DMT Consulting Ltd
International Mining Consultants

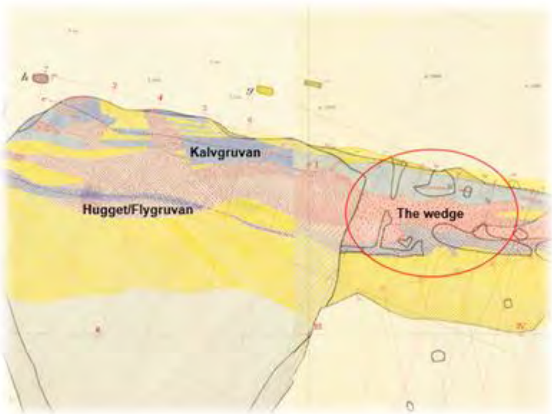
Mineral Resource Estimate

For the

Blötberget Iron Ore Project, Ludvika, Sweden

On behalf of

Nordic Iron Ore™



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1 EXECUTIVE SUMMARY

1.1 Introduction

DMT Consulting Ltd. ("**DMT**" or "**the Consultant**") was retained by Nordic Iron Ore ("**NIO**" or "**the Client**"), to prepare an independent Mineral Resource Estimate ("**MRE**" or "**the Study**") for the Blötberget Iron Ore Project ("**the Project**"), located near Ludvika, Sweden.

The purpose of this report is to update the existing MRE for the Project which was reported by DMT in April 2015.

Subsequently, in April 2016, NIO applied for an additional mining lease (Blotbergsgruva K nr 2) for the area immediately north east of the existing Blötberget mine licence area. This forms an extension to the mineralised trend of the 2015 defined Mineral Resources. The new mining licence application area, referred to as 'Guldkannan' falls within the existing Blotberget Nr 1 exploration permit area, and is adjoining and contiguous with the existing Blötberget mining lease (Blotbergsgruva K nr 1). The Guldkannan licence area contains the former (now abandoned) mining operation referred to as Guldkannan, which ceased iron ore production in 1979

This constitutes a material change in the Mineral Resources available to the Blotberget Iron Ore Project and has triggered this updated MRE.

The estimation of Mineral Resources has been prepared in compliance with the guidelines set out in the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves 2012 ("**the JORC Code 2012**").

NIO is a mining company aiming to reopen the main Ludvika mines - Blötberget and Håksberg, and resume iron ore production.

1.2 Technical Summary

1.2.1 Property Description & Location

The Blötberget Project is situated in Dalarnas County in central Sweden, approximately 500 m south east of the village of Blötberget, and near to the town of Ludvika.

The Project region is known as the Bergslagen District, famous for its very long mining and steelmaking history, with notable former and current production areas within this region.

1.2.2 Land Tenure

NIO currently holds 12 exploration permits, which together cover an area of 3,044.36 hectares ("**ha**"). NIO currently holds two mining concessions - Blötbergsgruva K nr 1 and Håksbergsgruva K nr 1, covering an area of 262.7 ha.

All areas, besides those covered by the Väsman concession and parts of the Håksberg concessions are so called "brownfield" sites and have previously been worked and contain abandoned mines.

NIO applied for a mining concession within the Blötberget area in October 2010 and it was granted in August 2011. The mining concession, which runs for 25 years with possibility of extension, implies the right of exploitation and utilisation of iron, rare earths, and apatite. The environmental permit for this Project was granted in June 2014.

The mining lease application, submitted in April 2016, for Blotbergsgruva K nr 2 (36.65 ha), the area immediately north east of, and contiguous with the existing Blötberget mine licence and is referred to as 'Guldkannan'. NIO is awaiting final approval of the mining licence by the relevant government authorities.

1.2.3 Local Infrastructure

Blötberget is located 2.5 km west of Route 50 and is directly accessible along well maintained asphalt roads.

Blötberget does not have its own railway station, however the main Gotenborg to Gävle line lies 2.5 km directly to the east of the Project.

The closest large town to Blötberget is Ludvika, which is located 12 km north east and has a population of approximately 14,500.

1.2.4 Climate & Physiography

The climate at the Project is classified as cold and temperate (sub-arctic or boreal), characterised by short, cool summers and long cold winters. Average annual precipitation is 713 mm and the average annual temperature is 4.6 °C.

The Project is located in an area dominated by arboreal forest. Generally, the local terrain consists of gently undulating hills, except for the area around Blötberget, which is predominantly flat and marshy. Elevation in the Project area varies between 150 and 250 m above sea level.

1.2.5 History

Mining and exploration in the Ludvika area has been active since the 1600's. The majority of this small scale mining was focused on iron production.

Blötberget originally operated as two separate mines from the early 1900s, the German owned Vulcanus "original" mine and the Swedish owned Blötberget "new" mine.

Blötberget started operations in 1944. After the Second World War, in 1949, the Vulcanus mine regained Swedish ownership and continued production until the mine closed in 1979. Since 1979, the deposit has been controlled by several companies through exploration leases, until NIO was formed in 2008.

Airborne and ground-based geophysical surveys over the Project area were carried out in the 1960s and 1950s respectively.

From 1942 until 1977, the deposits were systematically diamond drilled for definition and extension.

Most of the drillholes (~80 %) were collared from underground. In areas where historic mining was on-going or planned, regular ‘fan’ drilling was carried out. Longer holes were drilled from underground positions in cross cuts from the hanging wall, with only the drillholes probing the deeper, down dip parts of the deposit, drilled from surface.

A total of 456 drillholes have been drilled historically at Blötberget, totalling 50,270 m. The majority of this drilling is located in Blötbergsgruva K nr 1 or in the nearby surrounding area.

The mining company, Stora Kopparbergs Bergslags AB submitted a closure report to the Inspector of Mines at the cessation of mining activities in 1979. The ‘reserves’ (non-compliant) at that time were estimated to be 25 Mt at an average grade of 43 % Fe.

The final production achieved in 1979 at Blötberget was 400 Ktpa (thousand tonnes per annum).

The process plant handled up to a maximum of 415,000 tonnes of feed material per annum. Large changes in the proportion of magnetite/hematite concentrate are noted in the production over the five year period ahead of closure in 1979, and reflect the variability of the ore composition with respect to hematite and magnetite. Historically the recovery has varied between 76.3% and 85.6%. Mineral recovery appears to be greater when magnetite percentages are higher.

1.2.6 Geology

The Blötberget apatite-iron oxide deposit is located in the western part of the intensely mineralised Paleoproterozoic Bergslagen Province in south central Sweden.

The Province is dominated by several generations of intrusive rocks, which enclose inliers of metasedimentary and metavolcanic rocks. The metasedimentary and metavolcanic inliers are of great importance as they host an overwhelming majority of the more than 6,000 known metallic mineral deposits and prospects in the Province. These rocks have been subjected to multiple-phase deformation and metamorphism under mainly greenschist to amphibolites facies conditions.

The host rocks to the Blötberget iron mineralisation have traditionally been classified as belonging to the ”leptite formation”, i.e. mainly felsic to, more rarely, intermediate, regionally metamorphosed (c. 1.90–1.87 Ga) volcanic rocks.

The mineralisation at Blötberget is a so-called "apatite lake ore" which, besides the iron minerals magnetite and hematite, also contains the phosphorus mineral apatite.

The mineralised zone at Blötberget appears as a set of vertically narrow, elongated lenses dipping 50°–70° to the SE. Airborne geophysical surveys and historical drillholes indicate that mineralisation extends to a depth of at least 900 m below surface.

The Blötberget field consists of five mineralised bodies, from west to east, these are:

- Kalvgruvan (KALV);

- Flygruvan (FLY);
- Hugget & Betstamalmen (HUG); and
- Sandellmalmen (SAND).

Within the Guldkannan licence area (application pending) there are two mineralised areas, from east to west referred to as ;

- Guldkannan, the north easterly continuation of Sandellmalmen (SAND) and;
- Carslvard, thenorth easterly continuation of Hugget-Flygruvan (HUGFLY-NE).

The Blötberget deposit is referred to as a Kiruna type deposit although the exact origin is still disputed.

1.2.7 Exploration & Drilling

2009

At the start of NIO's ownership of the Project in 2009, Kopparberg Mineral AB carried out a detailed magnetometry survey over a limited part of the Blötberget area to assist with defining the geometry of the mineralisation and planning further exploration works.

2011

During 2011/12 Berg och Gruvundersökningar AB ("**BGU**") was engaged by NIO to log and sample historical archive cores that were stored at the SGU repository in Malå.

13 cores, totalling 5077.21 m were logged for geological and geotechnical data (for RQD), then photographed (dry and wet).

2012

In 2012, a 16 hole drill programme which included twinned drilling to confirm the quality of historical drilling data, as well as infill and step-out drilling was completed by NIO.

Drilling for this programme totalled 7,430 m.

A drilling programme was undertaken during the summer and winter of 2012 and was completed in November 2012. This 16 hole programme included twinned drilling to confirm the quality of historical drilling data, as well as infill and step-out drilling.

NIO completed 16 drillholes totalling 7,430 m of drilling. The NIO drilling in 2012 was carried out by the Swedish contractor, Drillcon Core AB, or by their Finnish subsidiary Suomen Malmi Oy ("**SMOY**") using Onram 1000 and 1500 drill rigs and wireline 56 methodology, the programme recovered 39 mm diameter drill core.

Three of this programme of holes were drilled into the Guldkannan area for a total of 397 metres.

One hole in the 16 hole programme, BB12015-MET, was drilled for the purposes of generating material for metallurgical sampling. To date, this has been the only hole drilled using oriented core.

No drillholes were water pressure tested during this drilling campaign.

2014

The 2014 NIO drilling programme was designed to investigate the area between Flygruvan/Kalvgruvan and Hugget and to infill the intermediate depth extension of Hugget in order to improve the confidence of the geological model.

13 drillholes, totalling 7,093 m, were drilled and one of the drillholes (BB_14-011) was drilled down-dip for geotechnical purposes. All holes were drilled with orientation information, and eight holes were subject to pump testing to provide information on the potential for water bearing fracture zones.

There was no additional drilling undertaken within the Guldkannan tenement during this phase of exploration drilling. Some of the drill hole data provided to DMT for the 2015 MRE has changed and / or been added to, which resulted in an update of the geological wireframe and a subsequent modification of the Blotberget Project Block Model, and a revised estimation of Mineral Resources within the Blotberget and (pending) Guldkannon licence areas.

1.2.7.1 Logging

The core from the 2012 and 2014 drill programmes was logged and sampled at NIOs preparation facilities in Grängesberg. The core storage, logging and sampling facilities were inspected by DMT and found to be clean, well-organised and provide suitable conditions for logging and sampling.

The core is inspected for mislabelling or depth inaccuracies, checked using a magnetic pen and subject to a UV lamp to detect presence of Scheelite (tungsten).

The cores orientation is then marked and the geologist logs the core in accordance with NIOs geological logging template and in accordance with industry standard procedures.

Core photography, point load testing, drill core structure orientation, geotechnical logging and classification complete the logging procedure.

1.2.8 Sampling & Analysis

The core from the 2012 and 2014 drill programmes was collected in the field by NIO's technicians or geologists and transported directly to the NIO core logging and sample preparation facilities in Grängesberg.

NIO compiled its own Sampling Quality Manual, which sets out procedures in accordance with industry best practice, relating to core handling, sampling, analysis and QA/QC procedures

Analyses for the 2012 and 2014 samples was carried out by ALS Global in Vancouver.

As part of the verification program, NIO has re-logged and re-assayed many of the located historical cores. In total, 45 drillholes from Blötberget were found in Malå and 15 at the former mine storage facility in Håksberg.

There has been re-logging of 31 of these cores (6036 m), 950 m of mineralisation has been re-sampled and re-assayed according to current industry practice and standards.

Recent re-analysis of the historical holes indicate that Fe has been under represented but is a consistent <15 Fe % error which means there is reasonable confidence levels in the historical analysis.

It should be noted that the three drillholes that were drilled into the pending Guldkannan mining lease area in 2012 which were re-logged and re-assayed to the same industry standard as those of the adjoining Blötberget area.

1.3 Mineral Resources

DMT applied only geological constraints and a grade of ~+15 % Fe to establish the mineralised wireframes and solids. Based on analysis of the available data, the internal waste and country rock was assigned a grade of 8 % Fe (total).

The total 'global' (geological) Mineral Resources for the Blötberget and Guldkannan Project areas are estimated at 72.76. Mt at a grade of 34.9. % Fe (Total) and 0.46 % P.

DMT subsequently applied preliminary mining and economic parameters and assumptions to the geological wireframe model to estimate a preliminary cut-off grade ("**COG**").

The total Measured and Indicated Resources estimated for the Blötberget Project (including the pending Guldkannan licence) at a COG of 25% Fe are, 55.1 Mt at a grade of 40.7 % Fe (Total) and 0.5 % P. (Table 1-1). Of these Measured and Indicated Resources, 54 % is magnetite and 46 % is hematite.

Table 1-1 Measured and Indicated Resources for the Blötberget (including Guldkannan) Iron Ore Project - April 2017

Fe Cut-off % Fe	Resource Category	Volume Mm^3	Tonnage Mt	Density t/m^3	Fe %	Magnetite %	Hematite %	Magnetite proportion %	Hematite proportion %	Phos. %
25	Measured	11.9	45.4	3.8	41.7	34.5	23.8	0.58	0.42	0.48
	Indicated	2.7	9.6	3.6	36.2	16.9	34.3	0.34	0.66	0.51
	Measured + Indicated	14.5	55.1	3.8	40.7	31.4	25.7	0.54	0.46	0.49
	Inferred	3.3	11.8	3.6	36.1	15.9	35.1	0.33	0.67	0.51

Notes:

1) JORC 2012 definitions were followed for estimating Mineral Resources;
2) Mineral Resources are estimated at a cut-off grade of 25 % Fe;
3) Mineral Resources are estimated using a five year historical average price of US$ 90 per tonne (Source: IndexMundi.com); and
4) Figures may not total due to rounding.

1.4 Conclusions

The Blötberget apatite-iron oxide deposit is located in the western part of the intensely mineralised Paleoproterozoic Bergslagen Province in south central Sweden.

The deposits in the neighbouring area occur along a ~40 km long, broad zone. This zone of mineralisation is the third largest iron ore deposit in Sweden by production, only outnumbered by the giant Kirunavaara and Malmberget iron ores in Norrbotten, northern Sweden.

Airborne geophysical surveys and historical drillholes indicate that mineralisation extends to a depth of at least 900 m below surface.

The Blötberget field consists of five mineralised bodies, from west to east, these are: Kalvgruvan ("**KALV**"); Flygruvan ("**FLY**"); Hugget ("**HUG**") and Betsta ("**The Wedge**"); Sandell ("**SAND**"). The adjoining Guldkannan field consists of two mineralised zones which, from east to west, are referred to as Guldkannan ("SAND") and Carlsvard ("HUGFLY-NE") which are along trend (north – east) continuations of the Blötberget SAND and HUGFLY zones respectively.

NIO applied for a mining concession within the Blötberget area in October 2010 and it was granted by the Mining Inspectorate of Sweden in August 2011. The mining concession, which runs for 25 years with possibility of extension, implies the right of exploitation and utilisation of iron, rare earths, and apatite. The environmental permit for this Project was granted in late June 2014.

The Hugget and Kalvgruvan/ Flygruvan zones had previously been mined out from near-surface to the 200 m and 240 m levels respectively. The units dip towards the southeast at between 50° and 55° in the near-surface mined-out areas, and flatten at depth to ~25°.

A drilling programme was undertaken by NIO during the summer and winter of 2012 and was completed in November 2012. This 16 hole programme included drilling to confirm the quality of historical drilling data, as well as infill and step-out drilling. NIO completed 16 drillholes totalling 7,430 m of drilling. Three of the 16 drill hole programme were located in the Guldkannan licence area.

The 2014 drilling programme was designed to investigate the area between Flygruvan/Kalvgruvan and Hugget (formally known as "the Wedge" or Betsta area) and to infill the intermediate depth extension of Hugget in order to improve the confidence of the geological model. 13 drillholes, totalling 7,093 m, were drilled.

The Wedge was successfully explored during the 2014 drilling programme and, as a result, Kalvgruvan and Hugget/Flygruvan ("**HUG/FLY**") have now been shown to form continuous zones of mineralisation.

Mine maps and historical drilling data have been collected from various sources and digitised, where possible. Drill core from historical exploration drilling in the Blötberget project area has been recovered, re-logged and re-analysed. No recent (since 2012) additional drilling has yet been undertaken by NIO within the Guldkannan licence area.

DMT was provided with a comprehensive set of historical reports and data which have been collated and used in conjunction with data collected more recently by NIO in order to estimate and report Mineral Resources for the Blötberget Project in accordance with JORC standards.

In the resource development programme of Blötberget during 2012 and 2014, NIO completed industry standard QA/QC programmes to ensure the data is reliable and suitable for resource estimation. The drill density of the resource is adequate for the purpose and is reflected in the JORC compliant resource category classifications of Measured, Indicated and Inferred Mineral Resources.

DMT has relied heavily upon the information provided by NIO, however DMT has, where possible, verified data provided independently during the site visits.

DMT was able to overlay license information on the Mineral Resource estimate area to confirm that the deposit is within NIO's license. DMT has not undertaken a legal review of the licences and assume that all the required licences are in place.

The geology of the deposit is fairly well understood and DMT has constructed a wireframe geological model for the Blötberget and Guldkannan deposit based upon a combination of logged lithologies, analytical and Saturation Magnetisation Analyser ("**SATMAGAN**") magnetite results, which has allowed the splitting of the deposit into geological domains comprising of magnetite-rich material of KALV and hematite-rich material of HUGFLY and SAND,HUGFLY-NE and SAND.

DMT has undertaken a statistical study of the data, which demonstrates adequate splitting of the data into single iron population domains, and undertaken a geostatistical study to investigate the grade continuity and to provide grade estimation parameters for Ordinary Kriging.

Geovia Surpac solid and block models were created using all of the available geological and sample analytical test data has defined an iron ore resource. At this stage of the investigation most of the mineral resources of Blötberget have been classified into the Measured and Indicated categories.

Some of the drill hole data provided to DMT for the 2015 MRE has changed and / or been added to. Specifically, a number of drillholes used in the database for the 2015 MRE were shown to have incorrect survey data. In addition, several drillholes close to the boundary pillar between the Blotberget and Guldkannan licences have now been included in the database for this 2017 MRE. Equally, NIO has been able to gain access to additional sample data (primarily drillhole intersections) within the Guldkannon licence area that was also not available for the 2015 MRE. Consequently, there have been significant changes to the available data base which has led to a wire frame update and the development of a revised Block Model and MRE for 2017.

However, due to the paucity of drillhole intersections and supporting sample data, it is only possible to categorise small areas of the Guldkannan deposit as Indicated Resources. Nonetheless, this has added significantly to the Project global Mineral Resource base, and provides NIO with an opportunity to include additional Reserves into their mine plan should the Guldkannan mining permit application be approved.

This Resource estimate includes recommendations on location and drillhole density that will be required to improve the Indicated and Inferred Resource categories in the pending Guldkannan licence area.

DMT has estimated the total Measured and Indicated Resources for the Blötberget Project (including Guldkannan Mineral Resources) to be 55.1 Mt at a grade of 40.7 % Fe (Total) and 0.49 % P, at a preliminary COG of 25 % Fe. The magnetite-hematite ratio of the total resource is 54:46.

1.5 Recommendations

For the current MRE, it is considered that there is only limited additional geological information that can be gained from further, expensive, surface based drilling programmes at Blötberget. The bulk of the upper levels of the Blötberget deposit that have been identified as part of the proposed mine plan are within the Measured Resource category, therefore the confidence in the model overall would not benefit from more drilling.

However, surface drilling for rock mechanical / structural and or metallurgical information for detailed mine planning should be considered. There is an indication in the current drillhole information and geological level mapping that there may be structural (fissures, joint and /or faults) that exist in the 'Wedge' area and vicinity that potential may impact on the rock quality and hydrogeology locally.

The Guldkannan deposit does not currently have the robust data base that exists for Blötberget, and additional surface collared drilling is recommended. The Guldkannan deposit Resource estimate cannot be regarded with the same level of confidence as Blötberget. However, several areas, such as the ‘halo’ surrounding the known mined-out Guldkannan deposit, and the down dip parts of the identified “SAND” mineralised zone which was drilled on a reasonably regular interval from the 320L footwall exploration drive, and therefore warrant local elevation of the Resource category to Indicated.

Further hydrogeological investigations on existing drill holes should be undertaken, it is considered that insufficient data exists on the hydrological and hydrogeological conditions for underground mining.

Definition and grade control drilling should commence as soon as there is access to the underground areas after dewatering. This close spaced drilling is required to support the transfer of Measured Resources into (Proven) Ore Reserves. The underground based drilling should follow a similar approach to that used historically, with a fan pattern of close spaced drilling into the mine blocks. Wider spaced and deeper, down – dip, drilling collared from hanging wall positions to provide increased confidence in the areas containing Indicated Resources.

Should the pending application for the adjoining Guldkannan licence area be approved, then consideration should be given to a surface drill programme within this licence area to further define and improve on the confidence levels of geological model by improving the sample data quality and quantity, generating samples for metallurgical test work to assess the actual magnetite : hematite ore characteristics and to provide valuable geotechnical and hydrogeological information to the mine model for Guldkannan, where there appears to be a paucity of such data.

2 INTRODUCTION

DMT Consulting Ltd. (“**DMT**” or “**the Consultant**”) was retained by Nordic Iron Ore (“**NIO**” or ”**the Client**”), to prepare an independent Mineral Resource Estimate (“**MRE**” or “**the Study**”) for the Blötberget Iron Ore Project (“**the Project**”), located near Ludvika, Sweden.

The purpose of this report is to update the Mineral Resource Estimate for the Project.

The estimation of Mineral Resources has been prepared in compliance with the guidelines set out in the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves 2012 (“**the JORC Code**”).

2.1 Nordic Iron Ore

NIO is a mining company aiming to reopen the main Ludvika mines - Blötberget and Håksberg, and resume iron ore production.

Deposits are located along an approximately 25 km long vein field of iron-rich deposits that run from Blötberget in the south to the north section of the Håksberg field. For the first time in history, this mineralised field is controlled by a single stakeholder, NIO, through a total of 12 exploration permits, two mining concessions and one pending mining licence application..

2.2 Terms of Reference

DMT was retained in 2014 by NIO to prepare a full technical report on the status and development of the Blötberget Iron Ore Project. In order to fulfil the requirements of the technical report, an updated Mineral Resource Estimate was required in accordance with an internationally accepted Mineral Resource reporting code (JORC -2012). Subsequent to the issuance of the Blötberget MRE, prepared by DMT in 2015, NIO have made an application, which is currently pending, for an adjoining, contiguous area to the north east of the existing Blötberget mining lease (Blötbergsgruva K nr 1).This adjoining (pending) mining lease area (Blötbergsgruva K nr 2) is referred to as Guldkannan .

This 2017 MRE and report supercedes the 2015 DMT prepared estimate to take into account the additional Mineral Resources of the Guldkannan licence area. However, until the GuldK mining licence receives appropriate approval, none of the identified Resources within the GuldK boundary can be incorporated into any NIO mine plan at this stage.

This MRE will form a standalone report.

2.3 Sources of Information

Initial site visits were carried out by DMT Principal Geologist , Mr Tim Horner CGeol P.Geo. on 14/08/2014 and 15/08/2015 in which the core storage and logging facilities in Grängesberg were inspected. Several drill sites were observed and some surface (historic open pit) locations were viewed where it was proposed to recover bulk sample material.

Discussions were held with senior technical personnel from NIO.

Mr Florian Lowicki Pr.Sci.Nat Geol. (400425/13; SACNASP), DMT's Resource Geologist, visited the NIO Ludvika site offices on five separate occasions between September 2014 and January 2015 to review the data acquisition procedures applied to the drilling programme and the database. Technical discussions relating to the on-site mineralogical testing and the geological model were held with Thomas Lindholm (GeoVista), Michael Setter and Emma Bäckström (NIO Geologists).

Subsequent to NIO's mining lease application of the (pending) GuldK licence area, further data base share and follow – up teleconferencing and technical discussions have been held in late 2016 / early 2017 between the NIO and DMT technical teams.

The individuals responsible for this report have extensive experience in estimating and evaluating mineral resources and are members in good standing of appropriate professional institutions and hence are Qualified Persons ("**QPs**") under the terms of JORC.

Neither DMT nor any of its employees and associates employed in the preparation of this report have any beneficial interest in NIO or in the assets of NIO. DMT will be paid a fee for this work in accordance with normal professional consulting practice.

The documentation reviewed, and other sources of information, are listed at the end of this report in Section 14 - References.

2.4 Units & List of Abbreviations

Units of measurement used in this report conform to the metric system. All currency in this report is stated in United States Dollars ("**USD**") unless otherwise noted.

Table 2-1 List of abbreviations

Abbrv.	Description	Abbrv.	Description
°	Degrees	m^2	square metre
°c	degrees Celsius	m^3	cubic metre
%	Percent	m^3/hr	cubic metres per hour
<	less than	m^3/t	cubic metres per tonne
>	greater than	Ma	million years
attrib.	Attribute	mag	magnetite
BCM	bank cubic metres	magsus	magnetic susceptibility
BGU	Berg och Gruvundersökningar AB	masl	metres above sea level
CAPEX	capital expenditure	mm	millimetre
Cm	centimetre	MOP	mine operation period
COG	cut-off grade	MRE	mineral resource estimate
Conc	concentrate	Mt	million metric tonnes
DGRF	definitive geomagnetic reference field	Mtpa	million metric tonnes per annum

Abbrv.	Description	Abbrv.	Description
DMT	DMT Consulting Limited	m/min	metres per minute
DMT	dry metric tonnes	m/s	metres per second
DSCO	drill core structure orientation	N	north
DTM	digital terrain model	NIO	Nordic Iron Ore
E	East	OK	ordinary kriging
EIA	environmental impact assessment	OPEX	operating expenditure
ESIA	environmental & social impact assessment	OREAS	Ore Research and Analysis Australia
EMP	environmental management plan	P	phosphorous
Fe	Iron	QA/QC	quality assurance / quality control
FLY	Flygruvan	REE	rare earth element
G	Gram	ROM	run of mine
Ga	billion years	RQD	rock quality designation
GPS	global positioning system	RTK	real time kinetic
Ha	Hectare	S	south
HCl	hydrochloric acid	S	sulphur
HUGFLY	Hugget-Flygruvan	SAND	Sandell (Blötberget licence)
SAND-	Guldkannan (Guldkannan licence)	HUGFLY-NE	Carlsvard
ICP-AES	inductively coupled plasma–atomic emission spectroscopy	SATMAGAN	saturation magnetisation analyser
IEC	International Electrotechnical Commission	SEK	Swedish Krona
IOCG	iron oxide copper gold (deposit)	SG	specific gravity
ISO	International Organisation for Standardisation	SGU	Swedish Geological Survey
JORC	Joint Ore Reserves Committee	SiO_2	silica dioxide
KALV	Kalvgruvan	SOP	standard operating procedure(s)
Kg	Kilogram	TGA	thermo gravimetric analyser
Km	Kilometre	t/m^3	tonnes per cubic metre
km^2	square kilometres	tonnes	metric tonnes
ktpa	kilo (1,000) metric tonnes per annum	ToR	terms of reference
kV	Kilovolt	US$	United States Dollar
LIMS	low intensity magnetic separation	UV	ultra violet
LOI	loss on ignition	W	west
LOM	life of mine	XRF	x-ray fluorescence
M	Metre		

3 RELIANCE ON OTHER EXPERTS

This report has been prepared by DMT, for NIO.

The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to DMT at the time of preparation of this report,
- Assumptions, conditions, and qualifications as set forth in this report, and
- Data, reports, and other information supplied by NIO and other third party sources.

For the purpose of this report, DMT has relied on ownership information provided by NIO. DMT has not researched property title or mineral rights for the Project and expresses no opinion as to the ownership status of the property.

4 PROPERTY DESCRIPTION & LOCATION

4.1 Location

The Blötberget Project is situated in Dalarnas County in central Sweden, approximately 500 m south east of the village of Blötberget, and near to the town of Ludvika. Sweden's largest city, Stockholm, is located to the South East, within driving distance along Route 66 and E18 (228 km). The country's second largest city, Göteborg, to the South West is within driving distance along Route 50 and E20 (400 km).

The Project region is known as the Bergslagen District, famous for its very long mining and steelmaking history, with notable former and current production areas within this region including the Grängesberg iron ore mine, Zinkgruvan sulphide mine, Garpenberg sulphide mine and Falun sulphide mine. Ludvika is located at the southern shore of Väsman lake at an elevation of around 157 m above sea level ("**masl**").

