri iron deposits have been prepared and categorised for reporting purposes by Mr Lindholm, following the guidelines of the JORC Code. Mr Lindholm is qualified to be a Competent Person as defined by the JORC Code on the basis of training and experience in the exploration, mining and estimation of mineral resources of gold, base metal and iron deposits.

The mineral resource estimate for Ekströmsberg, Tjärrojåkka, and Pattok is effective from 22 July 2011 and has been prepared by Dr Christopher Wheatley of Behre Dolbear International Ltd, UK, acting as an independent “Competent Person”. Dr Wheatley is a member of the Institute of Materials Minerals and Mining (Member 450553). Mineral resources of the Ekströmsberg, Tjärrojåkka, and Pattok have been prepared and categorised for reporting purposes by Dr Wheatley, following the guidelines of the JORC Code. Dr Wheatley is qualified to be a Competent Person as defined by the JORC Code on the basis of training and experience in the exploration, mining and estimation of mineral resources of gold, base metal and iron deposits. Dr Wheatley consents to the inclusion in the report of the matters based on the information in the form and context in which it appears.

The mineral resource estimate for Vieto and Sautusvaara is effective from 26 July 2011 and has been prepared by Mr Geoffrey Reed of Minarco-MineConsult acting as an independent “Competent Person”. Mr Geoffrey Reed is a Member of the Australasian Institute of Mining and Metallurgy (CP)(Member 205422). Mineral resources of the Vieto, Sautusvaara have been prepared and categorised for reporting purposes by Mr Reed, following the guidelines of the JORC Code. Mr Reed is qualified to be a Competent Person as defined by the JORC Code on the basis of training and experience in the exploration, mining and estimation of mineral resources of gold, base metal and iron deposits. Mr Reed consents to the inclusion in the report of the matters based on the information in the form and context in which it appears.