Figure 4-1 Location Map

Source: Google Maps

4.2 Land Tenure

The Blötberget area was historically divided into six fields based on the old mining concessions, namely:

- Kalvgruvan;
- Flygruvan;

- Betsta;
- Hugget;
- Sandell; and
- Guldkannan.

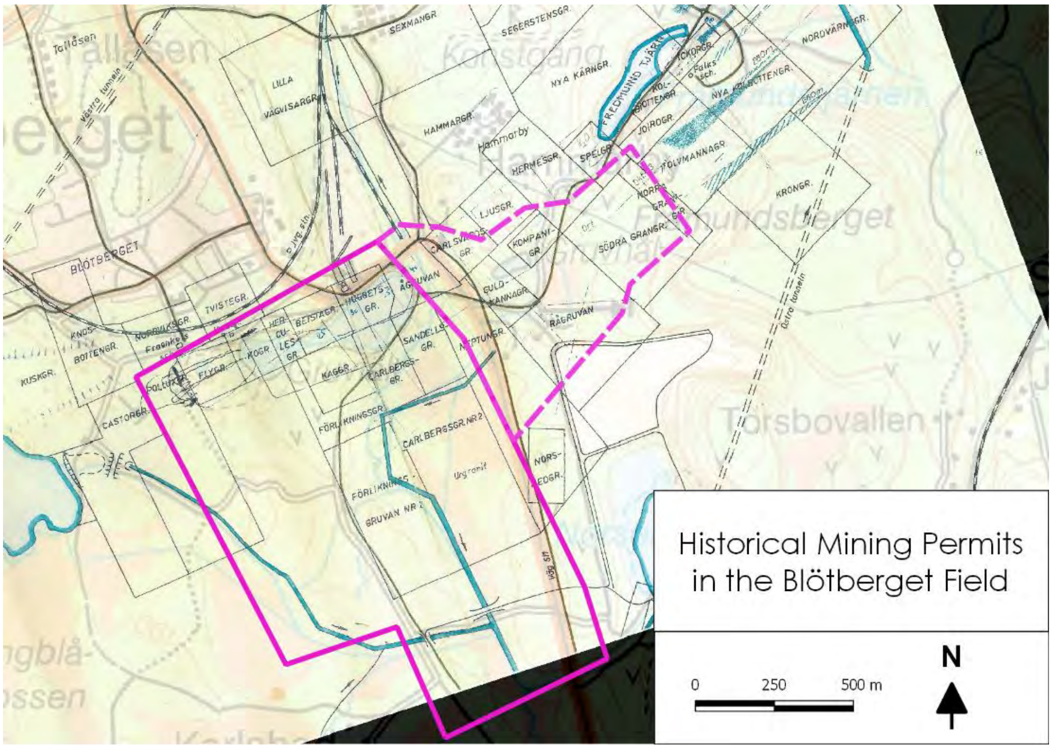

Figure 4-2 Historical, current (solid magenta) and pending (broken magenta) mining concessions – Blötberget and Guldkannan

Source: NIO

NIO currently holds 12 exploration permits, which together cover an area of 3,044.36 hectares ("**ha**"). NIO also holds two mining concessions - Blötbergsgruva K nr 1 and Håksbergsgruva K nr 1, covering an area of 262.7 ha. Nordic also have a pending mining lease application for a contiguous area, Blotbergsgruva K nr 2 (36.65 Ha), referred to by Nordic as the 'Guldkannan' licence.

All areas, besides those covered by the Väsman concession and parts of the Håksberg concessions are so called "brownfield" sites and have previously been worked and contain abandoned mines.

NIO applied for a mining license within the Blötberget area in October 2010 and was granted an application by the Mining Inspectorate of Sweden in August 2011. The mining concession, which runs for 25 years with possibility of extension, implies the right of exploitation and utilisation of iron, rare earths, and apatite. The environmental permit for this concession was granted in late March 2014. The licence locations and descriptions are shown in Table 4-1 and Figure 4-3.

In addition to the one exploitation concession, NIO has four exploration licenses within the Blötberget area.

Table 4-1 Mining and Surface Licences

Deposit / Area	Diary number	Licence ID	Status	Expiration Date	Area ha	Concession / Licence Points	Northing SWEREF99 TM	Easting SWEREF99 TM
Blötbergsgruva K nr 1	2010001141	-	Granted	30/08/2036	126.40	Mining concession for Iron, Apatite and Lanthanum	6664712	504156
Blötberget nr 1	2007000066	2007:148	Granted	29/05/2017	255.85	Exploration concession for Iron	6666399	505525
Blötberget nr 2	2007000114	2007:167	Granted	07/06/2017	421.25	Exploration concession for Iron	6663778	503957
Blötberget nr 3	2010000564	2010:100	Granted	16/06/2017	215.70	Exploration concession for Iron	6665561	503493
Främundsberget nr 1	2008000970	2008:222	Granted	25/09/2016	156.03	Exploration concession for Iron	6665881	506148
Blötbergsgruva K nr 2	2016000339	-	Applied for	-	38.65	Mining concession for Iron, Apatite , Lanthanum, Scandium and Yttrium	6665312	504721

Source: NIO

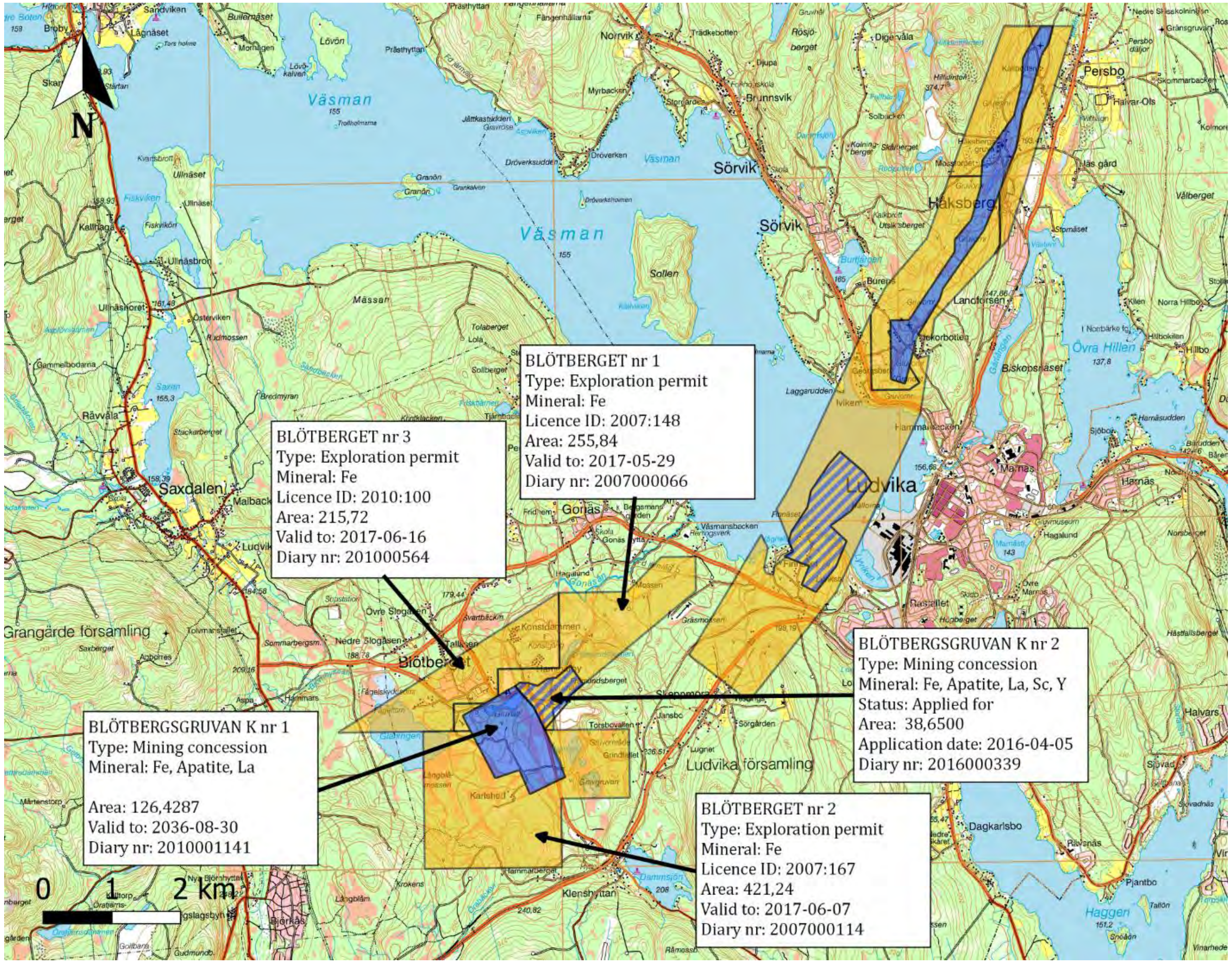

Figure 4-3 Licences Map

Source: NIO

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE & PHYSIOGRAPHY

5.1 Accessibility

Blötberget is located 2.5 km west of Route 50 and is directly accessible along well maintained asphalt roads.

5.2 Climate

The climate at the Project is classified as cold and temperate (sub-arctic or boreal), characterised by short, cool summers and long cold winters.

There is significant precipitation throughout the year, with an average annual precipitation of 713 mm. The driest month is March with an average of 35 mm of precipitation. Most precipitation falls in August, with an average of 87 mm for the month.

The average annual temperature is around 4.6 °C. The warmest month of the year is July with an average temperature of 16.1 °C. The coldest month is February, when the average temperature is -5.6 °C. The average temperature fluctuation throughout the year is 21.7 °C.

The cold climate at the Project site has the potential, but is unlikely to, affect surface operations during the winter months, should the mine become operational.

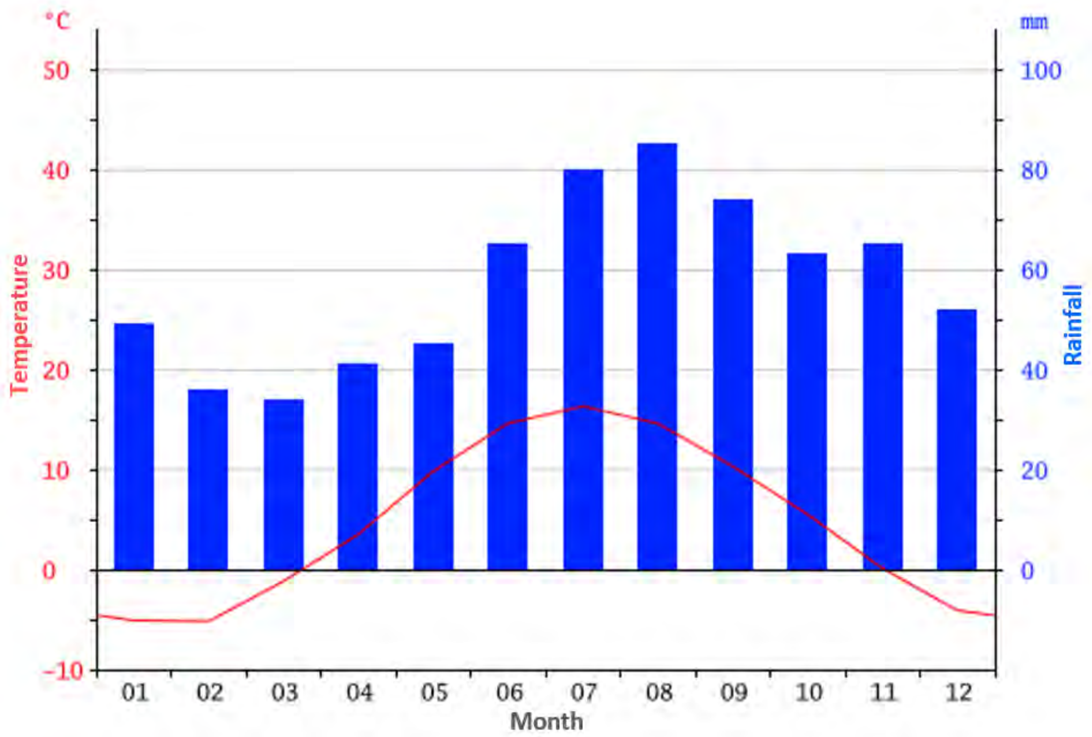

Figure 5-1Climate data (Ludvika)

Source: http://en.climate-data.org

5.3 Local Resources

The closest large town to Blötberget is Ludvika, which is located 6 km north east along Route 50. Ludvika has a population of approximately 14,500 and population density of 15.5/km^2 as of 2012 (*Urbistat.it, 2015*). Ludvika offers general services including medical care, telecommunications, banking, housing, hotels, vehicle repair and schooling.

The local community has a 7.8 % unemployment rate, lower than the Swedish average of 8.0 % (*Ekonomifakta, 2014*). The multinational engineering company ABB has manufacturing facilities in Ludvika for power transformers, capacitors and equipment for power transmission. ABB, as well as Sandvik and Atlas Copco are major employers in the area.

5.4 Infrastructure

5.4.1 Road

The national highway, Route 50, which runs north-south, passes close to the Project.

5.4.2 Rail

Blötberget does not have its own railway station, however the main line lies adjacent to the Project. This line is the main Northern Swedish railway from Gotenborg to Gävle which primarily runs parallel to route 50. There is also a railway station in Grängesberg, 9.7 km to the South West of Blötberget.

The railway that passes through Ludvika and close by the Project, offers connections to three port towns/cities namely; Gävle (180 km) and Oxelösund (270 km) at the Baltic Sea and Lysekil (410 km) on the Swedish west coast.

5.4.3 Air

The nearest airport with domestic flights to and from Arlanda International Airport is Dala Airport, located in the neighbouring town Borlänge, approximately 55 km northeast of Ludvika.

5.4.4 Power

The electrical power required for mining and milling operations will be sourced from the main power line (50 kV), operated by VB-Kraft, which lies approximately 1 km from Blötberget, but passes into the planned industrial area.

5.4.5 Water

Water for the industrial areas and process plant can be sourced from nearby lakes.

5.5 Physiography

The Project is located in an area dominated by arboreal forest.

In general, the local terrain consists of gently undulating hills, except for the area around Blötberget, which is predominantly flat and marshy. The elevation in the Project area varies between 150 and 250 masl.

5.6 Surface Rights

The agreements fully in place are those with the landowner of the water rights for the mine (for dewatering), necessary before the mining concession rights are granted.

Access has been agreed with the landowner to allow the building of the sedimentation ponds, required for dewatering.

Currently, NIO does not have final agreement for all the industrial areas or the tailings dams. However, discussions and agreements are pending commitments for further investment and advancement of the Project.

Importantly, all the arrangements for the development of the project and the surface rights are now covered by the Mining Laws. In the event of disputes, the Government representatives of the mining law can either arbitrate an agreement or, in extreme cases, expropriation can be enforced if agreement cannot be achieved through negotiations.

6 HISTORY

6.1 Previous Ownership

Mining and exploration in the Ludvika area has been carried out in different periods since the 1600's. The majority of this small scale mining was focused on iron production.

Blötberget originally operated as two separate mines from the early 1900s, the German owned Vulcanus "original" mine and the Swedish owned Blötberget "new" mine. Each operated with separate hoisting shafts between 1950 and 1966.

Blötberget started operations in 1944 by sinking the new shaft to the 300 m level and building the new Central Plant. After the Second World War, in 1949, the Vulcanus mine regained Swedish ownership under Stora Kopparberg and continued production until the mine closed in 1979. Since the mine closed in 1979, the deposit has been controlled by several companies through exploration concessions, until NIO was formed in 2008.

1900	Bergverks AB Vulcanus starts large-scale mining operations
1944	Stora Kopparberg Bergslags AB begins preparations for mining in the nearby mining district. The Bergslag shaft (BS) is sunk and the modern industrial site is established
1949	SStora Kopparberg Bergslags AB buys the Vulcanus mine from Flyktkapitalbyrån (Flight Capital Agency)
1950–1966	The mining area is integrated, both the Vulcanus mine and Bergslag shafts are utilised. Annual production reaches about 400 kilo tonnes of crude ore and 220 kilo tonnes of dressed ore products
1968–1975	The BS shaft is sunk to the 570 metre level, the BS ore skip is upgraded to an annual capacity of 600 kilo tonnes and the new plant comes into operation in December 1975
1978	SSAB is formed and Stora Kopparberg Bergslags AB hands over the Blötberget mine
1979	Mining operations cease
1980	Permits and mining rights are returned to the state
2007	New exploration permits are applied for and awarded
2008	**The permits are transferred to Nordic Iron Ore**

Figure 6-1 History of Blötberget

Source: www.nordicironore.se

Figure 6-2 Historic Blötberget workings (for Section A-B see Figure 6-6)

Source: NIO

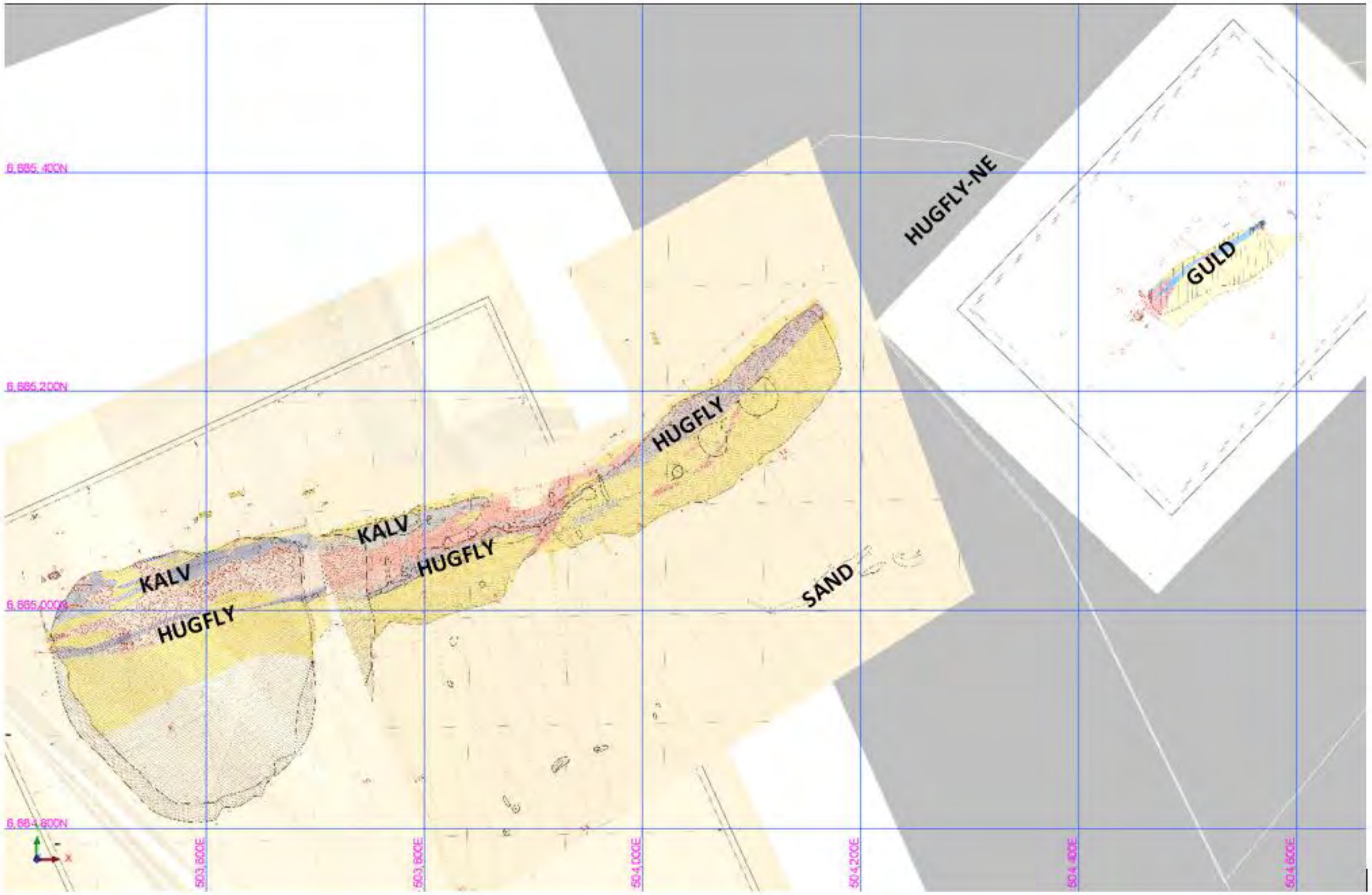

Figure 6-3 Historic Blötberget and Guldkannan workings for Blötbergsgruva K nr 1 and K nr 2

6.2 Exploration

6.2.1 Airborne Geophysical Surveys

The Geological Survey of Sweden ("**SGU**") performed regional airborne geophysical surveys over the area. In the 1960's, an airborne magnetometry and gamma spectrometry survey was completed. This was carried out with 250 m line spacing at a height of 30 to 60 m. The resultant map shows measured variations in the magnetic total field after the Earth's magnetic reference field (DGRF 1965.0) was subtracted. . The map provides information on lithological variations and structures in the bedrock at the surface and at depth. Shifts in anomaly pattern can detect faults and their relative movements. The information has been used for geological mapping and prospecting, and is particularly useful in areas where large parts of the bedrock is covered by soft soils and water, a common occurrence in this part of southern Sweden. The information is stored in the SGU database.

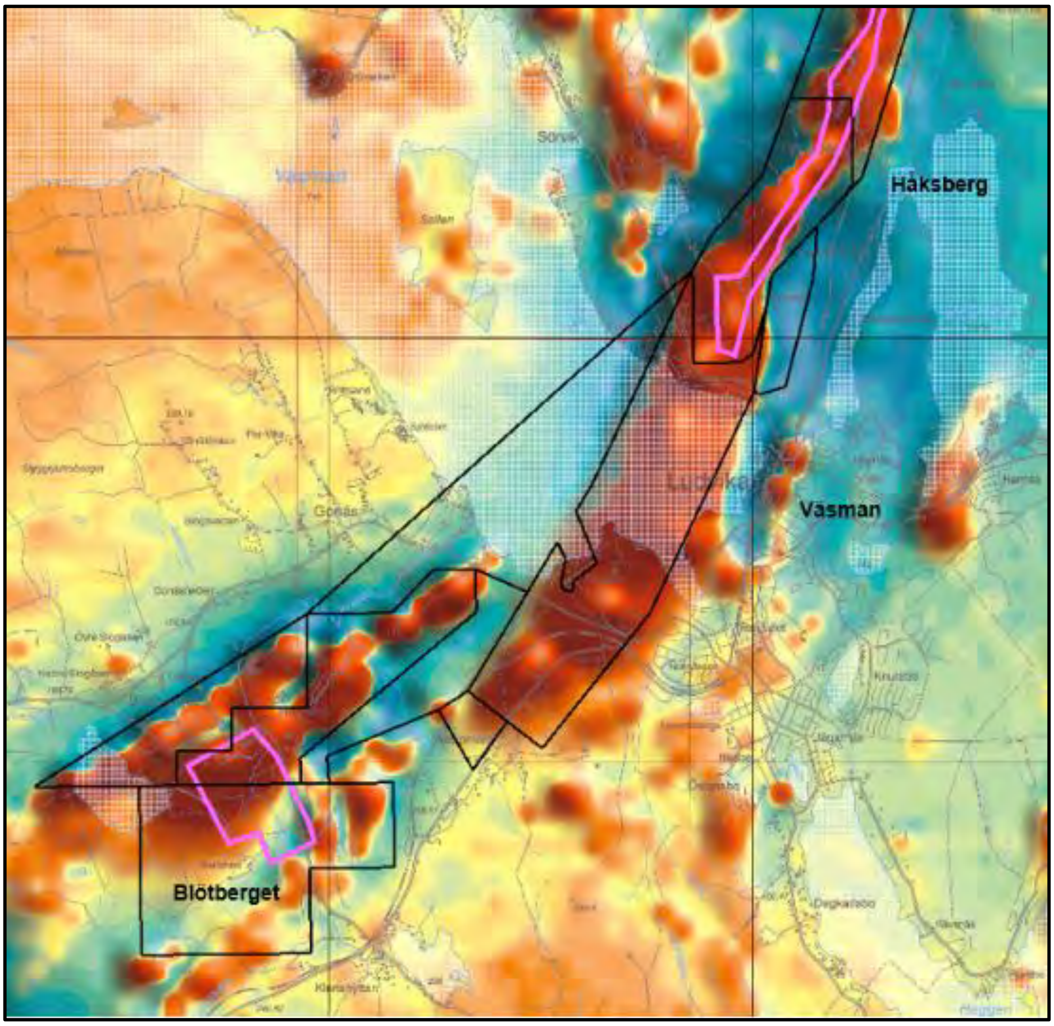

Figure 6-4 SGU airborne geophysical survey (showing currently approved Mining Concessions).

Source: NIO

6.2.2 Ground Geophysical Surveys

A ground magnetic anomaly survey of the Vulcanus and Blötberget project areas was conducted in 1950 by ABEM geophysics, on behalf of Stora Kopparberg. The results of this survey assisted in focussing historical drilling campaigns.

In 1967 Terratest (now owned by ABEM) reinterpreted the existing data, as illustrated in Figure 6-5.

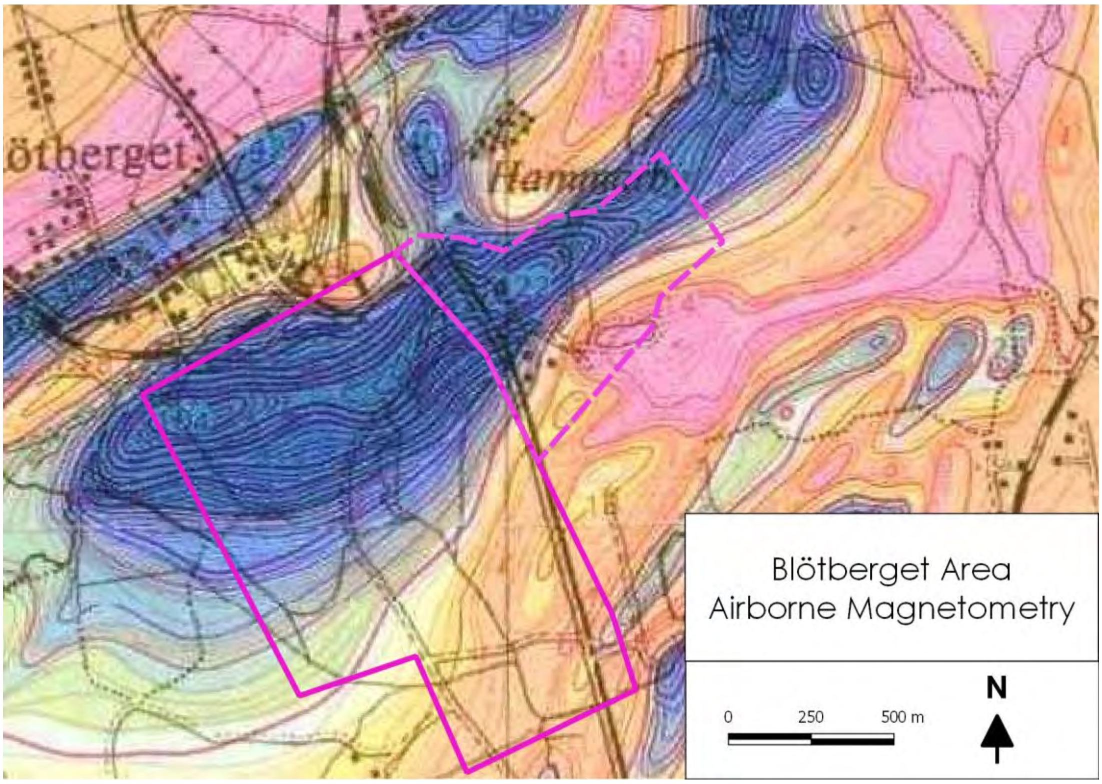

Figure 6-5 Terratest magnetic anomaly map showing current and pending (broken Magenta line) mining concessions

Source: NIO

6.2.3 Historical Drilling

From 1942 until 1977, the deposits were systematically diamond drilled for definition and extension.

In areas where mining was on-going or planned, regular drillhole fans, spaced 30 m apart, were drilled from underground positions in drifts. Deeper parts of the deposits were investigated with wider spaced drilling (~100 m). Most of the drillholes (~80 %) are collared underground in both the hanging and footwalls, and in some cases, mineralised zones. All of these drillholes had varying dips and azimuths. Only the drillholes probing the deeper, down dip parts of the deposit, were drilled from the surface.

The deeper drillholes, drilled in the late 1960's and early 1970's, were initially drilled with 52 mm core with step down to 32mm core and then 22mm core in the deeper parts of the hole. Drilling has been carried out in the past by contractors as well as by the mining companies themselves.

A total of 456 drillholes have been drilled historically at Blötberget, totalling 50,270 m. The majority is located in one of the two concessions or in thenearby adjoining areas

All digitised historical drillholes either have locations and surveys in mine maps, or in supplementary documentation. Where possible, collars have been located in the field and verified by NIO.

Average recoveries for these drillholes have not been recorded. In the majority of cases when re-logging of the available historical cores using current standard procedures was carried out, it was noted that most core loss was not recorded. In cases where it had been recorded, it was often not mentioned in the accompanying geological log and only on the actual core box. NIO does not have access to many of the historical cores as they have either been destroyed or not yet located. Daily drilling reports and hole status reports were historically not used or they have been mislaid or destroyed.

Mine maps and historical drilling data have been collected from various sources (including the Mining Inspectorate, a division of SGU) and digitised where possible. Drill core from historical exploration drilling in the Blötberget project area has been recovered at the core storage facility at the SGU in Malå, along with additional drill core found in buildings on the former mine sites.

In total, 45 drillholes from Blötberget were found in Malå and 15 at the former mine storage facility in Håksberg. 41 of these holes (6,884.83 m) have been re-logged, 1,047.75 m of mineralised material has been re-sampled and re-assayed according to current best industry practice and standards. This included mineralised core that had not been sampled historically as it was considered too low grade when assessed visually. Approximately 5-10 m mineralised core was sampled adjoining the historical sampled sections.

Figure 6-6 Typical condition of recovered historical core and core boxes

Source: NIO

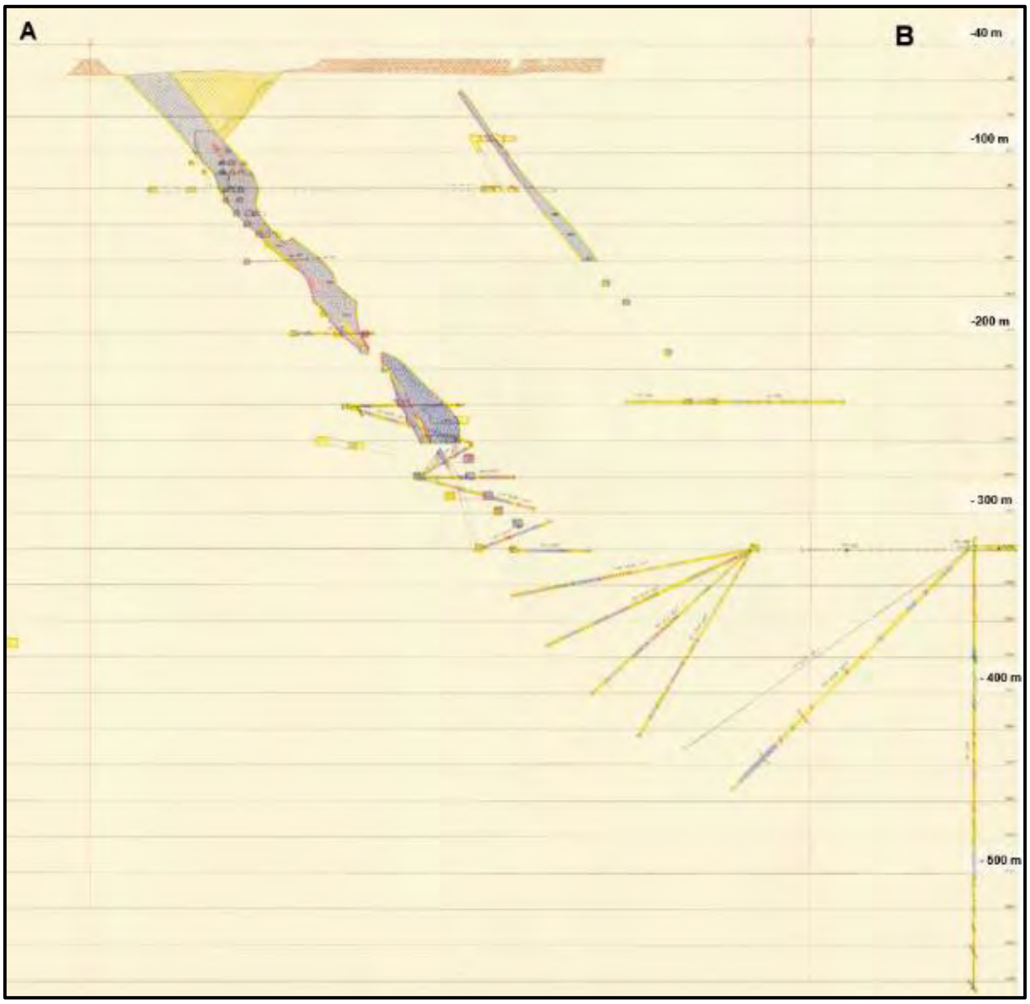

Figure 6-7 Cross section showing old Blötberget workings and delineation drilling

Source: NIO

6.2.3.1 Downhole Geophysics & Survey

Most of the deeper drillholes, drilled in the late 1960's and early 1970's, to investigate the depth extension of the iron ore zone, were logged with a magnetometer as well as deviation surveyed by Terratest AB.

Historically, only holes longer than 150-200 m were surveyed for deviation on a regular basis. To date, NIO has only been able to locate downhole deviation survey records for holes drilled from surface. These records have been entered into the database and some have been reconstructed from trace plots of the respective holes.

6.3 Historical Estimates

The mining company, Stora Kopparbergs Bergslags AB submitted a closure report to the Inspector of Mines at the cessation of mining activities in 1979. The 'reserves' (non-compliant) were estimated to be 25 Mt at an average grade of 43.5 % Fe.

6.4 Historical Production

The final production capacities achieved in 1979 at Blötberget was 400 Ktpa (thousand tonnes per annum).

Operations ceased at Blötberget in June 1979. A total of 19 Mt of material, averaging 37 % Fe Total, 0.55 – 0.8 % P and <0.01 % S, was reportedly extracted.

The information in the tables below was extracted from reports given to “Bergmästarämbetet”, Falun between the years 1973 and 1979. Figures for 1979 are up until the end of June (six months), as this is when the Blötberget mine closed.

Little historical data for mine production at the Guldkannan / Kompani Mine has been uncovered by NIO, but some information indicates the Guldkannan open – pit was developed during a high iron ore demand period to the Domnarvets smelter. In order to maintain supply demand a decision was made to start exploitation of Kompani and Guldkanne –mines. In 1974 49,000t of ore was produced and in 1975 some 34,000t, however, the open pit was closed in September 1975 and allowed to flood .

DMT has generated a model of the Guldkannan open pit and abandoned underground (mined out) areas from some surface and historical working level plans (Figure 6-9 and 6-10).

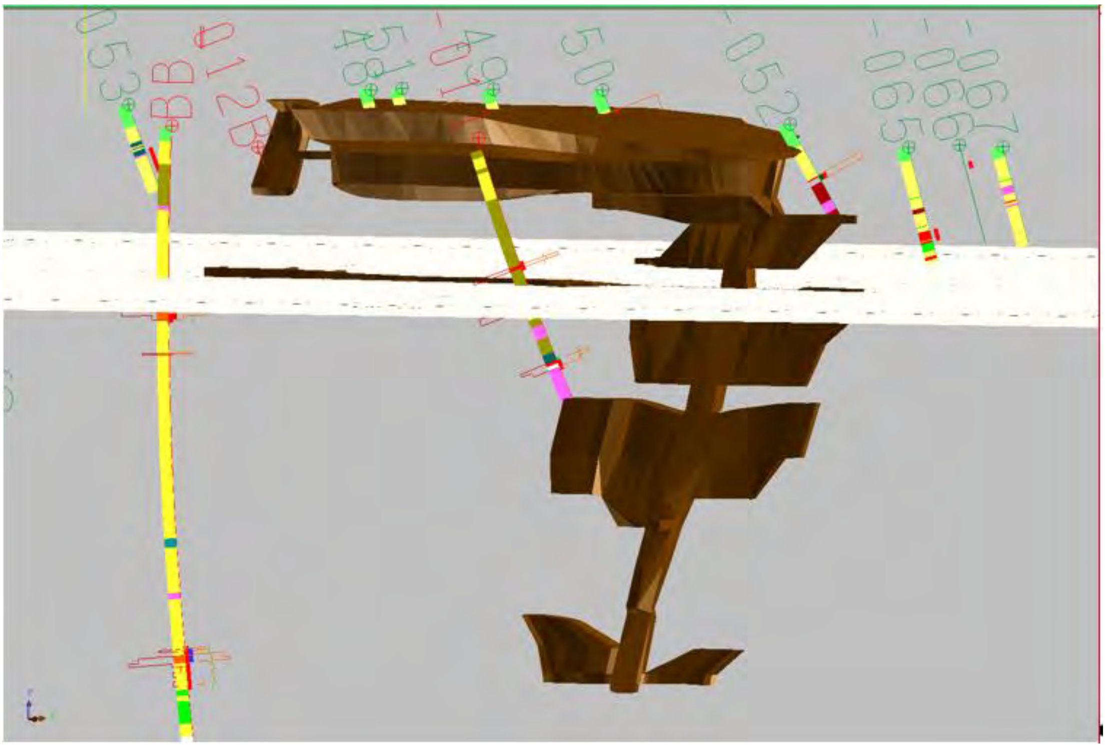

Figure 6-8 3D model view from EastE showing old Guldkannan open – pit and underground workings and one example of historic level plan map georeferenced in 3D.

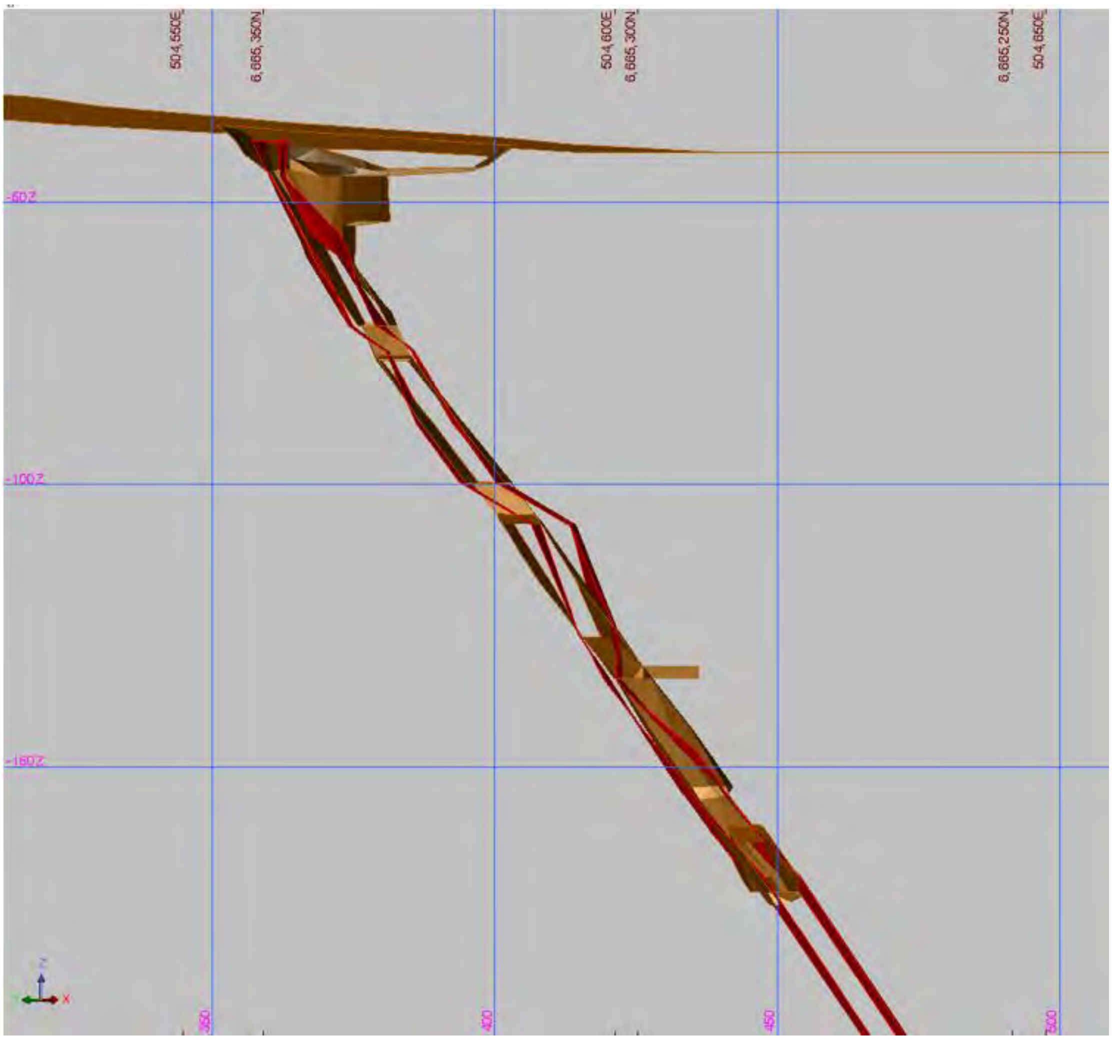

Figure 6-9 Section view from SE showing old Guldkannan open – pit and underground workings and wireframe of SAND.

6.5 Adjacent Properties

Within a couple of kilometres northeast of Blötberget and Guldkannan there are three smaller abandoned underground mines, namely:

- Frädmundsberg (mined up to 1944);
- Gonäs (mined up to 1919)
- Våghalsen/Finnäset (mined up to 1919)

The old workings at Finnäset became the investigation centre for the Väsman deposit, with a shaft sunk to 280 m.

Adjacent to the Våghalsen/Finnäset area, and located under Väsman Lake in the direction of Håksberg, lies the Väsman exploration target. This has previously been investigated via an exploration drift at the 300 m level, driven from a separate shaft at Finnäset.

Table 6-1 Historic feed and processed grades

Year	Feed % Fe	Magnetite Concentrate				Hematite Concentrate				Fe-Recovery %
		w %	Assay			W %	Assay			
			% Fe	% SiO_2	% P		% Fe	% SiO_2	% P	
1973	37.2	23.2	68.2	2.9	0.1	25.9	60.9	6.8	0.48	85.6
1974	37.3	22.9	68.3	2.66	0.11	25.6	60.2	6.85	0.56	85.4
1975	35.7	20.4	67.5	2.4	0.11	24.4	59.9	7.52	0.57	80.4
1976	37.1	14.8	67.4	3.87	0.07	28.9	61.1	6.71	0,50	76.3
1977	37.1	22,4	67.2	3.06	0.09	25.7	61.3	5.91	0,54	83
1978	34.5	18.2	68	2.93	0.1	25.5	61.7	5.93	0,46	83
1979	34.5	18,5	68.5	2.93	0.06	27,4	61.7	5.93	0,35	83
Average (excl. 1979)	**36.5**	**20.3**	**67.8**	**2.97**	**0.1**	**26**	**60.9**	**6.62**	**0.52**	**82.3**

Source: NIO

Table 6-2 Combined historic processed grades

Year	Combined Magnetite-Hematite Conc. (calculated)				
	W %	% Fe	% P	Proportion magnetite	Proportion hematite
1973	49,1	64,3	0,30	47,3	52,7
1974	48,5	64,0	0,35	47,2	52,8
1975	44,8	63,4	0,36	45,5	54,5
1976	43,7	63,2	0,35	33,9	66,1
1977	48,1	64,0	0,33	46,6	53,4
1978	43,7	64,3	0,31	41,6	58,4
1979	45,9	64,4	0,23	40,3	59,7
Average (excl. 1979)	**46,3**	**63,9**	**0,33**	**43,7**	**56,3**

Source: NIO

Note: Production between 1973 and 1979 was from the Hugget and Betsta deposits

The process plant handled up to a maximum of 415,000 tonnes of feed material per annum. This maximum was achieved in 1976 when an additional shift was added, increasing the operational time from 5,058 to 5,824 hours (66% utilisation grade).

To summarise the figures in the table (excl. 1979):

- Feed Fe varied between 34.5 and 37.3 %
- Fe grade in magnetite concentrate is quite consistent: 67.2 and 68.3 % (Δ 1.1)
- Fe grade in hematite concentrate varies between 59.9 and 61.7 % (Δ 1.8)
- P-grade variation in magnetite concentrate from 0.07 to 0.11 %P
- P-grade variation in hematite concentrate from 0.46 to 0.57 %P
- Proportion of magnetite and hematite concentrate has varied from 35:65 to 50:50 (rounded figures) over the six year period 1973 to 1978. (Avr.= 44:56)
- Fe-recovery has varied between 76.3 and 85.6 %

Tests were carried out with the SALA HGMS in 1976 which showed that P-grade in hematite concentrate could be decreased to 0.22-0.27 % P without grinding and to 0.12-0.14 % P with grinding. No further details are known.

The magnetite primary concentrate was reground and passed to a second stage of LIMS (to reduce P).

In 1978, a decision was taken to stop mining of the Sandell magnetite ore body due to high content of phosphorus combined with the need for fine grinding

Large changes in the proportion of magnetite/hematite concentrate are noted in the production over the five year period ahead of closure in 1979, and reflect the variability of the ore composition with respect to hematite and magnetite.

The recovery has varied between 76.3 to 85.6%. Mineral recovery appears to be greater when magnetite percentages are higher.

7 GEOLOGICAL SETTING & MINERALISATION

7.1 Regional Geology

Regional geological maps over the area have been published by the SGU. Publications include a colour version of map sheet Ludvika AF158, 1:50 000 (1986), a more detailed map in scale 1:50 000 (2005).

The Blötberget apatite-iron oxide deposit is located in the western part of the intensely mineralised Paleoproterozoic Bergslagen Province (“**the Province**”) in south central Sweden.

The Province is volumetrically dominated by several generations of intrusive rocks, which enclose inliers of metasedimentary and metavolcanic rocks. The Province has been described as being an extensional, continental back-arc, magmatic example. The metasedimentary and metavolcanic inliers are of great importance as they host an overwhelming majority of the more than 6,000 known metallic mineral deposits and prospects in the Province.

These rocks have been subjected to multiple-phase deformation and metamorphism under mainly greenschist to amphibolites facies conditions. Pre-Svecofennian rocks are not exposed but various isotopic, petrogenetic, and trace element studies of supracrustal rocks imply that an older Proterozoic, possibly in part Archaean, felsic basement underlies the western part of the Province.

The deposits in the neighbouring area occur along a ~40 km long, broad zone This zone of mineralisation is the third largest iron ore deposit in Sweden by production, only outnumbered by the giant Kirunavaara and Malmberget iron ores in Norrbotten, northern Sweden.

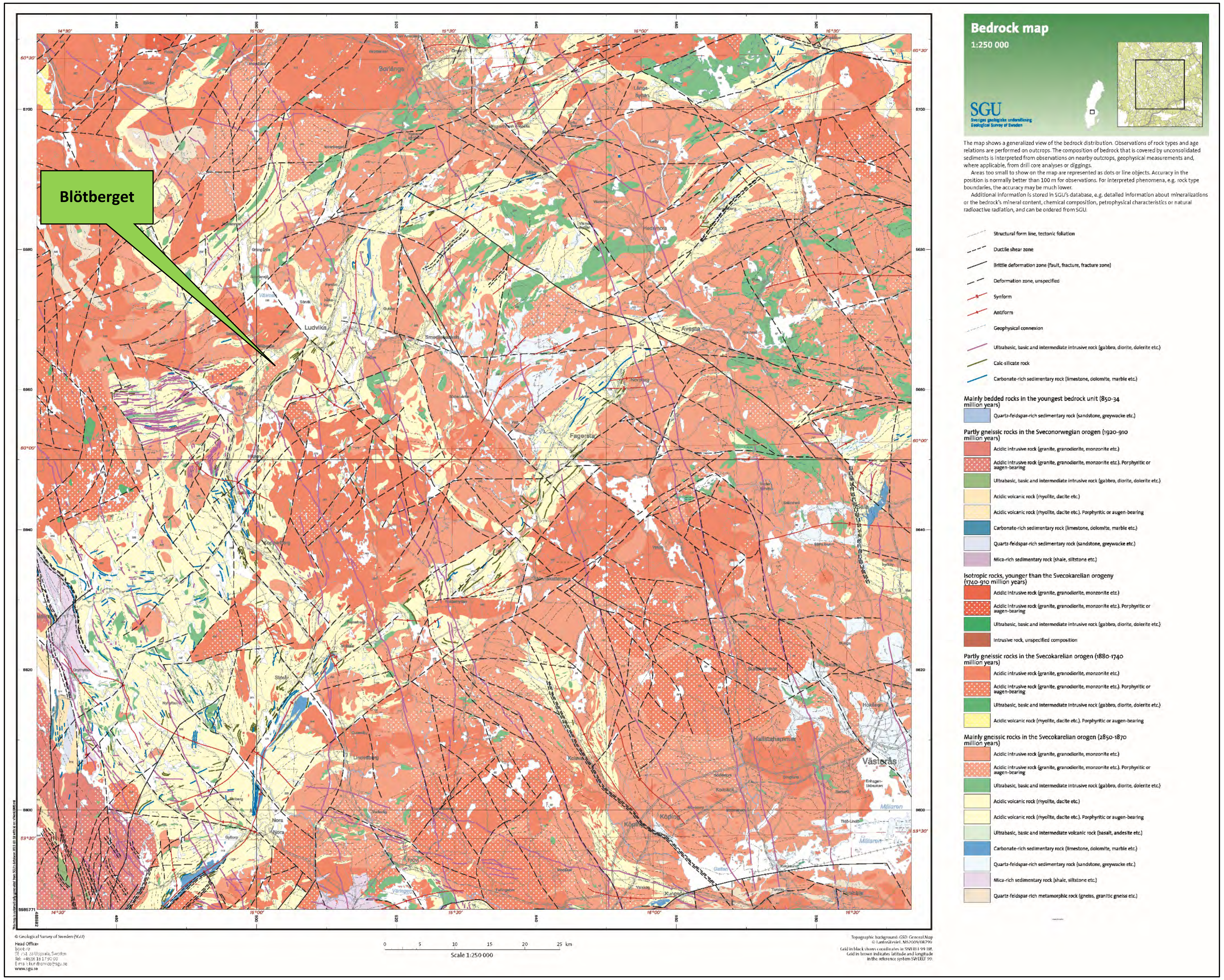

Figure 7-1 Regional geology map

Source: Swedish Geological Survey

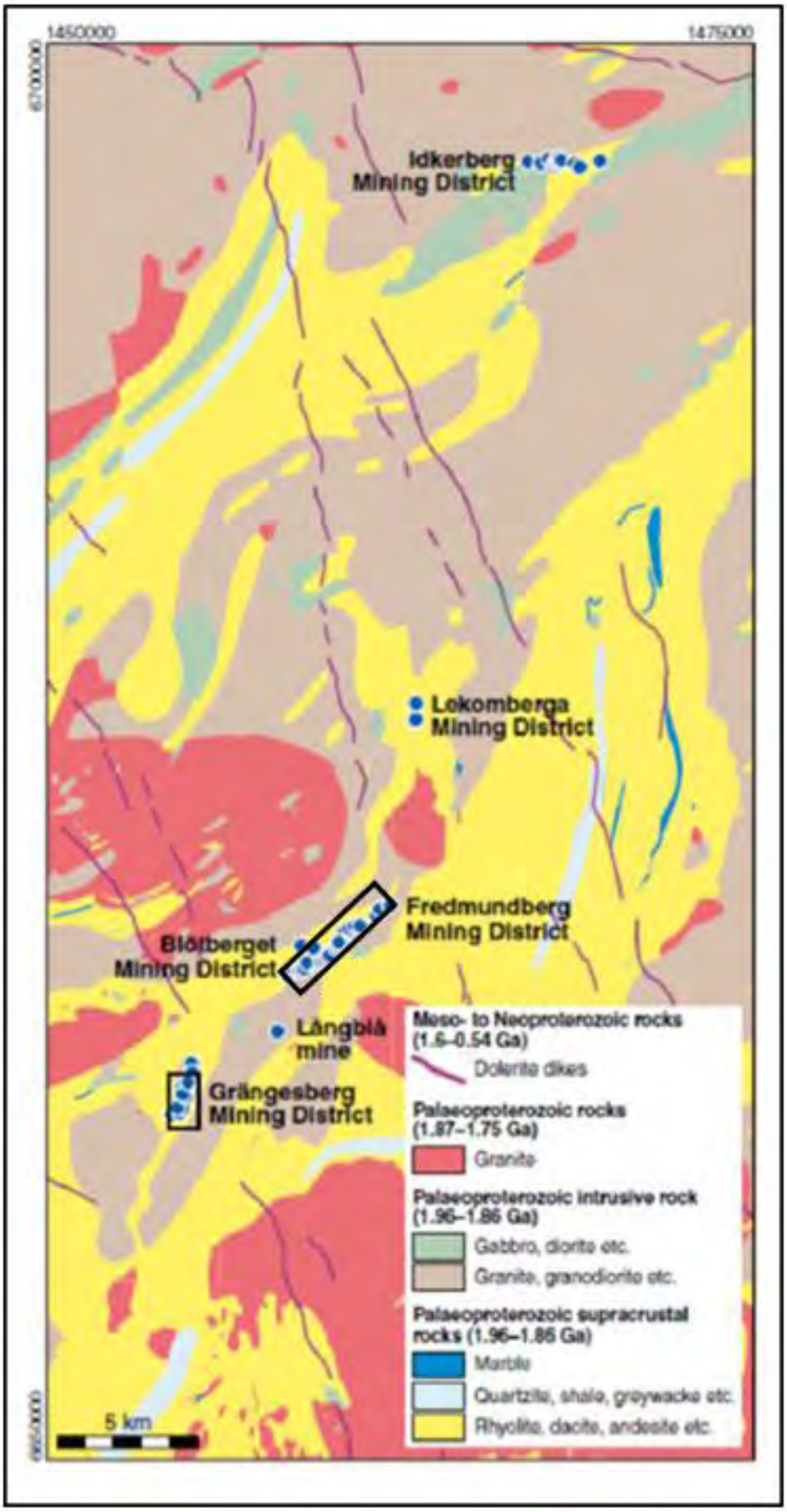

Figure 7-2 Geological map of part of Western Bergslagen

Source: Stephens et al (2007)

7.2 Property (Local) Geology

The mineralised zone at Blötberget appears as a set of vertically narrow, elongated, lenses dipping 50°–70° to the SE. Airborne geophysical surveys and historical drillholes indicate that mineralisation extends to a depth of at least 900 m below surface.

The host rocks to the Blötberget iron mineralisation have traditionally been classified as belonging to the ”leptite formation”, i.e. mainly felsic to, more rarely, intermediate, regionally metamorphosed (c. 1.90–1.87 Ga) volcanic rocks. In most parts of the Bergslagen ore province these leptites are predominantly SiO_2-rich and have mainly rhyolitic to dacitic compositions, yet, the immediate host rocks to Blötberget ores exhibit significantly more of intermediate to basic compositions. The metavolcanic rocks are locally feldspar-porphyritic, fine-grained and generally range between rhyolitic-dacitic to basaltic/andesitic in composition. A number of the observed leptites within Blötberget area, particularly in the mining concession, also exhibit crosscutting relations to various rock units and have been interpreted as subvolcanic in origin.

Alteration is evident in these host rocks, both in the form of regional-style sodic or potassic alteration and locally, as disseminated as well as discrete phyllosilicate (mainly biotite + chlorite) and amphibole-rich zones. These alteration assemblages systematically occur in and around the main ore zone.

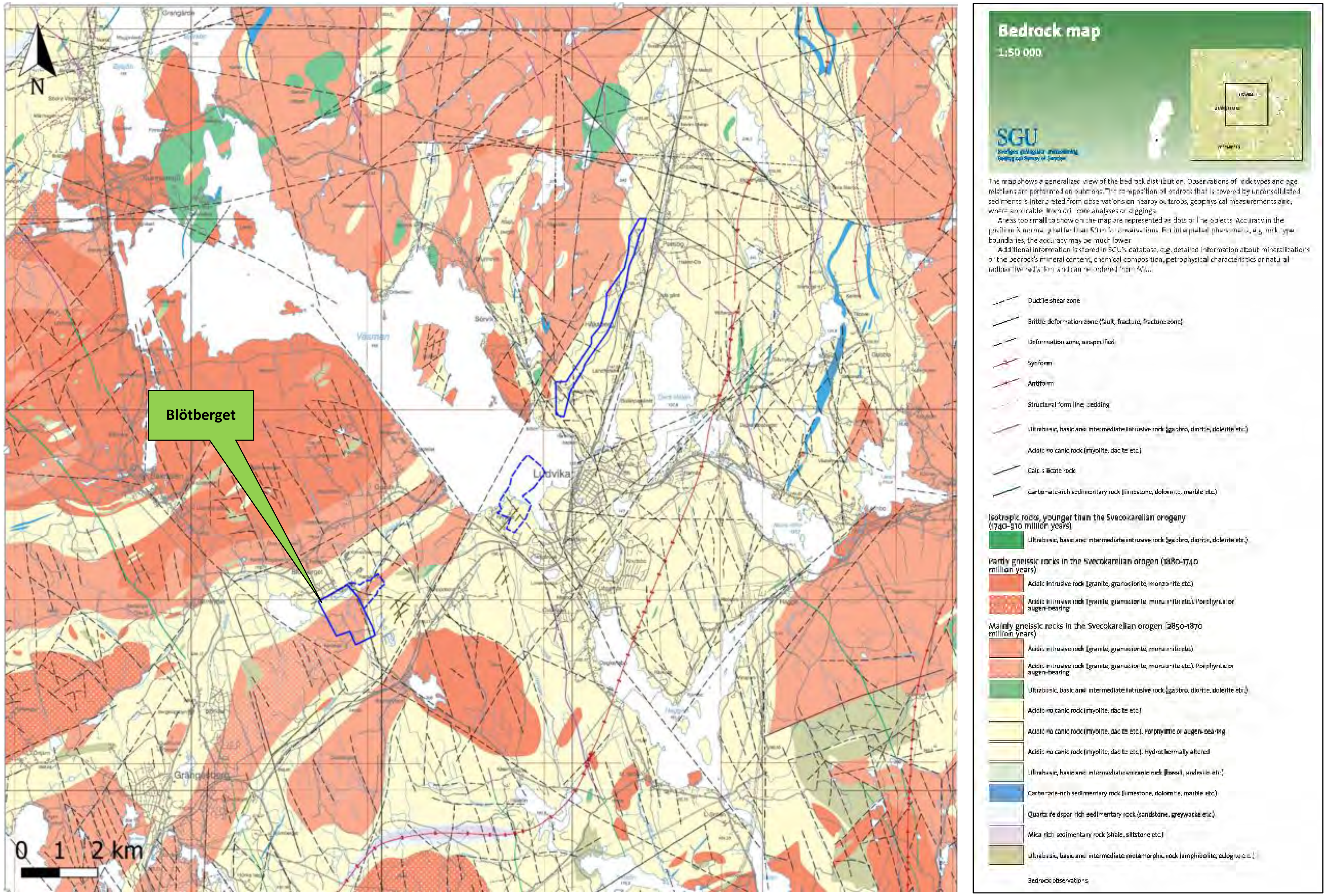

Figure 7-3 Local geology map

Source: Swedish Geological Survey

7.3 Mineralisation

The mineralisation at Blötberget is a so-called "apatite lake ore" which, besides the iron mineral magnetite and hematite, also contains the phosphorus mineral apatite, which previously caused problems in the production of iron. With the technological developments that occurred when the so-called Thomas process was invented in 1879, it became possible to also take advantage of ore that was rich in phosphorus.

The Blötberget field consists of five mineralised bodies, from west to east, these are identified in Table 7-1.

Table 7-1 Mineralisation zones

Mineralised Body	Short Form Name	Mineralisation
Kalvgruvan	KALV	apatite-rich magnetite
Flygruvan	FLY	apatite-rich, hematite-dominated, minor magnetite
Hugget & Betstamalmen	HUG & 'Betsta' or 'the Wedge'	Apatite-rich magnetite-hematite
Sandellmalmen	'Sandell'- SAND	Apatite-rich magnetite-hematite
Carlsvard	HUGFLY–NE	Continuation of HUGFLY
Guldkannan	SAND	Continuation of SAND within Blötberget licence

Source: NIO

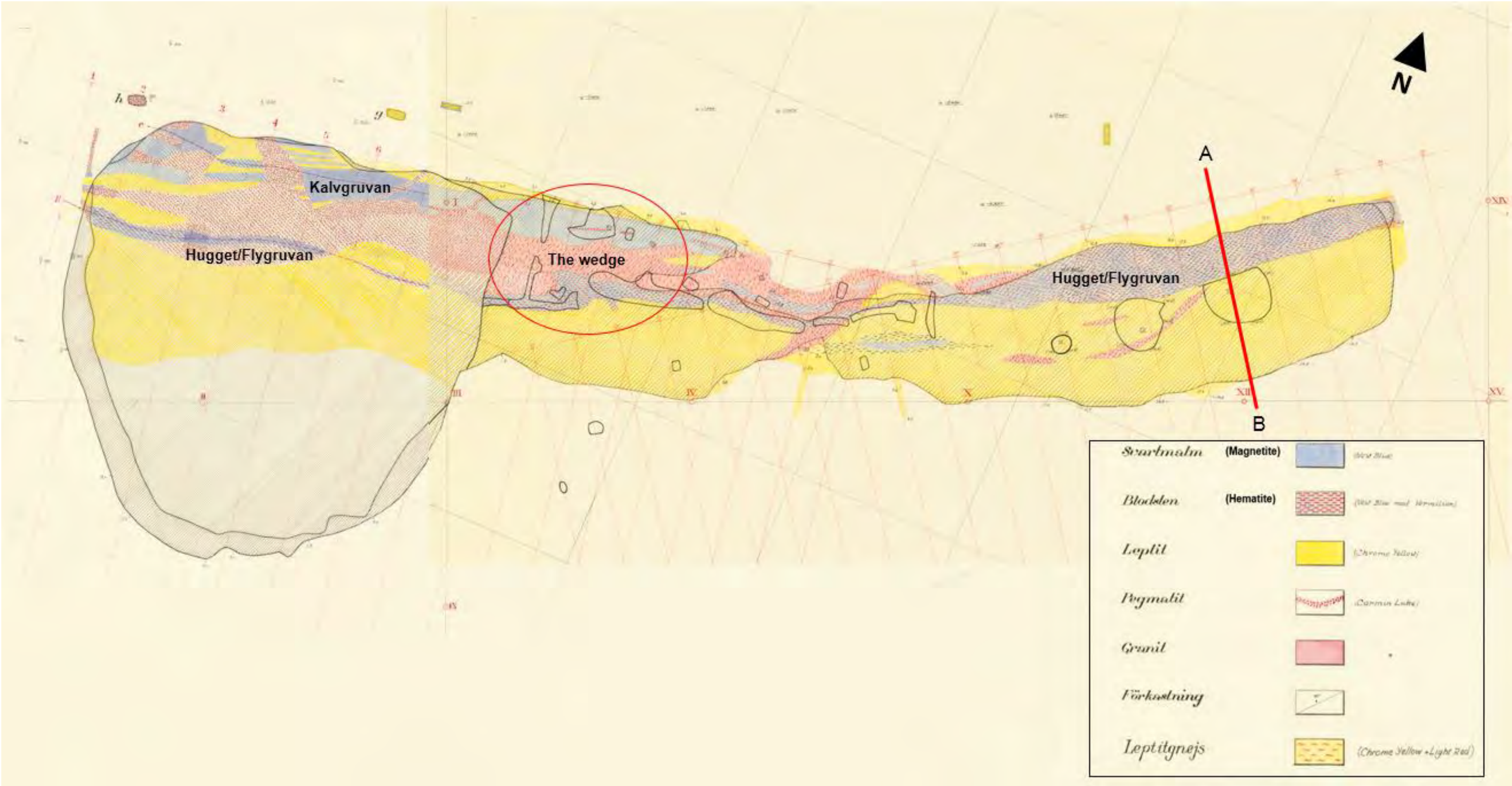

Figure 7-4 Plan Location of Blötberget mineralised zones

Source: NIO

The Hugget/Flygruvan and Kalvgruvan zones had previously been mined down from near-surface to the 250 m and 350 m levels respectively. The units dip towards the southeast at between 50° and 55° in the near-surface mined-out areas, and flatten at depth to ~25°.

The area, previously known as 'the Wedge' or Betsta, was an unknown area between the two former mining concessions, Vulcanus and Blötberget. The Wedge was successfully explored during the 2014 drilling programme.

Kalvgruvan and Hugget/Flygruvan have now been shown to be continuous zones of mineralisation Figure 7-4.

The license area 'Blotbergsgruva K nr 2' (ID: 2016000339), which is the NE extension of the license area 'Blötbergsgruva K nr 1' (ID: 2010001141), hosts two mineralized layers: Carlsvard and Guldkannan. While the footwall layer, Carlsvard, is the continuation of Hugget/Flygruvan, the hanging wall layer, Guldkannan, is the north – east continuation of Sandell. The different names originates from the fact that historically these were separate mining operations. Historically the Guldkannan mineralised zone was the only zone that was mined during the relatively short production period . For the Carlsvard zone no historic mining activities are reported.

The Kalvgruvan mineralised zone is characterised by a relatively high percentage of magnetite and at a consistent ratio. Sandell-Guldkannan, however, has a generally lower magnetite proportion and a more inconsistant ratio of magnetite to hematite. . For Carlsvard (HUGFLY-NE), no magnetite data are available, but in the absence of specific data it is reasonable to be assume that the mineral composition will be similar to Hugget-Flugrvan, with lower magnetite levels and generally inconsistent magnetite to hematite ratios.

8 DEPOSIT TYPE

The Blötberget deposit and its NNE continuation to Idkerberget constitute an anomaly in the Bergslagen Province. Of the >6000 deposits in the Province, registered in the SGU mineral deposits database, 5500 are iron oxide deposits. Of these, most are either banded iron formations or skarn-type deposits, except those in the spatially restricted Grängesberg-Blötberget-Idkerberget area.

The Blötberget deposit and its northern extension to Idkerberget thus represent a significant ore genesis and geological anomaly in the Province. Based on the mineralogy, deposit geometry, host rock relations and geochemical character, it is evident that the Blötberget apatite-iron oxide deposits represent Paleoproterozoic Kiruna-type deposits that have been deformed and metamorphosed to amphibolite-facies grade.

The similarities with the Kiruna deposits were acknowledged early, but hypotheses concerning the origin of these ores have varied over time, from direct magmatic, exhalative sedimentary to hydrothermal and metasomatic. Two main hypotheses on the origin of apatite-iron oxide ores have dominated the discussions during recent years, namely:

- Hydrothermal or orthomagmatic origin i.e. formed directly from a melt.
- Direct-magmatic origin, noted through several textural similarities between the Kiruna deposit and the much younger apatite-iron oxide ore at El Laco in Chile.

The magmatic model was challenged by Sillitoe & Burrows (2002), and a theory for a hydrothermal replacement process was proposed in its place. This was subsequently rejected based on the magmatic textures and relationships between apatite iron boulders and the host-rock. However, a hydrothermal origin for other apatite-iron oxide ore deposits was proposed.

A comparative study of different apatite-iron oxide ore deposits in North America was completed and suggested that these deposits, characterised with respect to age, tectonic setting, mineralogy and alteration, ought to be referred to as Iron oxide-copper-uranium-gold-REE deposits. These were later to be called Iron Oxide Copper Gold ("**IOCG**") deposits. The deposits of Kiruna-type were considered a sub-set within this IOCG concept, and a primary, shallow-level, hydrothermal origin has been suggested.

The IOCG concept marked the onset of an exploration frenzy for these deposits and subsequently more research has been conducted.

It has been shown that there is great variation between different possible IOCG occurrences, tentatively related to different ore forming processes. The trace element composition in apatite from the Tjårrojåkka deposit in Norrbotten for instance, is very different compared to other IOCG deposits and the question remains whether Kirunavaara should be considered an IOCG type deposit at all. This statement is also valid for the Blötberget deposit, as it does not contain any significant concentrations of either gold or copper, which perhaps emphasizes its similarity with the Kirunavaara ore. Indeed, the concept of an orthomagmatic origin for the Kiruna-type deposits suggest they are "non-IOCG" (*Nilsson et al. 2013*)

Besides iron and apatite being present in these rocks, there are significant accumulations of rare earth elements ("**REEs**") and phosphorous (*Nilsson et al. 2013*).

9 EXPLORATION

Since the formation of NIO, several surface sampling campaigns have taken place. The majority of these have been within the mining concession areas but some have extended to include the surrounding exploration licence in order to allow a better understanding of the geochemical relationship between the satellite deposits and the main Blötberget mineralised zone. This work assisted with the realisation of potential sites for a bulk sample/test mining site. A handheld magnetic susceptibility (KT-10) device and a Thermo Niton x-ray fluorescence ("**XRF**") XL3 were used to ascertain iron and magnetite percentages of outcrop samples. Rock samples were then sent to ALS for chemical assay.

During 2009, Kopparberg Mineral AB carried out a more detailed magnetometry survey over a limited part of the Blötberget area on behalf of NIO (Figure 9-1).

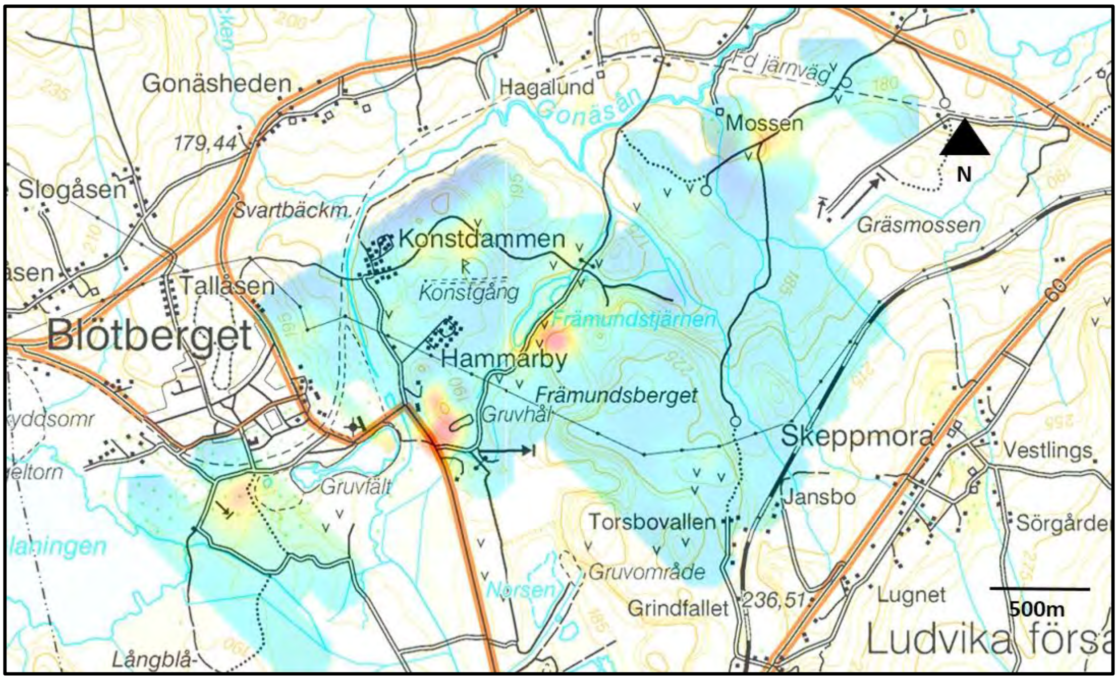

Figure 9-1 Ground magnetic anomaly map (November 2009)

Source: NIO

10 DRILLING

10.1 Blötberget / Guldkannan 2012 Drill Programme

A drilling programme was undertaken during the summer and winter of 2012 and was completed in November 2012. This 16 hole programme included twinned drilling to confirm the quality of historical drilling data, as well as infill and step-out drilling.

NIO completed 16 drillholes totalling 7,430 m of drilling. The NIO drilling in 2012 was carried out by the Swedish contractor, Drillcon Core AB, or by their Finnish subsidiary Suomen Malmi Oy ("**SMOY**") using Onram 1000 and Onram 1500 drill rigs and wireline 56 methodology, the programme recovered 39 mm diameter drill core.

Of this 16 drillhole programme , three holes were collared to the north east extension of the Blötberget in what is the new Guldkannan mining lease area. The drillholes B12011 ; B12012 & B12012B were drilled for a total of 397m .

One hole, BB12015-MET, was drilled for the purposes of generating material for metallurgical sampling, using HQ-size equipment to recover 63.5 mm diameter core. To date, this has been the only hole drilled using oriented core.

No drillholes were water pressure tested during this drilling campaign.

Three holes were left uncompleted as they hit highly fractured and clay altered rock which collapsed the drillhole. These holes were BB12003 (@ 400 m), BB12012B (@ 8.10 m) - BB12012 was a re-drill of this hole - and BB12014-MET (@ 30 m). No mineralisation was encountered in these holes.

Several deviations from the planned targets occurred during this drilling campaign, due largely to the small drill equipment and small drill diameter used.

Figure 10-1 SMOY drilling rig (2012 drill programme)

Source: NIO

Table 10-1 2012 NIO drill programme summary

Hole ID	Collar X	Collar Y	Collar Z	Depth m	Azimuth °	Dip °	Completed	Orientation	Water pressure
BB12001	504478.89	6664648.45	-46.85	680.60	330	-77	Y	N	N
BB12002	504054.36	6664849.61	-49.97	300.25	317	-77	Y	N	N
BB12003	503754.84	6664541.22	-42.16	404.20	325	-75	Y	N	N
BB12004	503866.26	6664556.24	-47.43	495.20	320	-74	Y	N	N
BB12005	503938.02	6664523.59	-48.22	530.75	350	-78	Y	N	N
BB12006	503850.94	6664388.32	-45.81	611.50	352	-76	Y	N	N
BB12007	503741.82	6664364.83	-43.08	599.30	353	-75	Y	N	N
BB12008	503922.63	6664262.80	-45.82	706.50	350	-76	Y	N	N
BB12009	503967.26	6664148.12	-47.03	769.75	356	-77	Y	N	N
BB12010	503982.65	6664354.08	-46.48	649.40	357	-78	Y	N	N
BB12011	504559.18	6665269.31	-38.02	101.80	322	-54	N	N	N
BB12012	504496.76	6665214.94	-36.60	287.50	395	-56	Y	N	N
BB12012B	504491.60	6665241.50	-42.75	8.10	322	-50	N	N	N
BB12013	503870.56	6664162.06	-45.99	782.90	326	-78	Y	Y	N
BB12014-MET	503518.32	6664743.35	-44.12	30.00	89	-70	N	N	N
BB12015-MET	503795.81	6664758.28	-45.58	468.30	146	-80	Y	N	N
			Total	**7426.05**					

Source: NIO

10.2 Blötberget 2014 Drill Programme

The 2014 drilling programme was designed to investigate the area between Flygruvan/Kalvgruvan and Hugget (formally known as "**the Wedge**" or Betsta area) and to infill the intermediate depth extension of Hugget, (-320 m to -660 m; measured from surface depth and relating to mining blocks) in order to improve the confidence of the geological model.

At the onset of planning for this drill programme, it was deemed necessary that a larger diameter drilling method, NQ2 (50.6 mm core diameter), and larger, more powerful drilling rigs were to be used to alleviate deviation; hole losses due to fractured/clay strata and to improve core recovery.

13 drillholes, totalling 7,093 m, were drilled by the Finnish contractor Kati using a Sandvik DE 140 and Onram 1000 and NQ2 drilling methodology, recovering 50.6 mm diameter drill core and producing 75.5 mm diameter drillholes. Kati used a hexagonal reamer which helped ensure that the drillholes had minimum deviation.

One of the drillholes (BB_14-011) was drilled down-dip for geotechnical purposes.

All holes were drilled with orientation information, using either a Devico Devicore or ACT II Reflex tool to provide accurate structural information. Eight holes were subject to pump testing to provide information on the potential for water bearing fracture zones. Each hole was measured for deviation using a Devicore Deviflex gyroscope.

Figure 10-2 Kati drilling rig (2014 drill programme)

Source: NIO

Table 10-2 2014 NIO drill programme summary

Hole ID	Collar X	Collar Y	Collar Z	Depth m	Azimuth °	Dip °	Completed	Orientation	Water pressure
BB_14-001	503966.65	6664675.74	-47.54	430.05	336	-78	Y	Y	N
BB_14-002	504010.83	6664605.24	-49.44	464.28	336	-75	Y	Y	N
BB_14-003	504059.67	6664542.24	-47.97	509.90	336	-75	Y	Y	N
BB_14-004	504107.87	6664434.06	-45.55	596.70	336	-78	Y	Y	N
BB_14-005	503776.23	6664625.74	-44.55	464.30	322	-78	Y	Y	Y
BB_14-006	504301.01	6664578.15	-48.77	564.10	322	-80	Y	Y	Y
BB_14-007	504436.00	6664550.14	-46.78	635.70	322	-78	Y	Y	Y
BB_14-008	503623.60	6664584.70	-44.32	455.80	322	-78	Y	Y	Y
BB_14-009	504236.00	6664685.00	-42.75	525.00	322	-78	Y	Y	N
BB_14-010	504380.00	6664468.00	-42.75	665.00	322	-78	Y	Y	Y
BB_14-011	504191.05	6664870.50	-49.48	664.30	142	-75	Y	Y	Y
BB_14-012	504153.76	6664582.01	-49.68	497.70	328	-78	Y	Y	Y
BB_14-013	504473.21	6664652.83	-46.64	620.00	325	-77	Y	Y	Y
			Total	**7092.83**					

Source: NIO

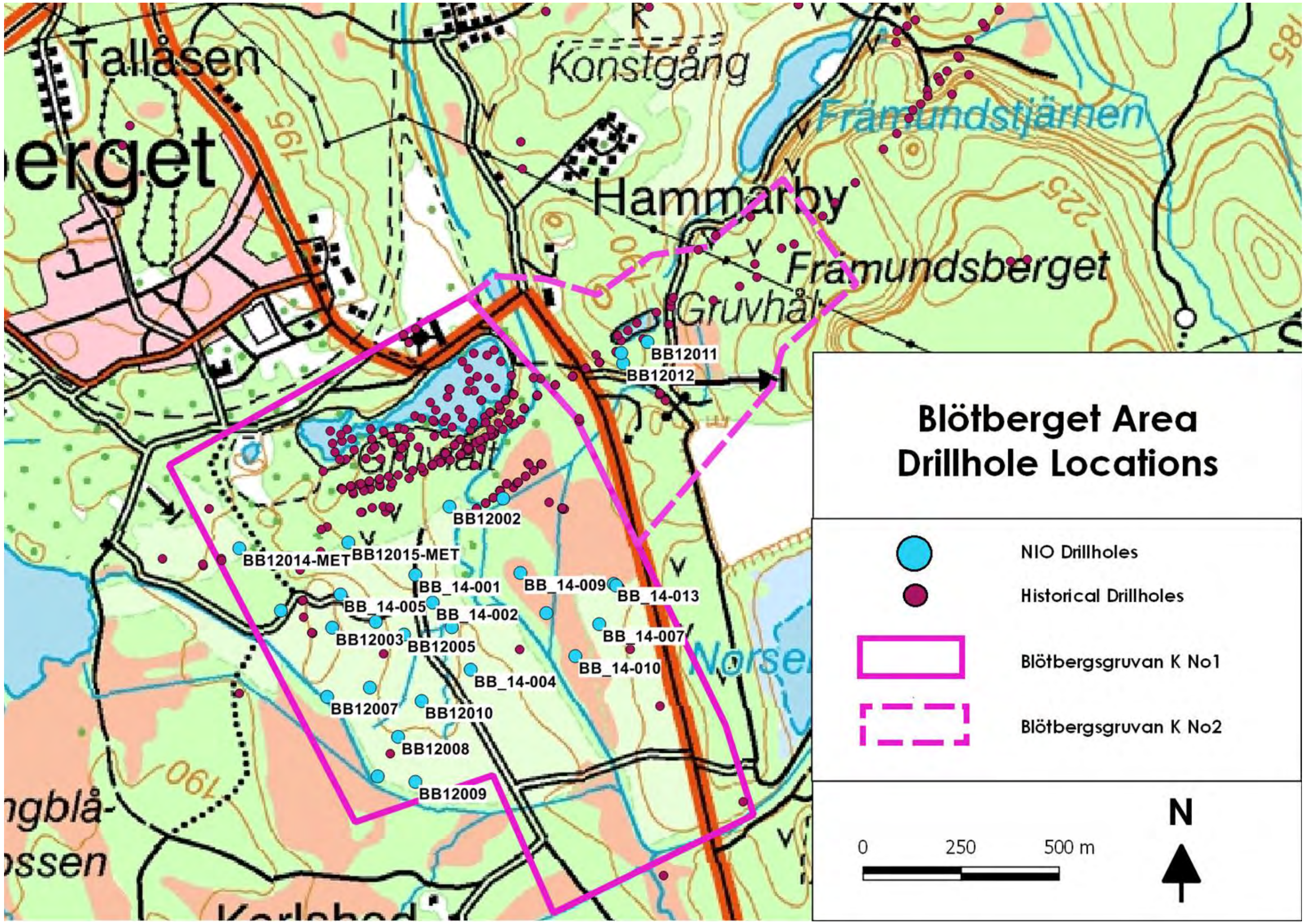

Figure 10-3 2012 and 2014 drillhole locations (also showing historical drillhole locations)

Source: NIO

10.3 Logging

10.3.1 Re-Logging of Historical Core

During 2011/12 Berg och Gruvundersökningar AB ("**BGU**") was engaged by NIO to log and sample historical cores that were stored at the SGU repository in Malå.

13 cores, totalling 5077.21 m were logged for geological and geotechnical data (for RQD), then photographed (dry and wet).

A detailed report containing geological descriptions, profiles and sections was created entitled "*Geological Logging and Sampling of Archive Cores at the Central Core Archive in Malå 2012-13*". This report was updated once the 2012 drilling campaign had been completed. The updated report was entitled "*Core Logging, Geological Description and Interpretation of Blötberget, Finnäset – Väsman and Håksberg 2013*". Both of these reports were compiled by BGU.

10.3.2 2012 & 2014 Programmes

The core from the 2012 and 2014 drill programmes was collected in the field by NIO's technicians or geologists and transported directly to the NIO core logging and sample preparation facilities in Grängesberg. The core storage, logging and sampling facilities are clean, well-organised and provide suitable conditions for logging and sampling (Figure 10-4).

Figure 10-4 Grängesberg core storage facility

Source: 2014 GeoVista Resource Report

The core is firstly placed on roller tables and inspected for mislabelling or depth inaccuracies. Any discrepancies are checked against daily drilling logs and followed up with the drill teams.

The core is further checked using a magnetic pen and areas of “pull” are marked onto the core boxes and a UV lamp is used to detect presence of Scheelite (tungsten).

The core is then placed in V-rails and the orientation line is drawn from the marks placed by the drilling teams from their orientation tool. Once completed the Geologist logs the core utilising the geological logging template, shown in Figure 10-6.

Figure 10-5 Core logging facility showing roller tables

Source: DMT

HOLE ID	BB_141-013
General comments:	

From	To	Length	Description	Lith 1	%	Lith 2	%	Lith 3	%	Lith 4	%	Lith 5	%	LITH TOTAL	Colour 1	Light/Dark	Colour 2	Light/Dark	Colour 3	Light/Dark	Texture 1	Texture 1 occurance	Texture 2	Texture 2 occurance	Texture 3	Texture 3 occurance	mineral type 1	mineral type 1 occurance	mineral type 2	mineral type 2 occurance	mineral type 3
0.00	6.90	6.90		OVB	100									100																	
6.90	8.04	1.14		BMV	80	RFZ	15	SARG	5					100	GR	DARK	GY	DARK	GR	LIGHT	FOL	STRONG	B	LOCAL			AMP	STRONG	CHL	WEAK	BIO
8.04	14.42	6.38		SARG	90	RFZ	10							100	BK		GY	DARK	GY	LIGHT	FOL	STRONG	B	WEAK			BIO	STRONG	AMP	LOCAL	CHL
14.42	15.38	0.96		GRA	95	RFZ	5							100	PK	DARK	GY	LIGHT	GR	LIGHT	FOL	STRONG	GNE	WEAK	B	LOCAL	POTA	WEAK	BIO	LOCAL	EPI
15.38	19.68	4.30	veins purple dark -> possibly precipitation of hematite/magnetite	GRA	75	RFZ	25							100	PK	DARK	RD	DARK	BK		M	STRONG	MOT	STRONG			POTA	STRONG	BIO	WEAK	EPI
19.68	25.16	5.48	GRA MASSIVE (30CM) AT 21,45M + 2 VEINS OF PEG : ONE (4CM) AT 21,40M AND ONE (8CM) AT 21,95M	GRA	85	BMV	10	RFZ	5					100	PP	DARK	PP	LIGHT	YL	LIGHT	FOL	STRONG	GNE	WEAK	UG	LOCAL	POTA	WEAK	BIO	WEAK	EPI
25.16	26.70	1.54		GRA	95	RFZ	5							100	GR	DARK	GR	LIGHT	GY	LIGHT	FOL	STRONG	GNE	WEAK			POTA	WEAK	BIO	WEAK	
26.70	29.89	3.19		GRA	90	RFZ	10							100	GY	LIGHT	PK	LIGHT	YL	LIGHT	FOL	STRONG	GNE	WEAK			POTA	WEAK	BIO	WEAK	EPI
29.89	32.31	2.42		RFZ	60	BMV	40							100	GR	LIGHT	BR	DARK	YL	LIGHT	BREC	STRONG	B	LOCAL			AMP	STRONG	CHL	WEAK	EPI
32.31	33.34	1.03		GRA	95	RFZ	5							100	YL	LIGHT	GY	LIGHT	GR	LIGHT	FOL	STRONG	GNE	WEAK			POTA	WEAK	BIO	WEAK	EPI
33.34	48.65	15.31	RFZ (55CM) AT 38,30M + BRECCIA (15CM) AT 42,25M + VEIN OF PEG (13CM) AT 43,20M + CALCITE INTO THE HOLES OF THE GRA AT 48M ON 25CM	GRA	90	RFZ	10							100	GY	LIGHT	GY	DARK	PK	LIGHT	FOL	STRONG	GNE	WEAK	UG	LOCAL	POTA	WEAK	BIO	WEAK	EPI
48.65	55.55	6.90	RFZ (70CM) AT 49,25M (PLUS SEVERAL SMALL (5-15CM OTHER RFZ) + veins purple dark -> possibly precipitation of hematite/magnetite + GRA HAS A GNESOSITY TEXTURE AND MASSIVE TEXTURE + VEIN (12CM) OF PEG AT 50,30M	GRA	80	BMV	10	RFZ	10					100	PK	LIGHT	GY	LIGHT	YL	DARK	BREC	STRONG	FOL	LOCAL	M	LOCAL	POTA	WEAK	BIO	WEAK	EPI
55.55	61.03	5.48	GRA (132CM) POROUS BETWEEN 57,85-59,30M + veins purple dark -> possibly precipitation of hematite/magnetite + VEIN (8CM) OF PEG AT 59,95M	GRA	100									100	PP	DARK	PK	DARK	GR	LIGHT	FOL	STRONG	GNE	WEAK	UG	LOCAL	POTA	STRONG	BIO	WEAK	CC
61.03	62.26	1.23		BMV	85	GRA	15							100	GR	DARK	PK	DARK	YL	LIGHT	FOL	STRONG	B	WEAK	GNE	LOCAL	AMP	STRONG	BIO	LOCAL	POTA
62.26	63.68	1.42	RED COLOR -> JASPELITE?	SARG	90	GRA	10							100	RD	DARK	GR	DARK	GY	DARK	FOL	STRONG	GNE	WEAK	M	LOCAL	BIO	WEAK	POTA	WEAK	
63.68	64.87	1.19	BIG CONCENTRATION OF AMPHIBOL GRAIN AT 64M ON 10 CM	BMV	100									100	GR	DARK	RD	DARK	BK		FOL	WEAK	MOT	LOCAL			AMP	STRONG	JASP	LOCAL	PYR
64.87	72.08	7.21	VEIN (5CM) OF PEG AT 71,20M + veins purple dark -> possibly precipitation of hematite/magnetite	GRA	100									100	RD	DARK	PK	DARK	BK		M	STRONG	MOT	STRONG	UG	LOCAL	POTA	STRONG	BIO	WEAK	EPI

Figure 10-6 Example of NIO geological logging sheet

Source: NIO

NIO staff produce logs of the drill core using industry standard procedures. This includes core recovery, geotechnical and lithological logging and photography (wet and dry). In addition, point load tests are conducted on the core in order to assess the rock mechanical properties.

10.3.2.1 Core Recovery & Geotechnical Logging

Geotechnical logging information is collected to determine the Rock Quality Designation ("**RQD**") and Barton's Q classifications.

Fractures, foliation and joints are measured for their angle using a Drill Core Structure Orientation ("**DCSO**") device, supplied by Petroteam Engineering. This device uses two lasers to measure alpha and beta angles and core diameter. The DCSO is connected directly to the logging laptop and the software included with the device enables the data measured to be captured directly into the database. Once the logging has been completed, selection of mineralised core to be sent for sampling takes place (Figure 10-7).

Figure 10-7 Geologist using DSCO device

Source: NIO

11 SAMPLE PREPARATION, ANALYSES & SECURITY

11.1 Introduction

The core from the 2012 and 2014 drill programmes was collected in the field by NIO's technicians or geologists and transported directly to the NIO core logging and sample preparation facilities in Grängesberg.

NIO compiled its own Sampling Quality Manual, which sets out best practice procedures relating to core handling, sampling, analysis and QA/QC procedures and is summarised in the following sections.

11.2 Sampling & Assaying of Historical Samples

Samples from historical drillholes, which have not been re-assayed, contain only % Fe grades as standard, presented as either % Fe HCl (to determine only Fe oxide species), or % Fe Total determinations.

Assays for % SiO_2 and % P have been discovered for less than half these historical assayed samples. Formerly, these historical samples were sampled by visual inspection, i.e. those samples that appeared to be above a grade of 35 % Fe. Material below this subjectively applied high grade 'cut-off' was not considered economic. This methodology has resulted in data gaps in the mineralised material as samples deemed to contain <35 % Fe have not been sampled.

712.8 m of mineralised material was sampled using current industry best practice at the SGU Malå logging facilities. Core boxes were then transported to CL Prospecting in Malå for sawing and density measurements. Samples were then packaged and sent to ALS, Piteå for analysis. In addition samples were sectioned out for metallurgical testing to be carried out on assay rejects at Minpro AB, in Stråssa, Sweden. Samples were also sent for environmental and leach testing by Golder Associates AB, Sweden.

No QA/QC samples were sent along with these samples for assaying by ALS. Density was determined for historical core samples using the Archimedes method.

11.3 Sample Preparation (2012 & 2014 Programmes)

After the lithological and geotechnical logging, sectioning for assaying takes place.

11.3.1 Core Mark-Up

Geologists mark the assay sections on the core boxes as well as on the core itself and insert a sample ticket into the core box. All material with Fe over 5-10 % (determined with hand held XRF, magnetic pull and geological competence), greater than 50 cm in length and within a mineralised section, is selected for sampling.

Sampling lengths are constrained within lithological boundaries in order to assist with sectioning of the mineralised core. Sampled core of similar composition is split into 2 m lengths.

In addition to sampling mineralised core, 1 m of hanging wall (material above the identified mineralised section) and 1 m of footwall (material below) was sampled for each mineralised sample to enable definition of the mineralised zones.

11.3.2 Core Photography

High resolution digital photography (wet and dry) is carried out for each core box from the 2012 and 2014 drill programmes (Figure 11-1 and Figure 11-2).

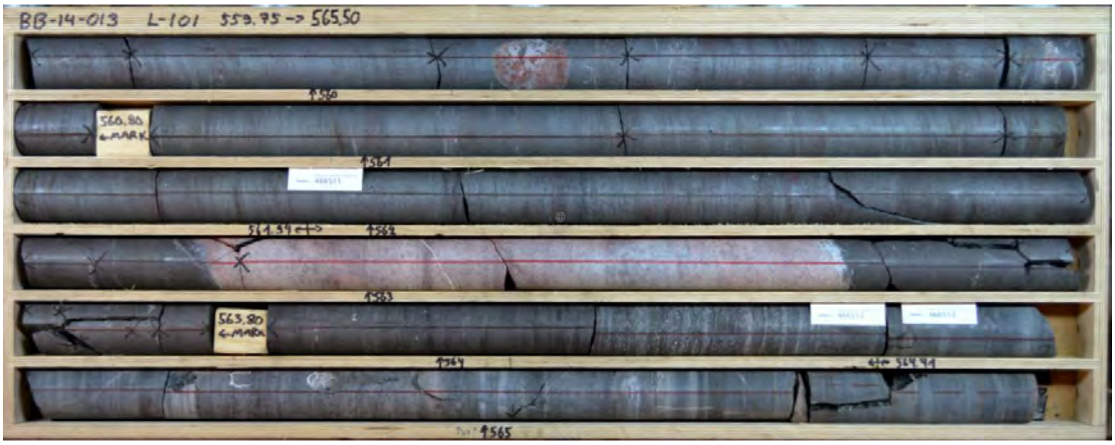

Figure 11-1 Core photography (dry) – BB 14-013

Source: NIO

Figure 11-2 Core photography (wet) – BB 14-013

Source: NIO

11.3.3 Point Load Tests

An industry approved Point Load testing unit is used to assess the rocks mechanical properties (Figure 11-3). The geologist selects a representative, homogenous piece of core based on the geological logging. If the rock has foliation, six measurements are taken – three parallel and three perpendicular within 15-20 cm of each other.

The point load equipment is calibrated each day before use to ensure all measurements are accurate.

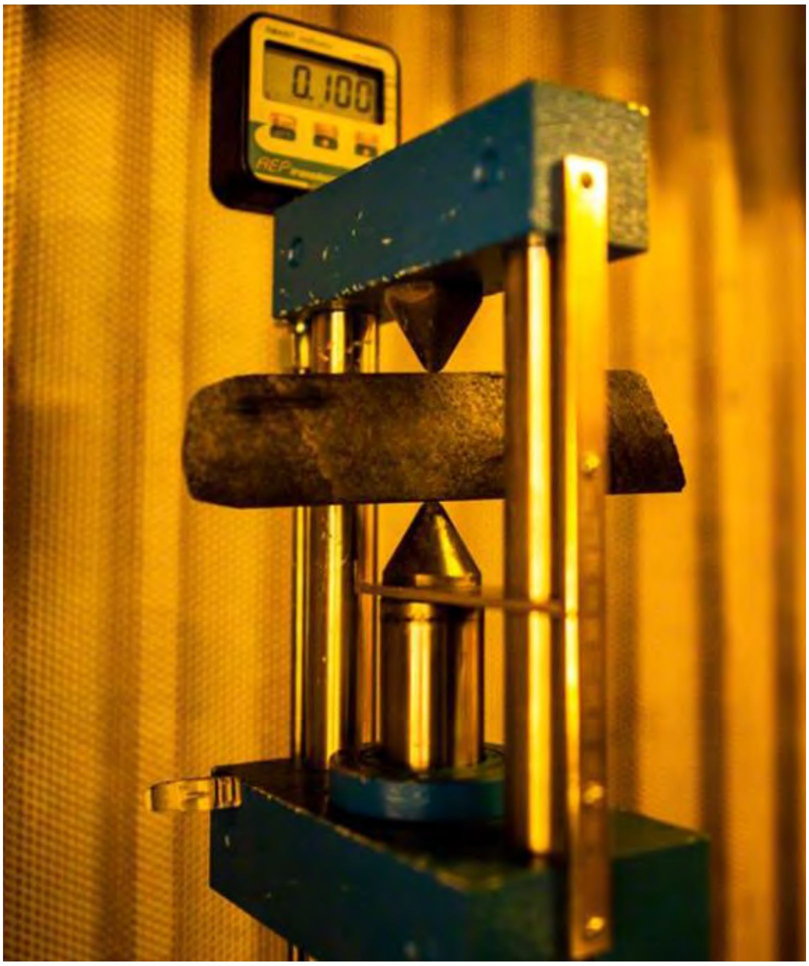

Figure 11-3 Point load device

Source: NIO

11.3.4 Core Splitting

The core is split by diamond sawing, with ¼, ⅓, or ½ core sent for analysis. At the beginning of the 2012 drilling and sampling campaign, ½ core was used. This was subsequently changed to ⅓ core, which is now the standard procedure, in order to preserve more material for later test work, if needed.

The re-assays of the historical core used ¼ core due to the majority of core in Malå having already sampled ½ core historically (Figure 11-4).

Figure 11-4 Diamond saw

Source: DMT

11.3.5 Density Determination

After splitting with a diamond saw, the core is dried in an oven at 70 ° C for 24 hours. Following this, 1 kg of representative core is selected and weighed in air, then placed in water and weighed again while suspended in the water. All sections selected for assay by NIO, from the re-logged historical core as well as from core from the recent drilling campaigns, have had the density determined using the Archimedes method. The weighing machines used during this process are calibrated before use and after every 40 samples using an accredited 1 kg calibration weight supplied by the manufacturer.

The 632 samples taken during the SGU Malå historical re-logging campaign had density measurements carried out on only 100-300g of representative material.

When the Grängesberg core logging and storage facility came into operation in 2011, this density measurement was changed to select samples weighing more than 1000 g (1 kg) and typically using half core. This resulted in a better sample representation and for density determination in the tonnage calculations. Primary bulk density was carried out on all core sent for sampling. Data was thus compiled for low, medium and high grade mineralisation; non- mineralised country rock and internal waste. In total 814 samples with less than 15 % Fe have been analysed.

A correlation curve between bulk density and the grade of Fe is illustrated in Figure 11-5. This is based on 1,527 number of samples tested globally across the Blötberget dataset. There is a clear correlation between bulk density and Fe grade which has allowed the assignment of variable densities to all blocks in the block model (see Section 13).

However, although it is considered that a sufficient number of waste rock samples have had their density determined for the purposes of estimation of bulk density for the Resource Estimation, it is acknowledged that further such determinations will have to be completed for the forthcoming mine planning.

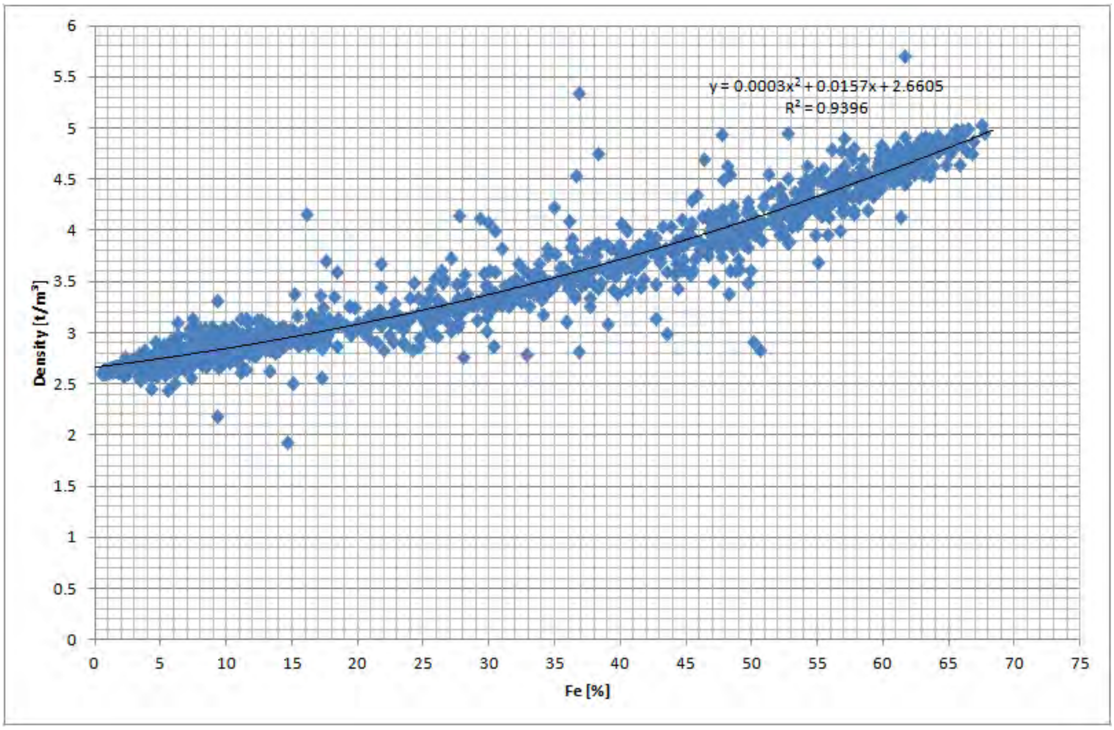

Figure 11-5 Correlation plot – Density vs. Fe %

Source: NIO

11.3.5.1 Density Attribution for Non-Oxidized & Oxidized Material

0% Fe = **2.66 t/m³**

8% Fe (equals the average Fe grade of all material not logged as ore) = **2.81 t/m³** (equals the density of all material not logged as ore)

40% Fe = **3.77 t/m³**

11.3.6 Packaging, Dispatch & Transport

Once density determinations have been completed, the sampled core is packaged in a marked plastic bag with a sample tag stapled to the top and a sample tag inside.

Samples are then placed into boxes in batches along with accompanying QA/QC samples and a sample list, prior to being dispatched to the ALS certified laboratory in Piteå, Sweden for sample preparation. All sample batches are sent using a registered

Swedish courier service, either Bussgods or DHL. Once samples are picked up, the consignment details are emailed through to ALS preparation labs in Piteå. Once ALS receives the batches in Piteå, they are weighed and recorded in their global tracking system.

11.4 Sample Security

All drill samples from the 2012 and 2014 drill programmes were collected under direct supervision of Project staff from the drill rig and remained within the custody of staff up to the moment the samples were delivered to the laboratory then picked up or delivered to a national courier service for delivery to the ALS, Piteå laboratory.

Samples, including duplicates, blanks and certified reference materials are stored in the secure Grängesberg storage area within the locked and fenced Grängesberg core facility.

Chain of custody procedures consisted of filling out sample submittal forms, which are sent to the laboratory with sample shipments, and also emailed directly to the laboratory to make certain that all samples are received by the laboratory. All samples dispatched are assigned tracking IDs which enabled the laboratory and NIO to track consignments to ensure they arrived successfully.

DMT believes that the sample preparation, dispatch and transit procedures for samples from the 2012 and 2014 drill programmes are in accordance with industry best practice.

11.5 Analysis

Analyses for the 2012 and 2014 samples was carried out by ALS Global in Vancouver.

The ALS sample preparation lab crushes to 70% <2 mm and 250g is riffle split off. This 250g is then pulverized into 85% passing 75 microns. From the ALS sample preparation laboratory in Piteå, ampoules of approximately 250 g of the crushed and milled material is sent to ALS in Vancouver for analysis.

11.5.1 Malå Historical Sampling Campaign

Of the 632 samples taken during the SGU Malå historical core logging project undertaken by BGU in 2011-12, 560 were analysed using x-ray fluorescence ("**XRF**") equipment - ME-XRF11b and ME-XRF21n.

XRF is the method of choice for analysis of oxide iron ores throughout the industry. The lithium borate fusion technique coupled with XRF, offers a robust and repeatable method, consistent with industry requirements. The relatively low flux to sample ratio offers good sensitivity for the majority of elements and creates a matrix which is not subject to particle size effects. With very few spectral interferences and high instrument stability, the XRF method delivers highly accurate and precise results across the full range of iron oxide ore types.

During 2012, analysis was carried out using XRF with either ME-XRF15b or ME-XRF21n equipment. ME-XRF15b was used when samples were suspected of containing larger amounts of sulphide minerals as this method of analysis is more reliable for sulphide-rich samples. In total, 59 samples were analysed with ME-XRF15b.

616 samples were also sent for ME-ICP61a analysis. During the analysis, the sample is digested in a mixture of nitric, perchloric and hydrofluoric acids. Perchloric acid is added to assist oxidation of the sample and to reduce the possibility of mechanical loss of sample as the solution is evaporated to moist salts. Elements are determined by inductively coupled plasma – atomic emission spectroscopy ("**ICP-AES**"). This method is useful for analysis of trace elements such as rare earth elements ("**REEs**").

Table 11-1 Malå historical sampling summary

Total samples analysed	XRF11b/XRF21n	XRF15b	ICP61a
632	560	59	616

Source: NIO

11.5.2 2012 & 2014 Programmes

As of March 2013, only ME-XRF21n analysis was used for samples from Blötberget as the amount of sulphides encountered in the Blötberget 2012 drill programme showed that this method had sufficient detection limits for the amount of sulphur present in the samples.

Samples were subject to Loss on Ignition ("**LOI**") testing using a Thermo Gravimetric Analyser ("**TGA**").

11.5.3 Coarse Rejects & Pulps

After return of the coarse rejects from Piteå and the analysed pulps from Canada. The pulps were subjected to SATMAGAN analysis as well as magnetic susceptibility determination.

11.5.3.1 SATuration MAGnetisation Analyser ("SATMAGAN")

SATMAGAN is used to measure the total magnetic moment of a sample in a saturating magnetic field.

A 1.2cm^3 of pulp material of <0.3 mm grind size is placed into the SATMAGAN. The SATMAGAN weighs the sample in air, then in a magnetic field. When combined with the Fe % assay results, the proportion of Fe bound to magnetite can be determined.

The results from the SATMAGAN produce quantified percentages of magnetic material, which has been utilised in conjunction with Fe % Total XRF and inductively coupled plasma ("**ICP**") assays to determine magnetite and hematite ratios effectively. The results of the SATMAGAN determinations are presented in the Figure 11-6.

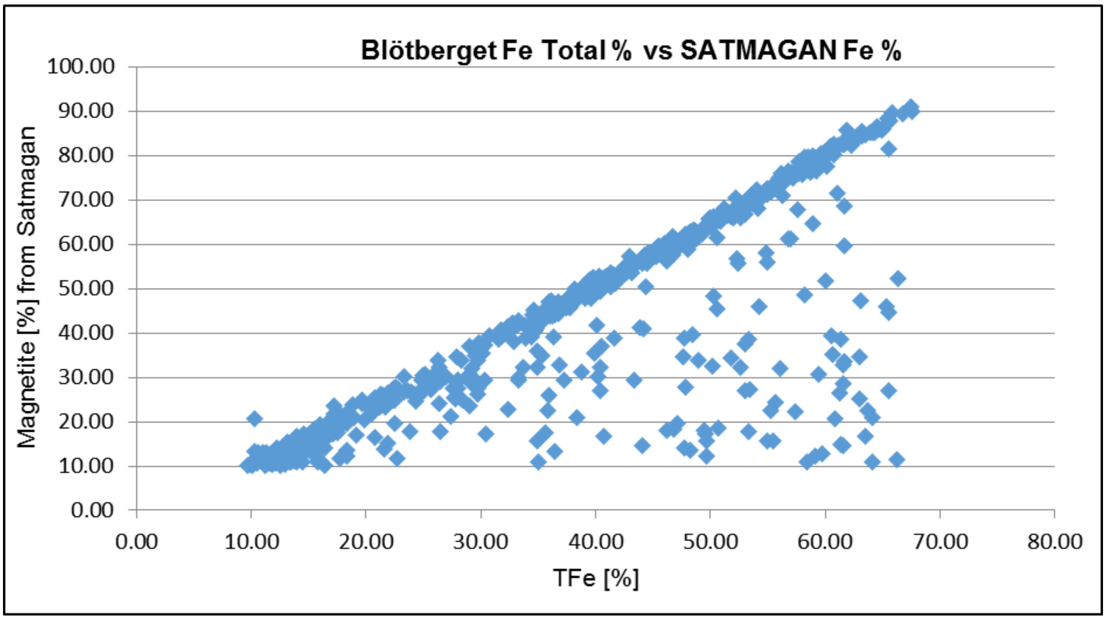

Figure 11-6 Correlation plot –Fe Total % vs. SATMAGAN Fe %

Source: NIO

11.5.3.2 Magnetic Susceptibility

A KT10 magnetic susceptibility ("**Magsus**") meter has been used to analyse all return pulps currently available on site at the core storage facility in Grängesberg.

The pulp bags are agitated by hand to homogenise the sample and then three reading are taken, once from the top, bottom and side of the pulp bags. An average for each sample is then calculated from these values.

The magnetic susceptibility metre determines the degree of magnetization of the material in response to an applied magnetic field, which enables accurate determination of Fe bound to magnetite when combined with the certified Fe % from the ALS results.

When the Magsus values are plotted against SATMAGAN contained magnetite percentage, the results correlate reasonably well up to a SATMAGAN value of approximately 70 % magnetite, above which the correlation is more scattered (Figure 11-7).

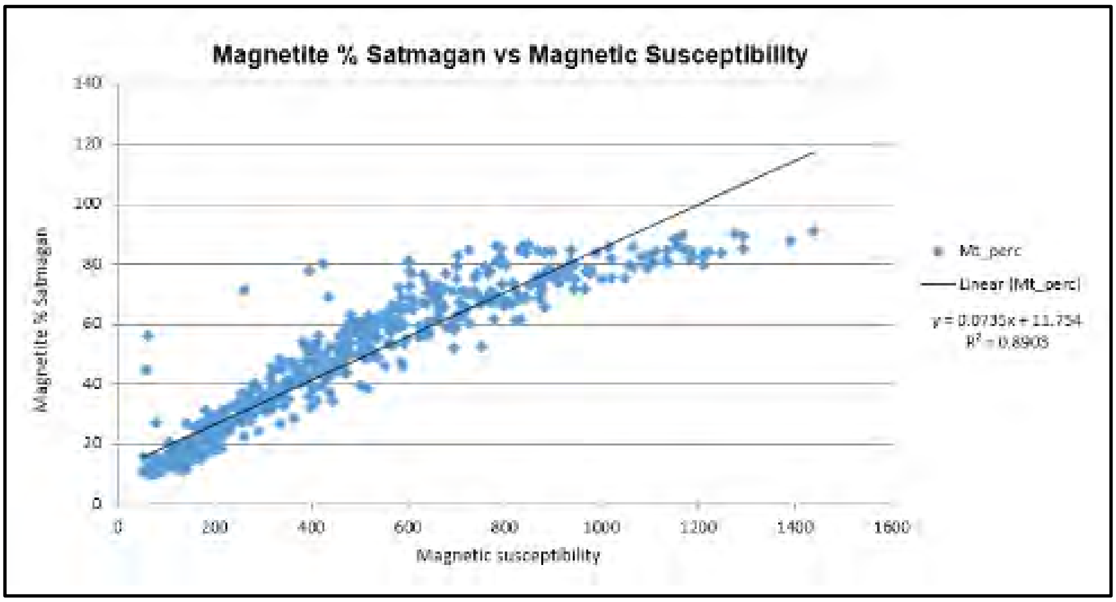

Figure 11-7 Correlation plot –Magnetite % SATMAGAN vs. Magnetic Susceptibility

Source: NIO

11.6 Quality Assurance / Quality Control ("QA/QC")

11.6.1 Historic

There are no records documenting the QA/QC control procedures during historical logging, sampling and analysing (i.e. prior to 2012). The drill core was logged following the mine/industry standard at the time. Geological mine level sections were marked where core sections were visually assessed to be "mineable". A check sample was then taken with a follow –up analysis in the onsite laboratory. Recent re-analysis of 22 of the historical holes that had assay data available has been plotted against the re-assayed results. These results indicate that Fe has been under represented but is consistent <15 Fe % error which means there is reasonable confidence levels in the historical analysis (Figure 11-8). Phosphorous, however, was not representative, as the plot shows there was an error <40 % which indicates historical phosphorus data cannot be used in the current resource model. (Figure 11-9).

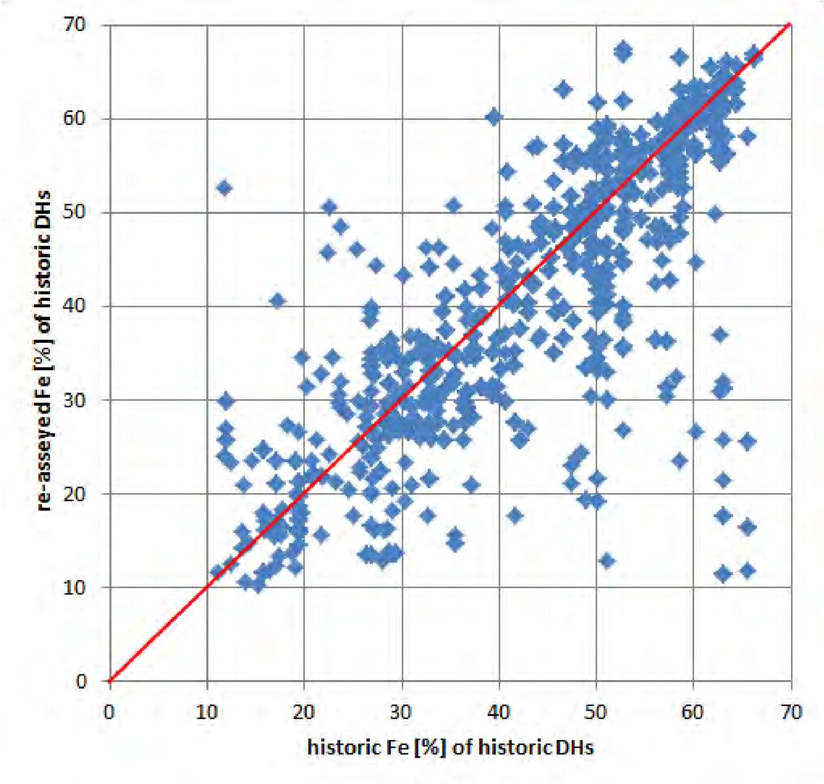

Figure 11-8 Correlation plot –Fe Re-Assay % vs. Fe Historic %

Source: NIO

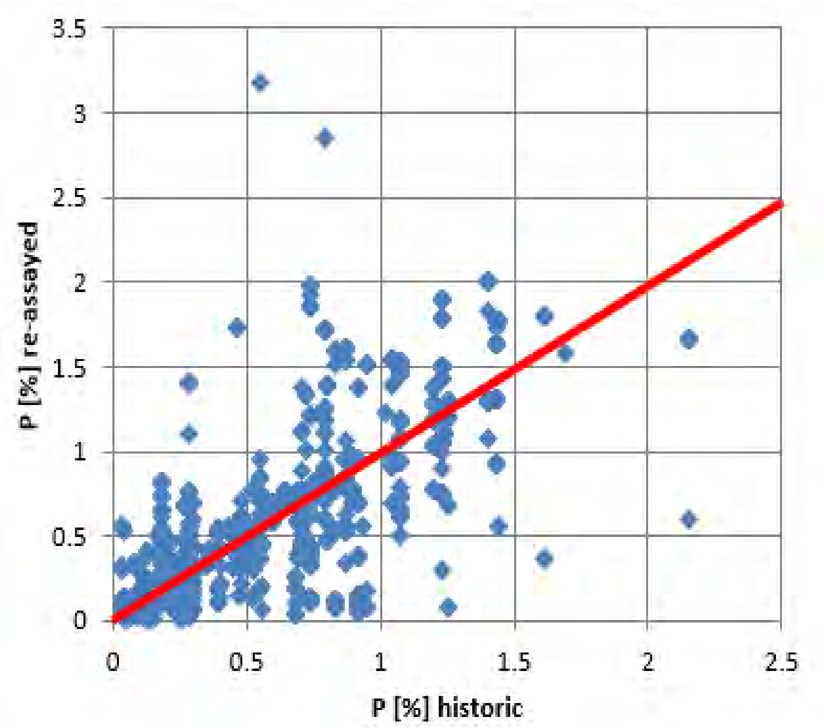

Figure 11-9 Correlation plot –Phosphorous Re-Assay % vs. Phosphorous Historic %

Source: NIO

The ALS Chemex laboratory in Vancouver used by NIO is accredited to ISO/IEC 17025:2005 standards.

All of the methods of analysis used in 2012 and 2014 are considered appropriate by DMT for iron ore projects of this type.

All results from every analysis were recorded within an MS Excel worksheet, checked using the QA/QC data then and transferred to the NIO Blötberget Access database. All coarse rejects, pulps and drill cores are then fully catalogued and stored in Grängesberg for reference at a later date.

11.6.2 Equipment Accuracy & Tolerances

The analytes and ranges for the ME- ICP61a, ME-XRF21n and XRF15b equipment at ALS Vancouver are illustrated in Table 11-2.

Table 11-2 Analytes and ranges for ME- ICP61a, ME-XRF21n and XRF15b from ALS Labs

ANALYTES & RANGES (ppm)								CODE
Ag	1-200	Cr	10-100,000	Na	0.05%-30%	Ti	0.05%-30%	ME-ICP61a
Al	0.05%-30%	Cu	10-100,000	Ni	10-100,000	Tl	50-50,000	
As	50-100,000	Fe	0.05%-50%	P	50-100,000	U	50-50,000	
Ba	50-50,000	Ga	50-50,000	Pb	20-100,000	V	10-100,000	
Be	10-10,000	K	0.1%-30%	S	0.05%-10%	W	50-50,000	
Bi	20-50,000	La	50-50,000	Sb	50-50,000	Zn	20-100,000	
Ca	0.05%-50%	Mg	0.05%-50%	Sc	10-50,000			
Cd	10-10,000	Mn	10-100,000	Sr	10-100,000			
Co	10-50,000	Mo	10-50,000	Th	50-50,000			

ANALYTES & RANGES (%)						DESCRIPTION	CODE
Al_2O_3	0.01-100	K_2O	0.001-6.3	Sn	0.001-1.5	Fused disc XRF	ME-XRF21n (normalized) ME-XRF21u (un-normalized)
As	0.001-1.5	MgO	0.01-40	Sr	0.001-1.5		
Ba	0.001-10	Mn	0.001-25	TiO_2	0.01-30		
CaO	0.01-40	Na_2O	0.005-8	V	0.001-5		
Cl	0.001-6	Ni	0.001-8	Zn	0.001-1.5		
Co	0.001-5	P	0.001-10	Zr	0.001-1		
Cr_2O_3	0.001-10	Pb	0.001-2	Total	0.01-110		
Cu	0.001-1.5	S	0.001-5				
Fe	0.01-75	SiO_2	0.01-100				

ANALYTES & RANGES (%)						CODE
Al_2O_3	0.01-100	La_2O_3	0.01-50	Sn	0.005-20	ME-XRF15b*
As	0.01-10	MgO	0.01-40	Sr	0.01-5	
BaO	0.01-66	Mn	0.01-30	Ta	0.002-16.4	
Bi	0.01-5	Mo	0.005-2	Th	0.002-5	
CaO	0.01-40	Nb	0.005-20	TiO_2	0.01-30	
CeO_2	0.01-50	Ni	0.005-20	U	0.001-5	
Co	0.01-7	P_2O_5	0.01-25	V	0.01-5.6	
Cr	0.01-10	Pb	0.005-20	W	0.001-15.9	
Cu	0.005-20	S	0.01-20	Zn	0.005-20	
Fe	0.01-75	Sb	0.005-20	Zr	0.01-20	
K_2O	0.01-6.3	SiO_2	0.01-100			

Source: ALS

11.6.3 Check Samples

Check samples have consisted of certified standards, blanks and duplicates of previously assayed samples.

No QA/QC samples were analysed for the re-assayed historic core project undertaken by BGU at Blötberget.

During the 2012 drilling and sampling campaign, samples used for quality assurance and quality control purposes were inserted, on average, one every 20 samples (5% insertion rate). During the 2014 drilling programme this changed to one in every 15 samples (6.7% insertion rate) for each type of check sample, namely; standards, duplicates and blanks.

Standards were inserted dependant on the Fe grade of the material that was being sampled.

QA/QC samples were inserted at a rate of 6 %, comparing favourably to the documented protocol. In total, 45 duplicates, 8 blanks at 1 % Fe, and 42 at 2 % Fe, 17 GIOP-94, 15 GIOP-120, 9 GIO-48 and 2 GIOP-126, standards were analysed. The results of the analyses are plotted in figures below.

The potential effects of bias in the sampling of the 2012 and 2014 core, where different proportions of core were used at different times, has not been investigated to date.

11.6.3.1 Duplicates

The duplicate analyses show an excellent correlation between original and duplicate % Fe Total, magnetite and phosphorus results.

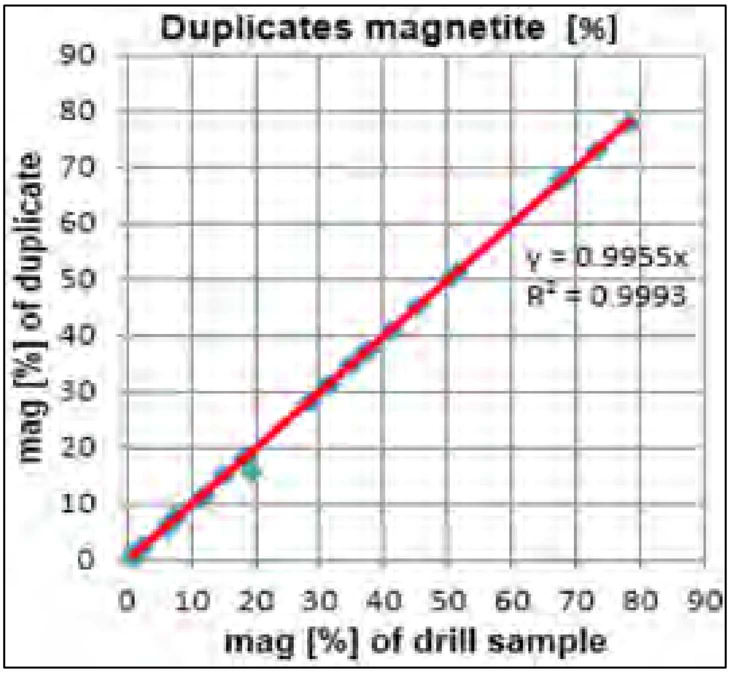

Figure 11-10 Duplicate analyses – Magnetite

Source: NIO

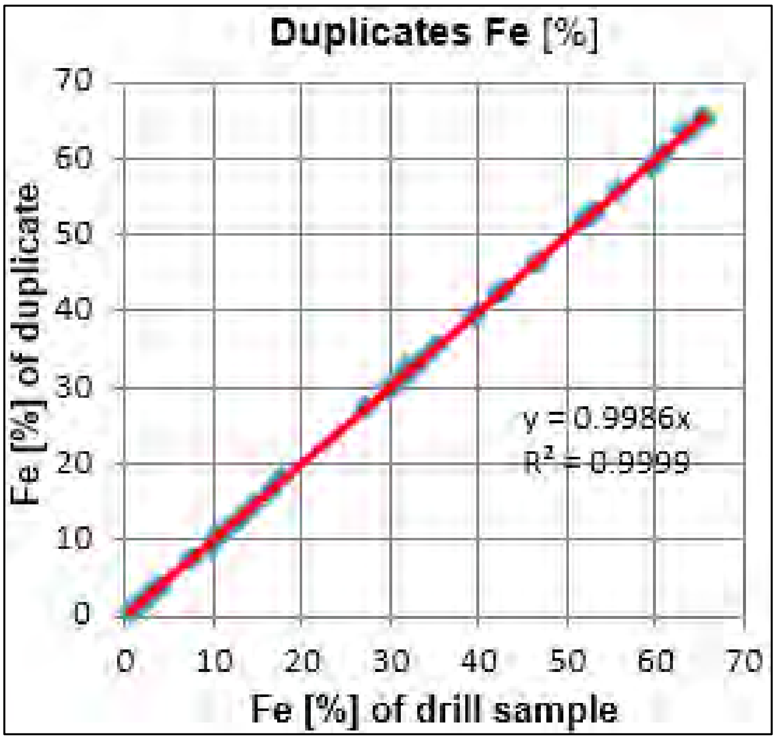

Figure 11-11 Duplicate analyses – Fe Total

Source: NIO

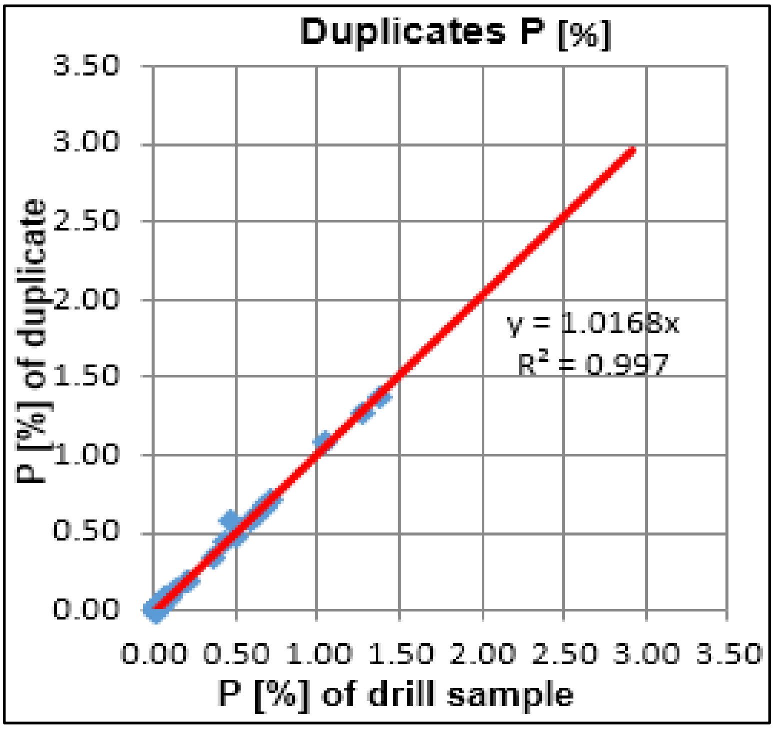

Figure 11-12 Duplicates analyses – Phosphorus

Source: NIO

11.6.3.2 Blanks

There are two blanks in the NIO database; the NIO blank material is a quartz-rich sand from a nearby quarry, and the ALS Chemex blank material is a quartzite. The first blank was used until mid-way through the 2012 drilling programme which averaged 1 % Fe, and the second blank that replaced the first blank standard averages 2 % Fe.

The blank analyses show two separate trends, with the initial blank standard grading ~1 % Fe Total and the replacement blank which grades at ~2 % Fe Total. The results of the two blank materials used (NIO and ALS) are shown in Figure 11-13. The red line on the graph indicates the point of change of the blank materials in 2012.

The results indicate that there have been no contamination issues.

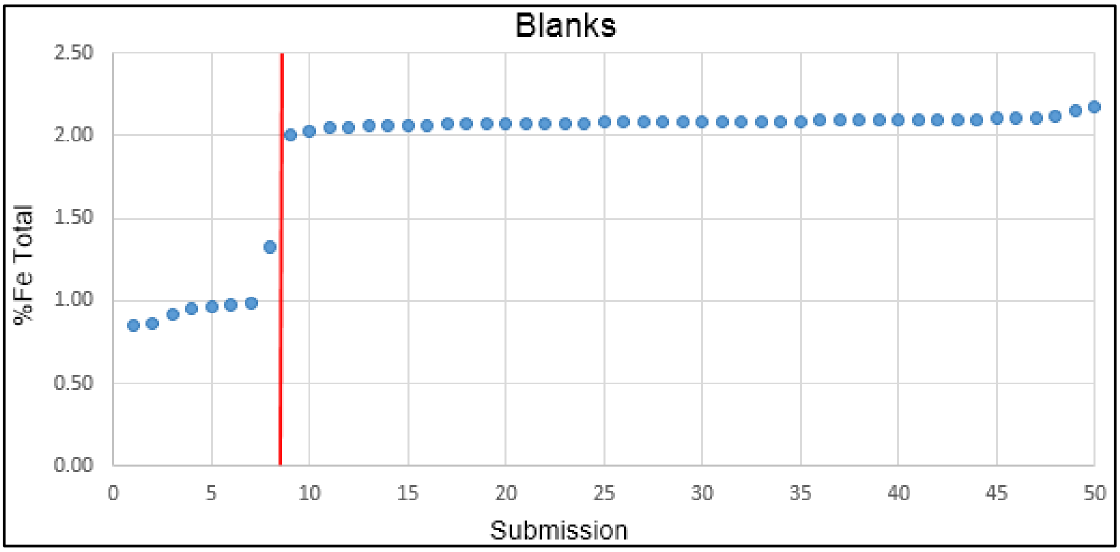

Figure 11-13 Blanks analyses - % Fe Total

Source: NIO

Assay results of blank material show significant amount of Fe and magnetite. Due to the good reproduction demonstrated from duplicates and certified standards, it is considered by DMT that the preparation of the blank sample requires more attention.

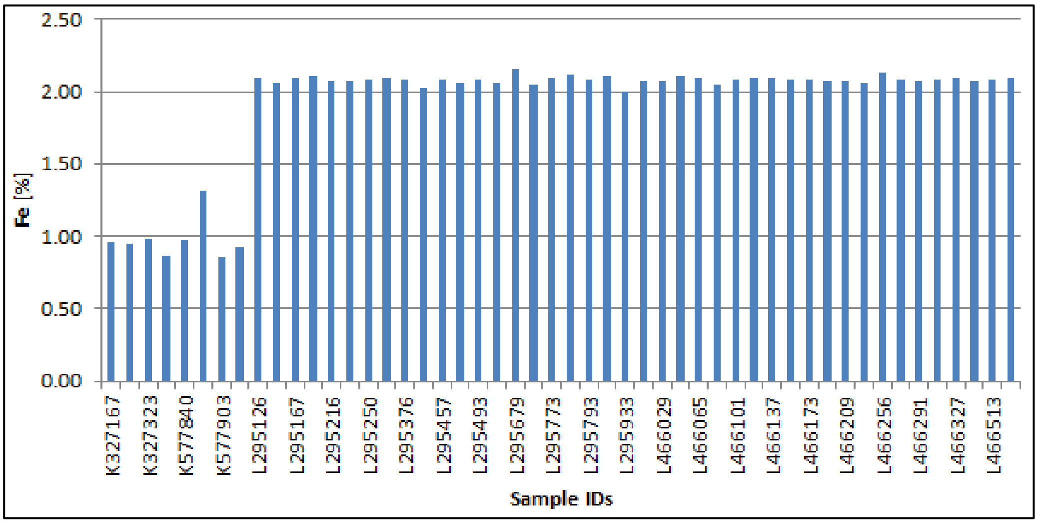

Figure 11-14 Assay results of blank samples - Iron

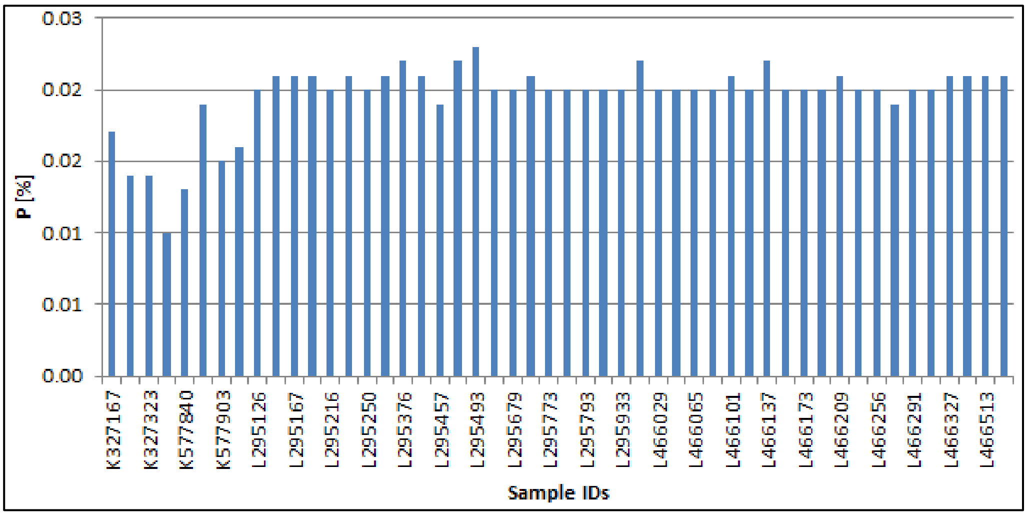

Figure 11-15 Assay results of blank samples - Phosphorous

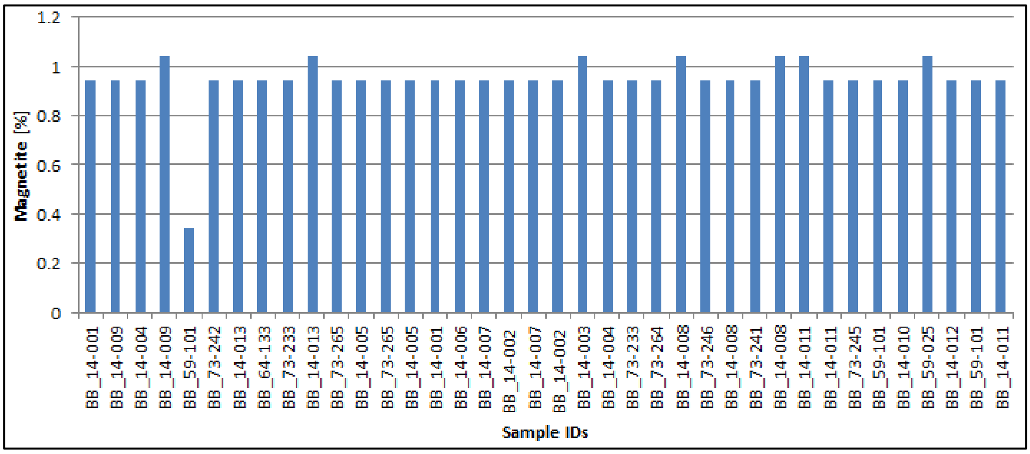

Figure 11-16 Assay results of blank samples – Magnetite

Sources: NIO

11.6.3.3 Certified Standards

The standards represent an appropriate spread of % Fe Total grades, as shown below:

- **GIOP-126** (certified mean of 49.61% Fe Total)
- **GIOP-120** (certified mean of 2.83% Fe Total)
- **GIOP-94** (certified mean of 23.97% Fe Total)
- **GIOP-48** (certified mean of 45.93% Fe Total)
- **OREAS-701** (certified mean of 23.98 % Fe Total containing Fe_3O_4 17.95%) (For use calibrating the SATMAGAN)

The four standards used show a slight negative bias to the data compared to the certified mean and the lower confidence limits set by the manufacturer. The majority of the data fall within errors of < 1% for iron and phosphorous and <2 % error for magnetite from the SATMAGAN analysis of the confidence intervals given by the standards manufacturer.

According to NIO, the standards often fall outside the lower or upper confidence levels. In this case, the total error of digestion and analysis for Fe is <1% for laboratory work (not 1 % Fe, 1 % total error).There is no indication of a systematic error by applied digestion or analysis method. Viewed in the context of the overall resource estimate error, the <1% error of the standards is deemed acceptable.

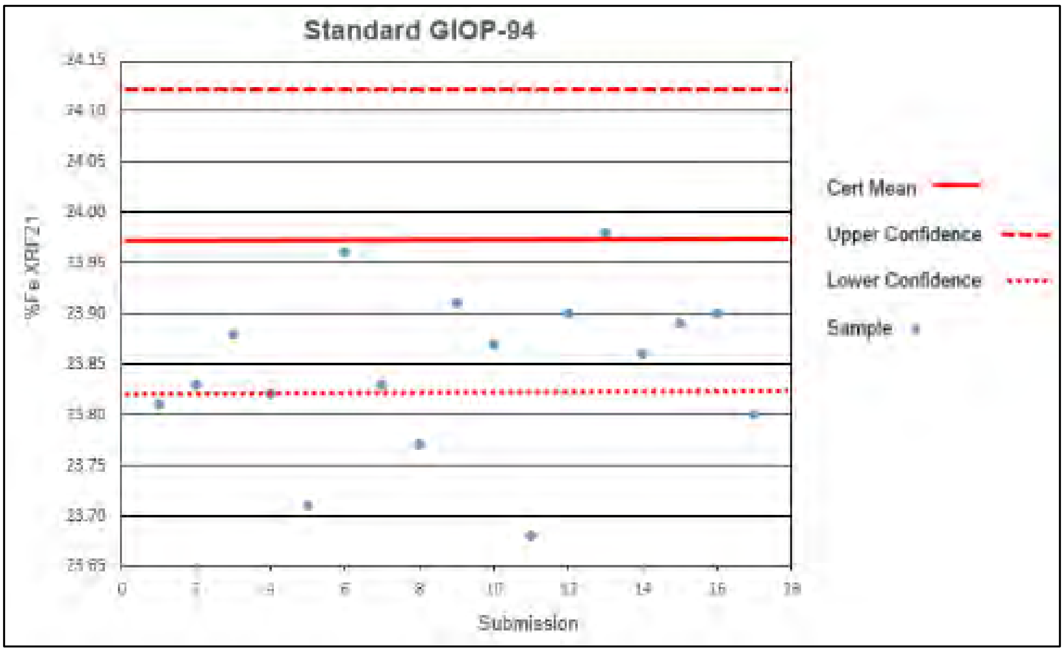

Figure 11-17 Standards analyses – GIOP-94

Source: NIO

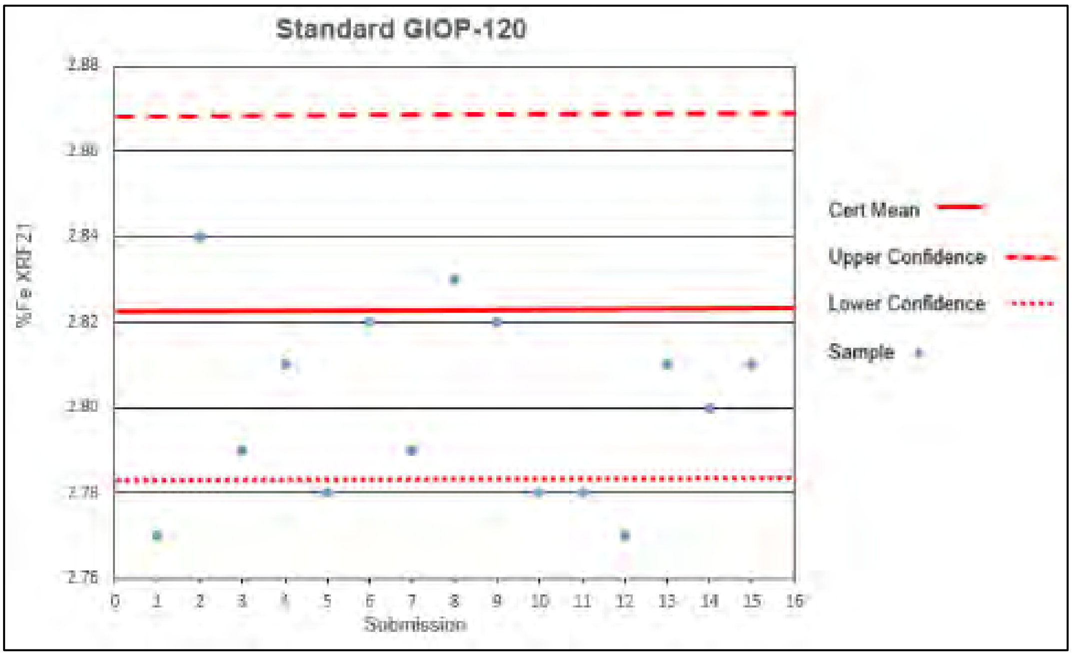

Figure 11-18 Standards analyses – GIOP-120

Source: NIO

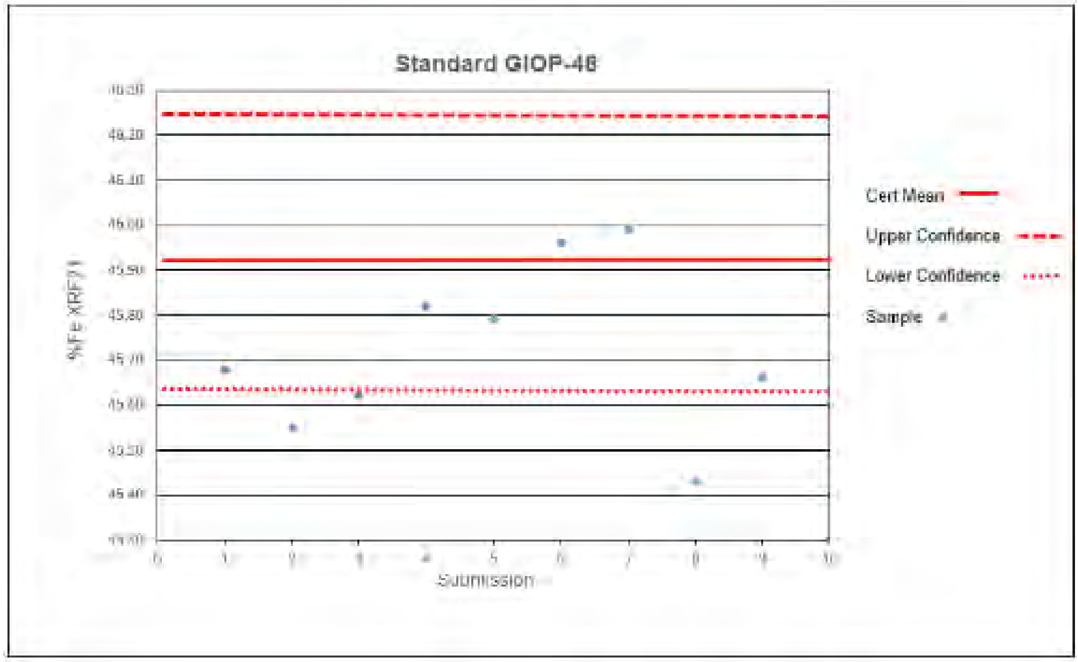

Figure 11-19 Standards analyses – GIOP-48

Source: NIO

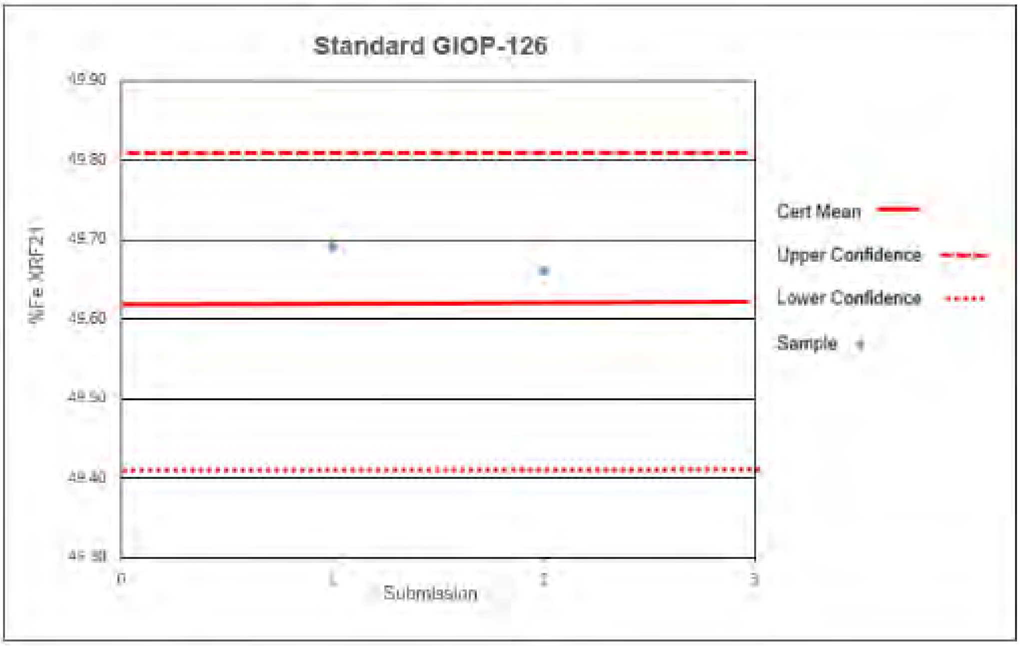

Figure 11-20 Standards analyses – GIOP-126

Source: NIO

11.6.4 SATMAGAN

Before the SATMAGAN is used, it is calibrated using the 10 supplied calibration samples from the manufacturer, Rapiscan. These calibration samples are 0, 10, 20, 30, 40, 50, 60, 70, 80, 90 and 100 % Fe bound to magnetite.

During analysis, the Standard OREAS 701 (provided by Ore Research and Analysis Australia) is inserted 1 in 5 samples (20 %). This standard has a certified mean of 23.98 % Fe Total and contains Fe_3O_4 17.95 %. NIO's blank sample and a sample of duplicate material created during sample selection by the geologists is also inserted at a rate of 1 in 5 (20 %). The SATMAGAN is factory calibrated annually by Holger Andreasen AB in Örebro, Sweden.

11.6.5 Magnetic Susceptibility

The KT-10 Magsus equipment is factory calibrated each year by Radiation Detection Systems AB in Falun, Sweden.

12 DATA VERIFICATION

12.1 Introduction

The accuracy and precision of data acquisition methods has been verified by DMT in order to assess the adequacy, reliability and representativeness (reproducibility) of the resulting data.

The verification was focused on the following data:

- Drilling location (collar) and drillhole orientation information to confirm the correct position of samples;
- Drilling and sample recovery in order to verify unbiased analytical results;
- The QA/QC sample set (Certified Standards, Blanks and Duplicates); implemented in each sample batch in order to verify the representativeness of results produced by sample preparation, digestion and chemical and mineralogical analysis;
- Davis Tube Recoveries in order to verify the magnetite data obtained by NIO using SATMAGAN instrumentation; and
- Density determinations.

All data from 2012 and 2014 have been acquired based on standard operating procedures ("**SOPs**"). Surface historical drillholes have been re-surveyed and a number of historical drillholes have been re-logged and re-assayed.

The location of all historic drillholes and geological underground maps have been converted from a local mining grid to map datum SWEREF99-TM. A local height reference system has been established, the current "zero" for which is 226.15 m below the RH2000 height system. The work of geo-referencing and coordinate conversion has been done by the Tyréns Company, Sweden.

Drillhole collar surveying was completed by Ludvika Kommun ("**LK**") after the completion of the 2012 and 2014 drilling programmes. LK surveyed drillhole collar locations (X, Y, and Z), dip and azimuth using high resolution Real Time Kinetic ("**RTK**") Global Positioning Systems ("**GPS**"). During the 2014 programme, LK also re-surveyed historic drillhole locations to confirm the translation of historic coordinates.

All coordinates and height data given in this report are in the projected reference system SWEREF99-TM + RH2000 minus 227.95 m.

12.2 Data Availability

12.2.1 Drill Hole Data

The license area has been investigated by several historic and recent drilling programmes.

Table 12-1 and give an overview of the scope of available data acquired from historic drillholes and drillholes from the 2012 and 2014 drilling programmes.

As part of the verification exercise, NIO has re-logged and re-assayed many of the located historical cores. In total, 45 drillholes from Blötberget were found in Malå and 15 at the former mine storage facility in Håksberg.

There has been re-logging of 31 of these cores (6036 m), 950 m of mineralisation has been re-sampled and re-assayed according to current industry practice and standards. This included mineralised core that had not been sampled historically as it fell below the (visual) historic cut-off grade of 35 %. Approximately 5-10 m of mineralised core was sampled beyond the boundaries of the historical sampled sections.

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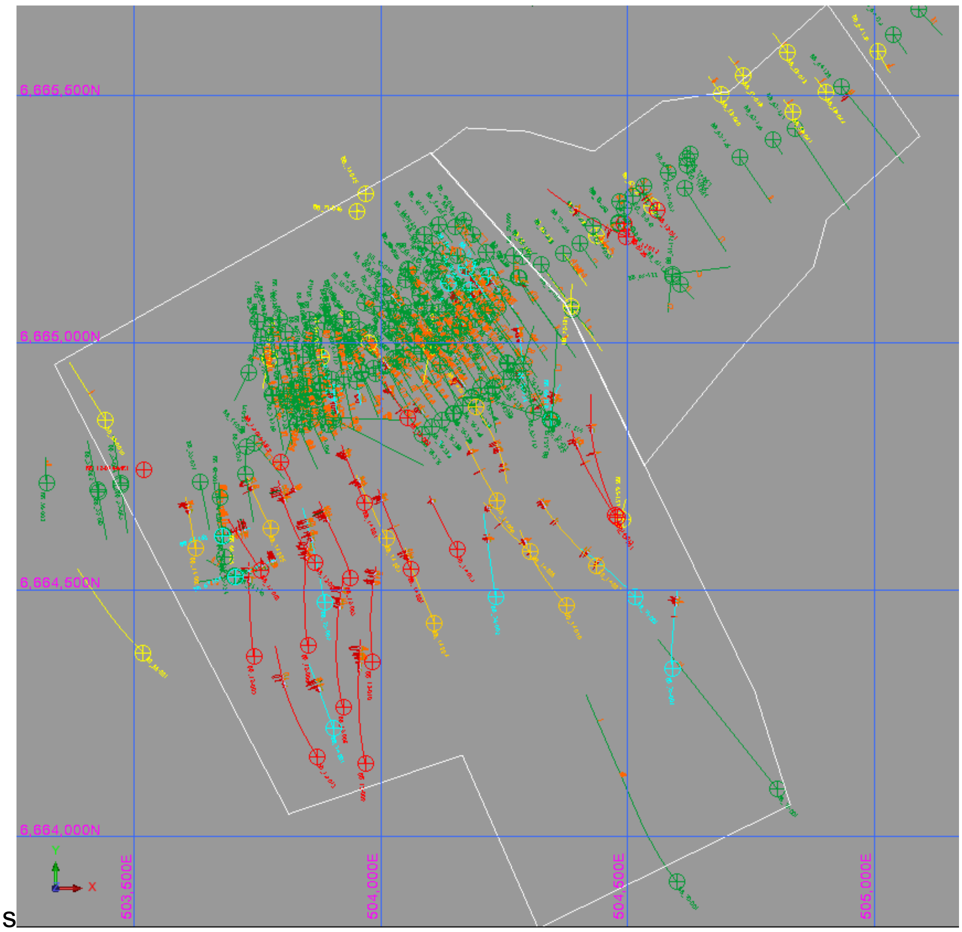

Figure 12-1 Plan of drillholes in current Blötberget & (pending) Guldkannan license areas (white border)

Source: DMT

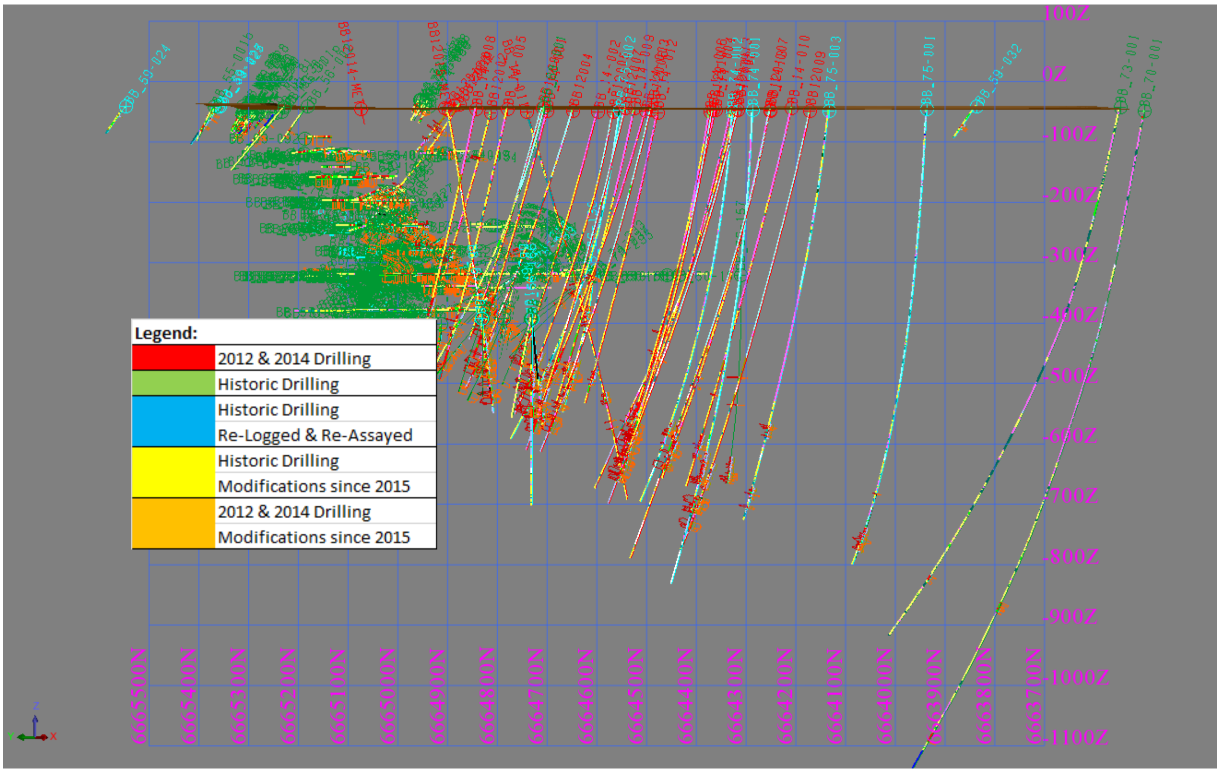

Figure 12-2 Section View W-E (Direction 55°N) of drillholes

Source: DMT

Table 12-1 Summary of data validation (drilling and sampling)

Type	Drillholes with known location and orientation	Metres drilled	Drillholes with down hole deviation data	Drillholes with geological data	Metres geologically logged	Drillholes with chemical data	Metres chemically analysed	Drillholes with magnetite analysis (SATMAGAN and mag sus)	Metres of magnetite analysis (SATMAGAN and mag sus)	Drillholes with density data	Metres of density data
Historic	427	35,742	12	260	26530	348	4750	30	900	25	730
Historic Re-logged / Re-assayed				29	6036	31	950	31	950	26	780
2012	16	7,426.05	16	14	7,385.65	13	621.55	13	600.25	13	620.00
2014	13	7,092.83	13	13	7,046.77	13	549.86	13	549.86	13	548.14
Total	**456**	**0**	**41**	**316**	**32,566**	**405**	**6,871.41**	**87**	**3,000.11**	**77**	**2,678.14**

Source: DMT

Table 12-2 Summary of drill hole data available in interpreted wireframes

Source: DMT

Wireframe domain	Number of Drillhole Intersections	Metres of Drillhole Intersections	Sampled metres assayed by ALS	Metres with digitised Fe results	Total metres with Fe results	Sampled metres with SATMAGAN (Mg) analysis	Metres of density data
HUGFLY	286	5130	765	2453	3218	765	710
HUGFLY-NE	15	160	5	112	117	5	5
KALV	102	1561	416	573	989	416	391
SAND-GULD	52	277	76	127	203	76	59
Total	**455**	**7128**	**1262**	**3265**	**4527**	**1262**	**1165**

12.2.2 License Area

The license area 'Blötbergsgruva K nr 1' (ID: 2010001141) held by NIO covers an area of 1.26 km² and has a mining status. The resource estimate of 2015 was based on this license area.

The adjoining and pending mining licence, Blötbergsgruva K nr 2' or 'Guldkannan', falls within the existing Blotberget Nr 1 exploration permit area. The Client made application for this mining licence in April 2016 and awaits approval from the Swedish mining authorities.

All license information has been provided by the client. Ownership and license status has not been independently verified by DMT.

Table 12-3 and Table 12-4 show the coordinates of the boundary lines defining these license areas. These coordinates are given in map datum SWEREF99-TM, as digitised by Tyréns, on behalf of NIO.

Table 12-3 Coordinates of licence area 'Blötbergsgruva K nr 1' (ID: 2010001141) in map datum SWEREF99-TM.

Licence Area Boundary Point	Easting	Northing	Licence Area Boundary Point	Easting	Northing
1	504 319.11	6 663 813.90	5	504 102.01	6 665 384.70
2	504 164.88	6 664 164.89	6	504 374.64	6 665 079.13
3	503 813.46	6 664 045.65	7	504 758.10	6 664 293.09
4	503 338.52	6 664 955.53	8	504 829.87	6 664 064.04

Source: DMT

Table 12-4 Coordinates of pending licence area 'Blotbergsgruva K nr 2' (ID: 2016000339) 'Guldkannan' in map datum SWEREF99-TM.

Licence Area Boundary Point	Easting	Northing	Licence Area Boundary Point	Easting	Northing
1	6665381.84	504102.01	8	6665418.13	505091.97
2	6665434.62	504172.37	9	6665249.23	504903.48
3	6665427.48	504296.42	10	6665154.56	504877.34
4	6665387.20	504431.29	11	6664958.95	504703.23
5	6665487.84	504569.50	12	6664751.08	504533.28
6	6665508.64	504707.13	13	6665076.27	504374.64
7	6665685.90	504904.52			

12.2.3 Topography

A Digital Terrain Model ("**DTM**") has been prepared by Tyréns, on behalf of NIO. This DTM is a triangulation based on contour lines with 5 m spacing. The morphology in the license area has a relatively low topographic range (-47 m to -23 m); predominantly on the -46 m, as illustrated in Figure 12-3.

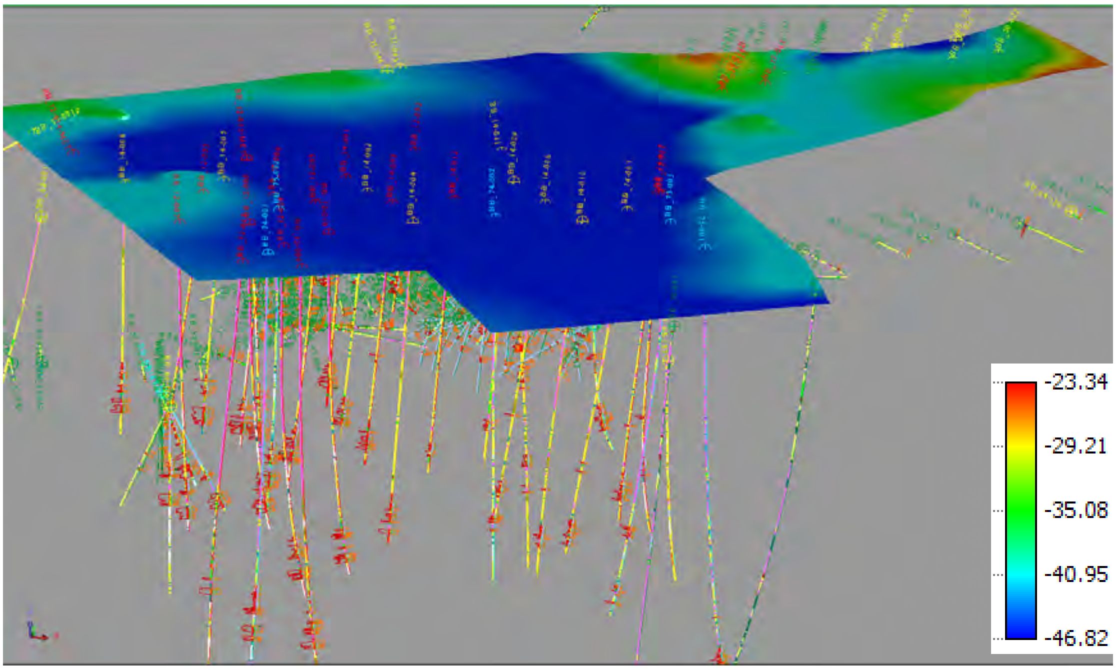

Figure 12-3 DTM of current Blötberget and adjoining (pending) Guldkannan license area

Source: DMT

12.2.4 Historical Mine Maps & Sections

In accordance with Swedish mining regulations, 1:800-scale maps and level plans were kept updated, during historic periods of mining, and these have been scanned and georeferenced.

Only the horizontal maps have been ortho-rectified and imported into Surpac. The sections were only used for interpretation and were digitised by Tyréns on behalf of NIO (Figure 12-4 and Figure 12-5)

A tabulation of the historic geological maps and sections that have been utilised are given in Appendix B.

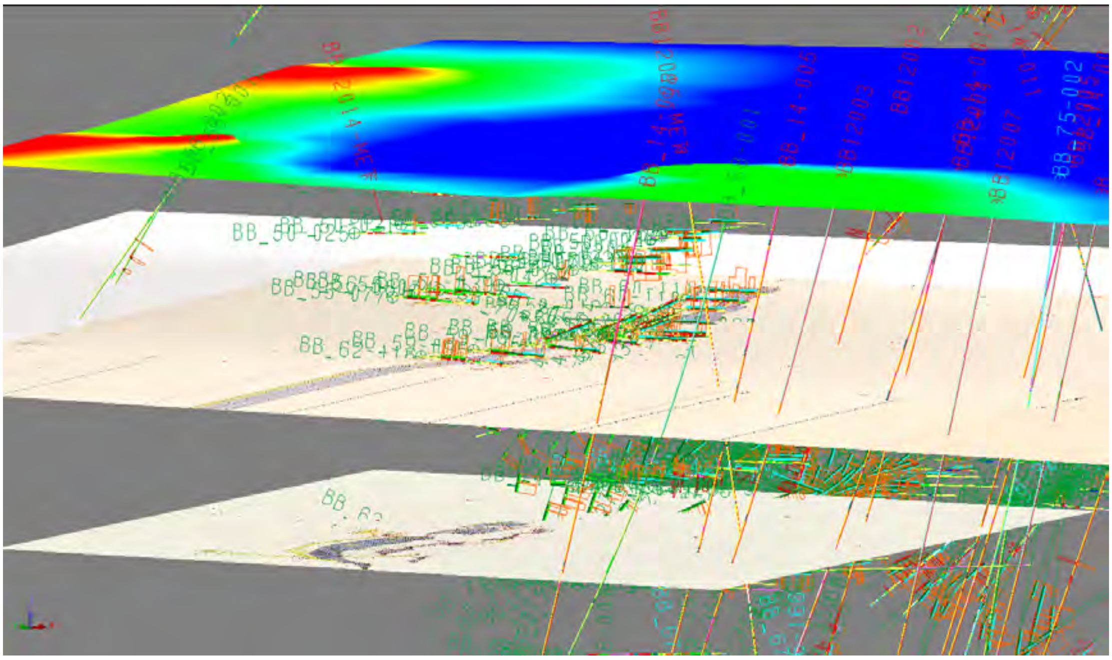

Figure 12-4 Geo-referenced historic level plans

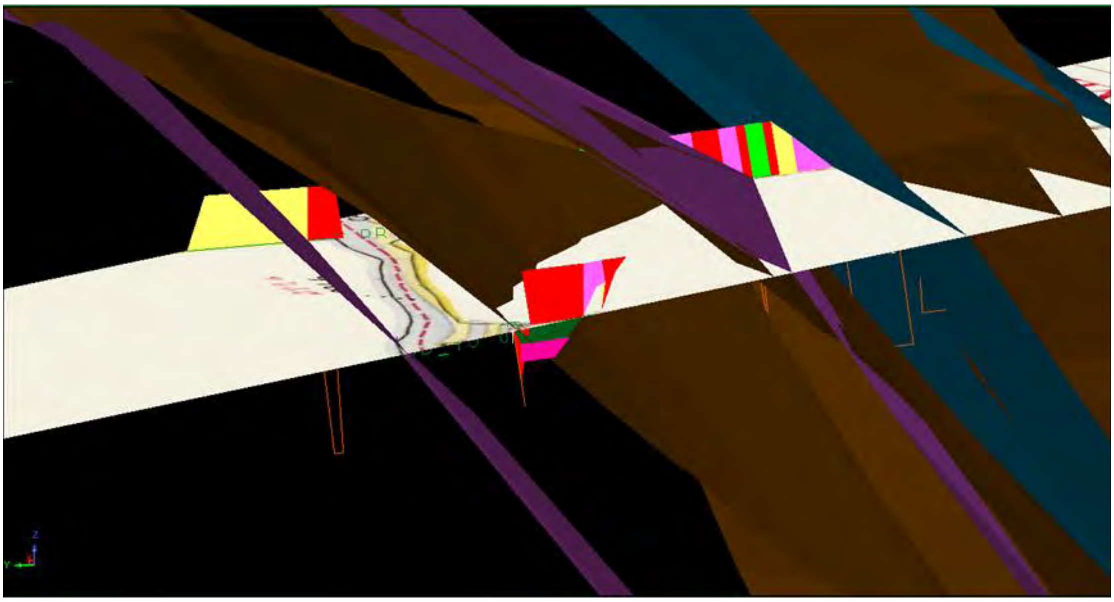

Figure 12-5 Geo-referenced level plan within the wireframe

Geological maps and underground level mine plans have been used to estimate the maximum depth level of historical mining activities and the volume of mined out material. This exercise was undertaken by NIO technical personnel and a terrain model surface was supplied to DMT showing the depth limit of mining activities in the license area of 2015 and the mine layout for Guldkannan mine. (Figure 12-6).

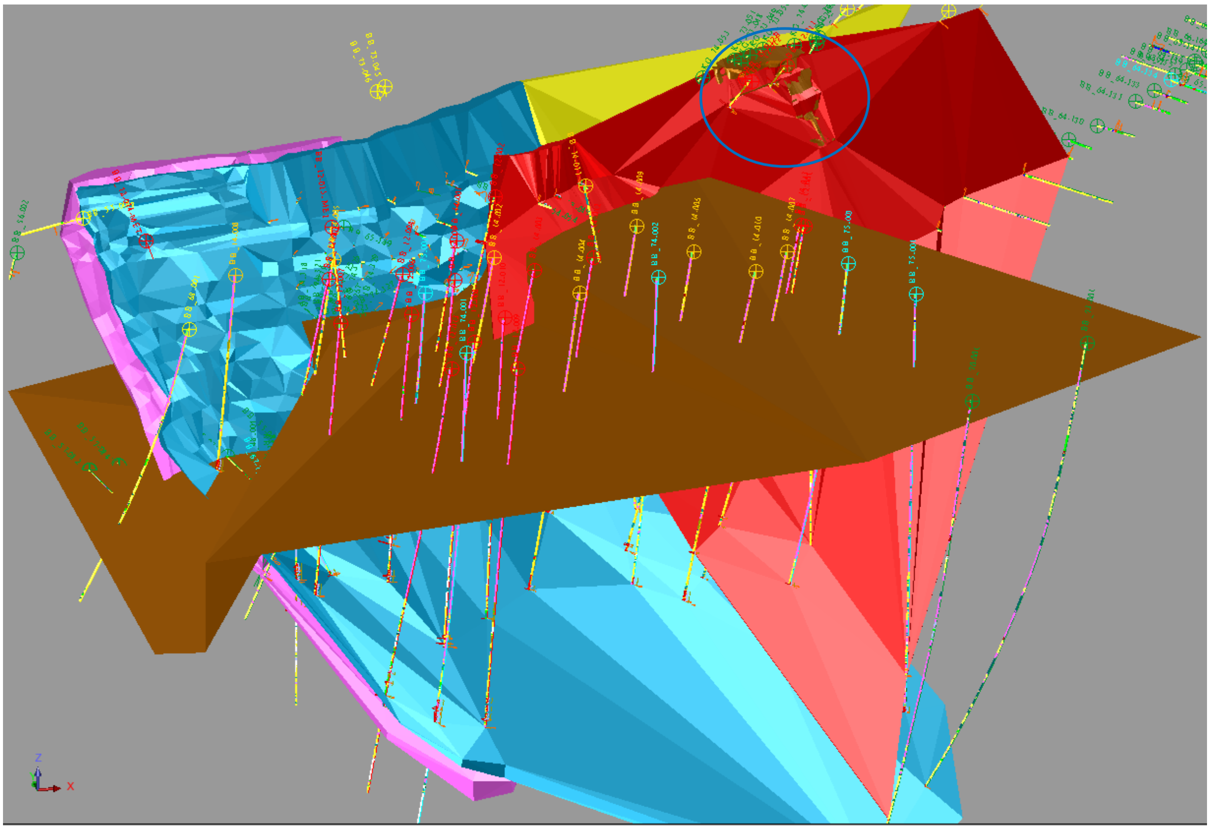

Figure 12-6 DTM of the lowest mined level (brown surface) within the Blotberget licence, and distinct mine layout of Guldkannan mine (within the blue circle)

12.2.5 Drill Hole Locations & Orientation

Collar locations and elevations from the 2012 and 2014 drilling programmes have been surveyed by a registered surveyor contracted by NIO. Some differences were identified between surveyed collar elevation and elevation of topography of between 1 m and 3 m. This variance in elevation does not significantly affect the thickness of the respective wireframe and related domain intersections.

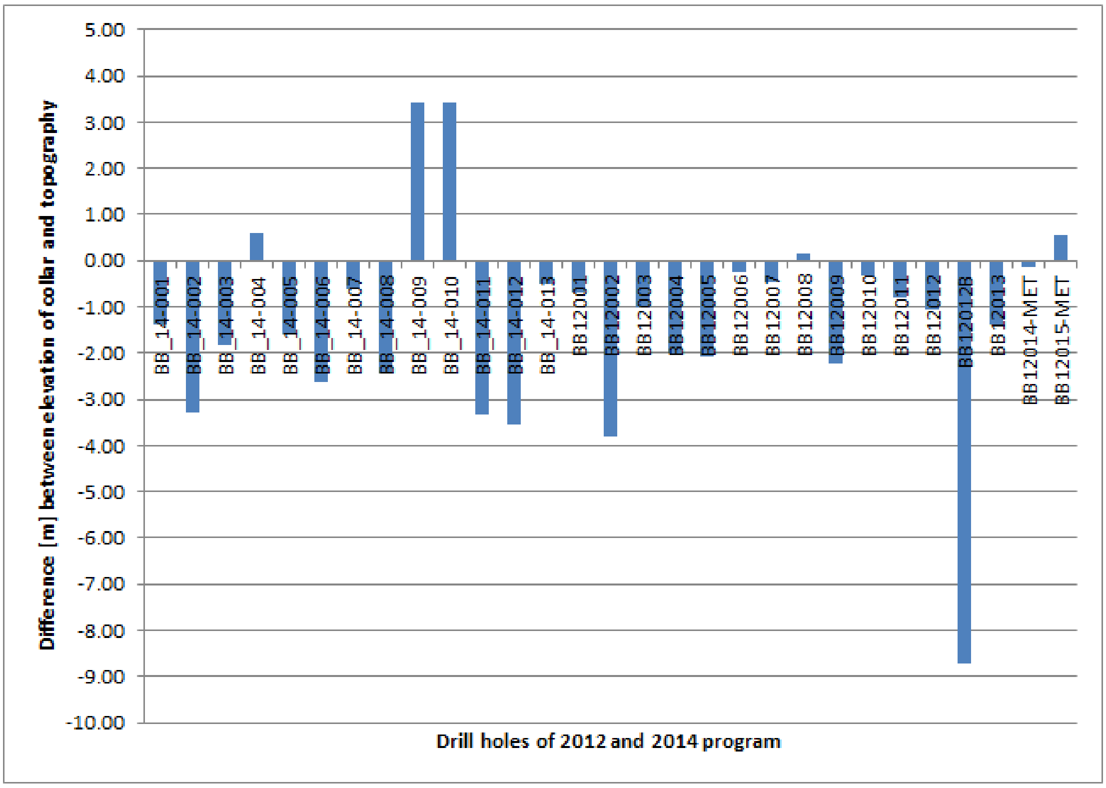

Figure 12-7 Offset of surveyed surface collar elevation from terrain model

Note: Negative values: collar elevation is below topography

Positive values: collar elevation is above topography

The collar locations, dips and azimuths of the underground historical drillholes, in all but a few instances, are very close to the information given in the historical protocols. The error in location is typically less than 0.5 m. For a small number of drillholes, no collar information has been found in the records. As a result, their locations have been taken from the plans.

12.3 Data Preparation & Management

All data from the historical and recent drilling programmes has been stored in an industry standard database software that includes the following information:

- Collar survey;
- Down hole survey;
- Geology (and abbreviation codes);
- Sampling;
- Laboratory assay data;
- Digitised chemical data;
- Magnetite data of SATMAGAN;
- Davis tube recovery;
- QA/QC sample set; and

- Bulk density.

The database has been rigorously checked by DMT for completeness and error for each drillhole and cross checked with the core photographs. All data have been exported and implemented into an industry standard (Geovia Surpac) modelling software package.

12.3.1 Drilling Recovery

Drilling recovery for the 2012 and 2014 drilling programmes is typically very close to 100 %. Consequently, any artificial bias caused by poor core and sample recovery can be excluded for the 2012 and 2014 drilled holes. For the historic drilling, no data relating to core recovery is available.

12.3.2 Historical Chemical Data

In total, 22 historical drillholes with chemical data of Fe and/or P were re-sampled and re-assayed. These drillholes have been used to verify the Fe and P data of historical drillholes (Table 12-5).

Table 12-5 Historical drillholes re-sampled

Item	Drillhole ID	Item	Drillhole ID
1	BB_59-101	12	BB_73-245
2	BB_59-103	13	BB_73-246
3	BB_64-134	14	BB_73-264
4	BB_66-138	15	BB_73-265
5	BB_66-157	16	BB_74-001
6	BB_66-166	17	BB_74-002
7	BB_67-167	18	BB_74-310
8	BB_67-168	19	BB_75-001
9	BB_73-236	20	BB_75-002
10	BB_73-241	21	BB_75-003
11	BB_73-242	22	BB_76-383

Figure 12-8 and Figure 12-9 show correlation plots comparing re-assayed Fe and P with historic Fe and P.

The data of Fe could be reproduced with an error of 12 %. No systematic error could be observed in the majority of the data. The data of P could be reproduced with an error of 40 %.

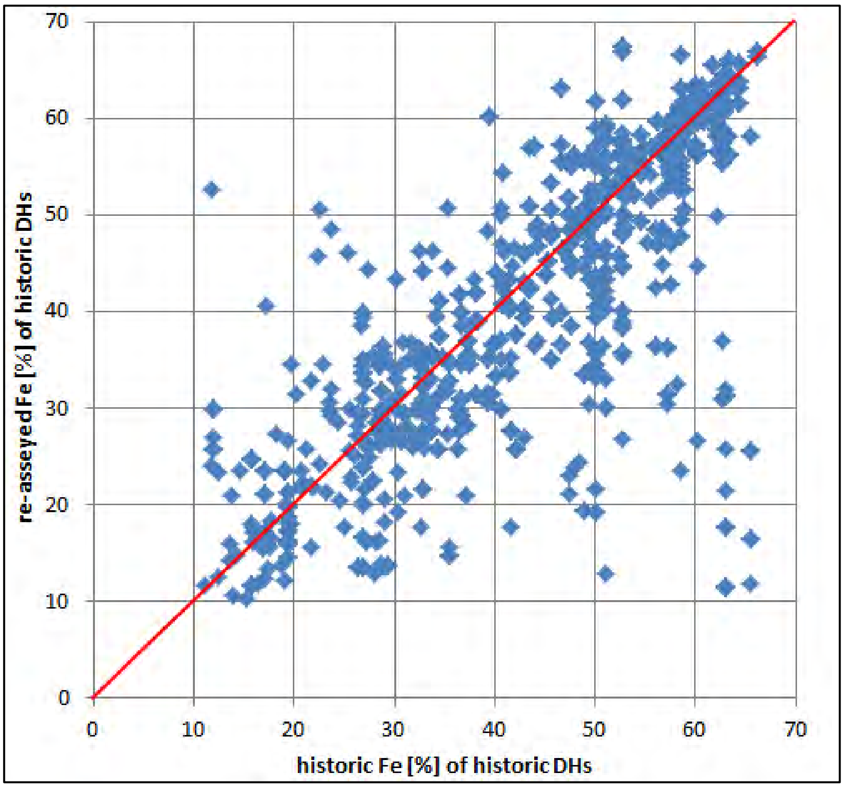

Figure 12-8 Correlation plot of re-assayed Fe vs. historic Fe

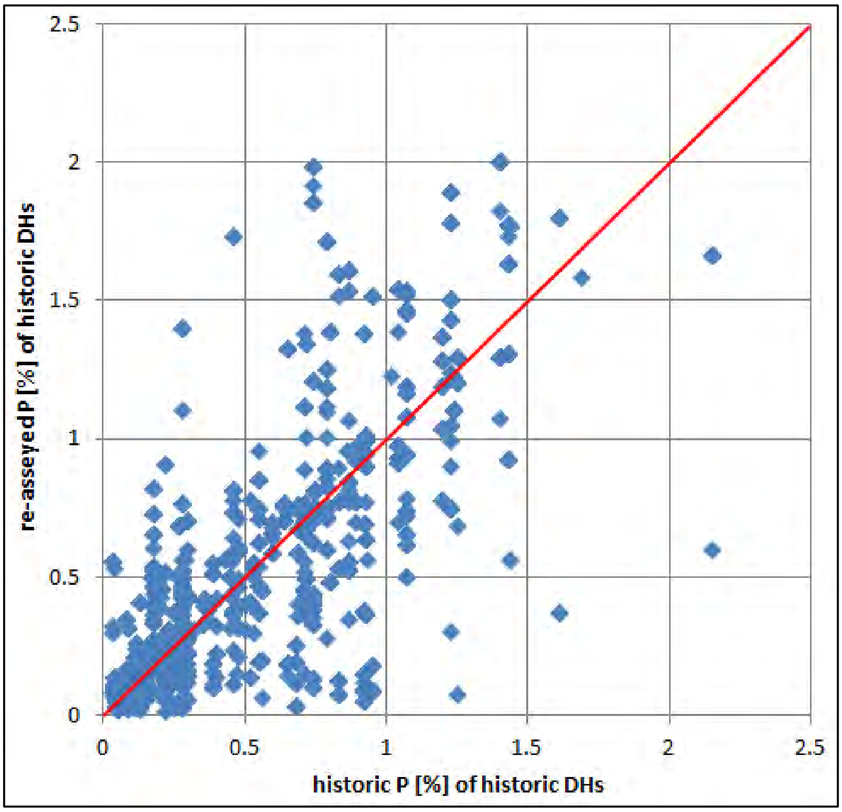

Figure 12-9 Correlation plot of re-assayed P vs. historic P

12.4 Comments on Data Quality

The accuracy and precision of the applied sample preparation and assaying methods have been verified by DMT and the resulting data for Fe, P and magnetite have been assessed as reliable and representative to be used in resource modelling.

While the historic Fe data are assessed as acceptable to be used in the resource model, the historic P data were not considered acceptable and were not used in the resource model and subsequent resource estimate.

The drilling recoveries from the 2012 and 2014 drilling programmes is close to 100 %. Consequently, sample or assay bias caused by poor core recovery is negligible.

A slight offset in sample location or orientation will not have any influence on the resource estimate.

No significant risks with the underlying data, used for mineral resource estimation, were not identified by DMT.

With regard to data quality and quantity in the pending Guldkannan mining licence application area, three surface drillholes were collared within this area in 2012, which were re-logged and re-assayed to the same industry standard as those of the adjoining Blötberget area. However, unlike the Blötberget licence area and, despite best efforts by the NIO geological staff, there was no opportunity to recover, re-log or re-sample any of the historical underground drilling. Thus, this part of the QA/QC process, which was carried out for the Blötberget MRE in 2015, to a satisfactory industry standard, has not been possible to replicate for the additional Resources estimated in the pending Guldkannon mining lease area.

Equally, the density of underground drilling was limited to the near surface and upper mined out levels of the Guldkannan underground operations and to 320 level footwall exploration drive.

A combination of the QA/QC shortfall, the low data density and the more focussed distribution of the underground sample points (by way of borehole interesections) in license area of 'Blötbergsgruva K nr 2', has influenced the level of confidence in the data quality / quantity for the Guldkannan licence block. Consequently, the interpretation, interpolation and assessment of continuation of mineral composition, especially the grade of TFe, magnetite and corresponding hematite-magnetite ratio is of a lower level of confidence in the 'Blötbergsgruva K nr 2' licence area than in the 'Blötbergsgruva K nr 1' license area.

Due to the limited data QA/QC and spatial distribution of the sample intersections within Guldkannan, the geostatistical study (variography) carried out on the data could not apply the same level of confidence and parameters as that used for the Blotberget license

13 MINERAL RESOURCE ESTIMATE

13.1 Introduction

DMT has built a new resource block model for this updated MRE for the Blötberget Project.

The MRE has been prepared in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves 2012 ("**the JORC Code**").

The geological model was prepared using an exploration database cut-off date of the, 10 March 2017. The Resource Model itself, has an effective date of the 28 April 2017, (issue date of 5 May 2017).

13.2 Geological Model

The geological interpretation has been based on the geological environment, deposit type and geological features controlling style and characteristics of the mineralisation.

The majority of the iron bearing lenses or zones at Ludvika are classified as magnetite rich lava flows, hosted by the Svecofennian, 1.91–1.89 Ga felsic metavolcanic rocks and generally form seam-shaped bodies. The flows are occasionally of pure magnetite, with additional detrital magnetite units assumed to be volcaniclastic sediments.

For the Blötberget area it is reported that the mineralisation relates to sub-aerial terrestrial volcanism. This has caused a partial oxidation of the primary magnetite mineralisation and hence produced large areas of martite (haematite formed after replacement of magnetite) mineralisation (*GeoVista Resource Estimate, January 2014*).

Prior to geological modelling, a series of cross sections were defined perpendicular to the strike direction of 55°N of all of the mineralised zones within the license area. Geological interpretation was carried out on cross sections at varying intervals dependant on drill spacing.

13.3 Wireframe Modelling

The interpretation followed the geological concept of a laterally continuous seam-like geometry, which is flexured along the dip direction of 145° with dips ranging from 50° at the surface to 35° at a depth of 800 m below surface.

Three main iron rich zones lie as narrow mineralised envelopes, from the upper (hanging wall) zone to lower (footwall) zone these three zones are referred to as:

- Sandell ("**SAND**") and Guldkannan ("**GULD**");
- Hugget-Flygruvan ("**HUGFLY**") and Carlsvard ("**HUGLY-NE**"); and
- Kalvgruvan ("**KALV**").

- While SAND, HUGFLY and KALV are located in the concession are of 2015, GULD and HUGFLY-NE are located within the new acquired licence area

Each of these zones required wireframe modelling for grade estimation purposes.

Individual hanging and footwall triangulated surfaces were created based on drillholes intersecting the mineralised zones and a set of underground maps of historic mining.

The surfaces were extended with half the distance to nearest drillhole as lateral limit of mineralisation. A fully enclosed 3D triangulated solid of each zone was achieved by cross-linking the boundary strings. A 15 % Fe cut-off grade has been applied to model the contacts of the mineralised zones. Some intersections did not show a composite grade above 15 % Fe. These low grade intersections were also included in the mineralised zone in order to honour the lateral continuity of the seam-like lava flow model.

The four solid models are representing the most optimistic envelopes which also consider waste material and low grade ore.

The shape and orientation of the mineralisation and the geological and mineralogical data (including dip and dip direction) suggest that there is no additional tectonic influence on the distribution of mineralisation. However, local mineralisation might be affected regarding re-mineralisation or local structural inconsistencies in areas were fault planes have been modelled, based on information provided by NIO from historic mine level plan and maps and historic drill logs.

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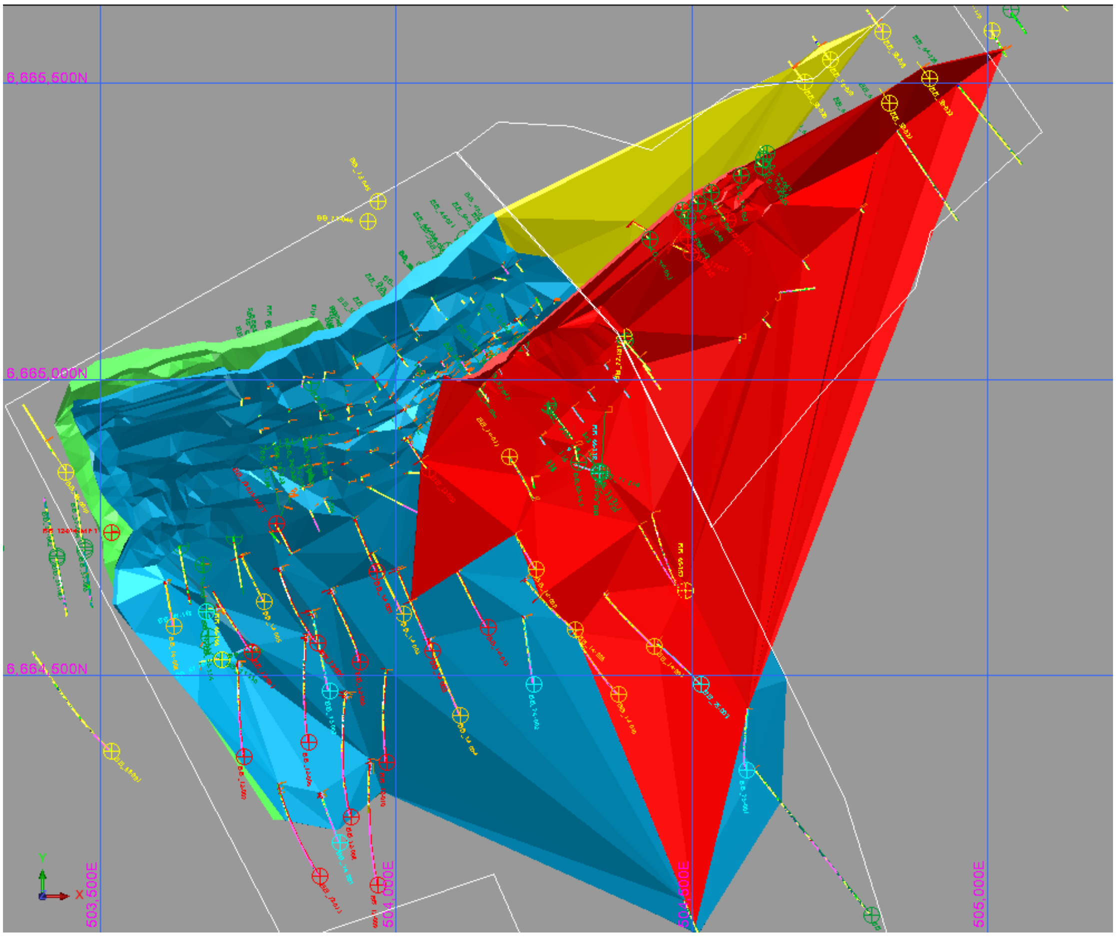


Figure 13-1 Wireframes; 3D high angle view from south east.

Note: SAND (red), HUGFLY (blue), KALV (green), HUGFLY-NE (yellow)

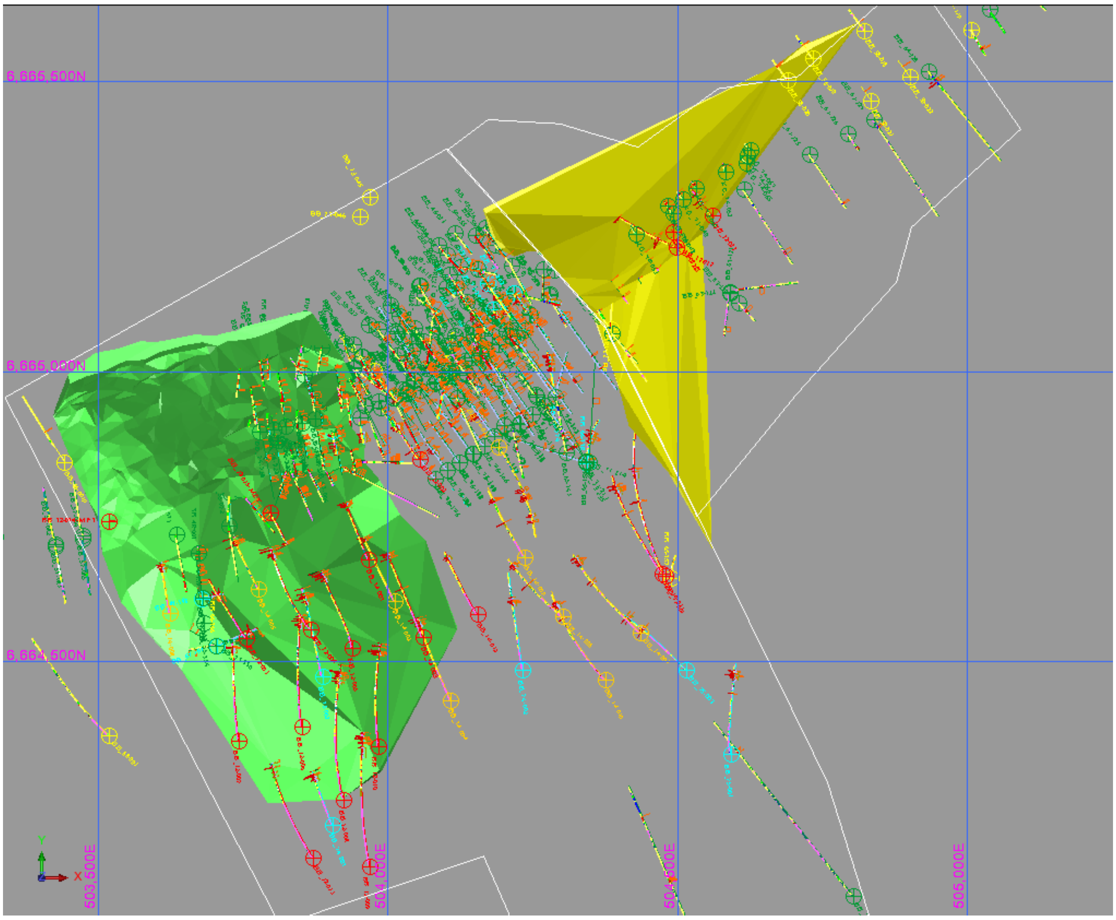


Figure 13-2 Wireframes; view from south east. (HUGFLY and SAND removed)

Note: SAND (not shown), HUGFLY (not shown), KALV (green), HUGFLY-NE (yellow)

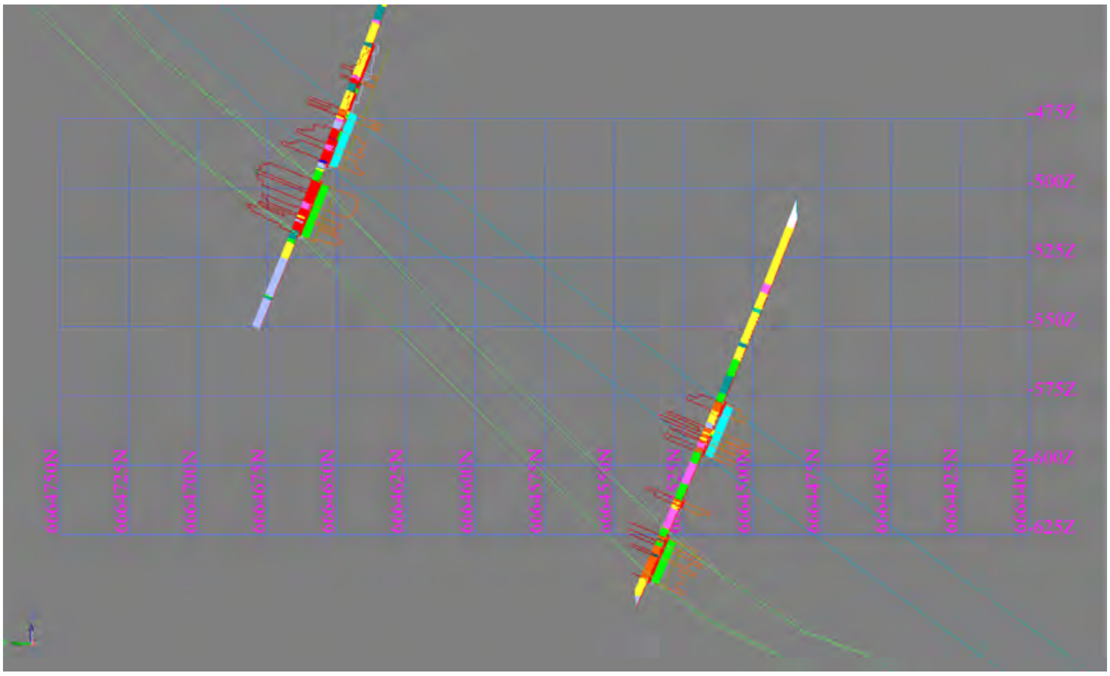


Figure 13-3 Cross section looking NE through HUGFLY

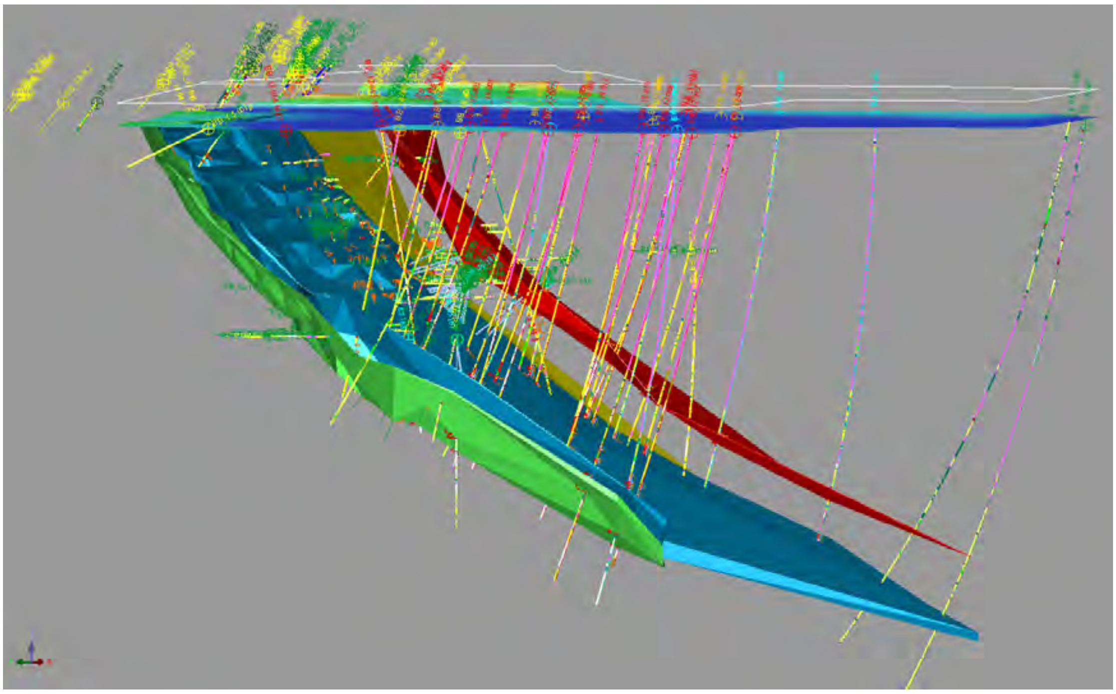


Figure 13-4 Wireframes 3D view to East along strike direction

Note: SAND (red), HUGFLY (blue), KALV (green), HUGFLY-NE (yellow)

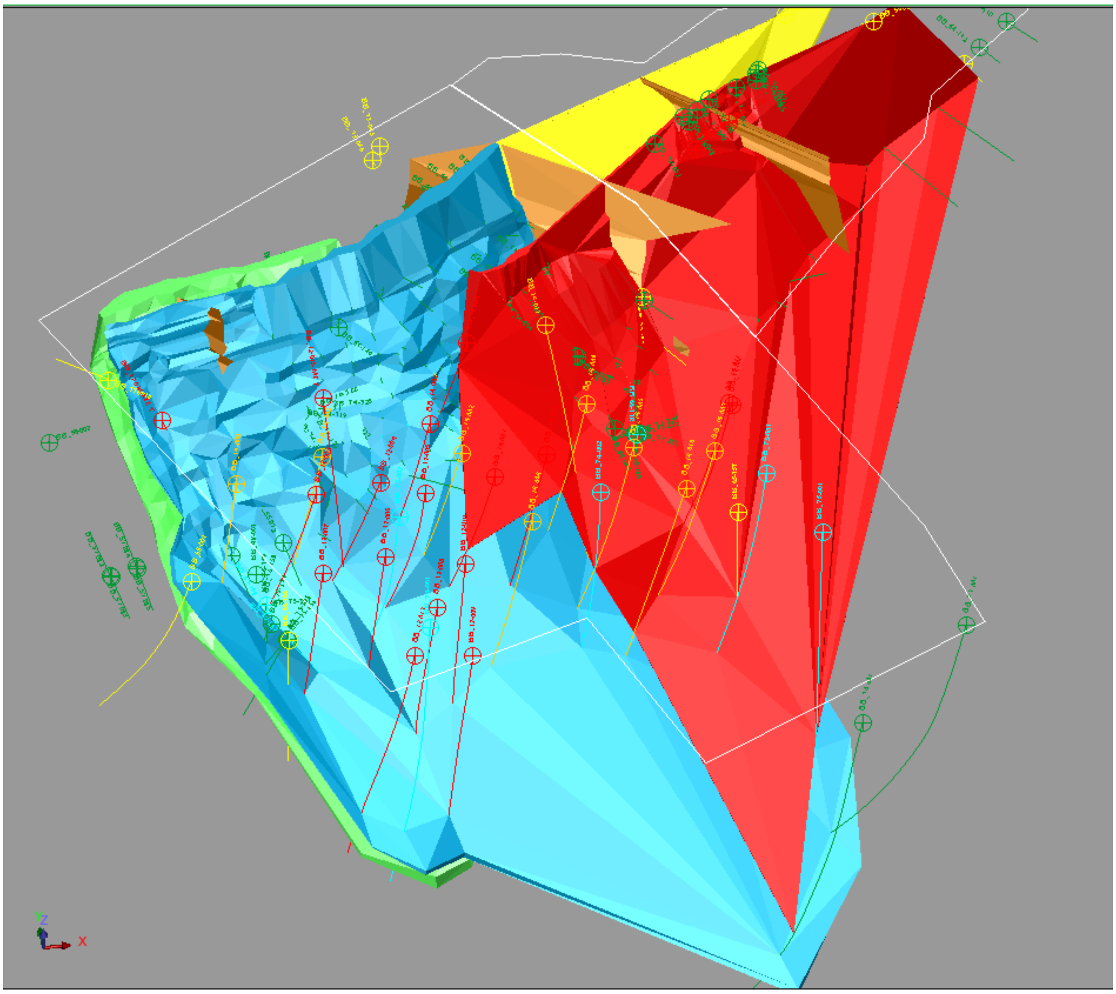


Figure 13-5 Wireframes 3D view from SE showing fault planes (brown) modeled from mine maps and drill logs

13.3.1 Topography

A DTM has been prepared by Tyréns (Sweden) on behalf of NIO. This DTM is a triangulation based on contour lines with 5 m spacing. The morphology in the license area has a relatively low topographic range (-47 m to -23 m), predominantly on the -46 m.

13.3.2 Weathering Profile

It is assumed that there is no weathering profile affecting the current geological model.

13.4 Resource Database

Table 13-1 Summary of drillholes and data used in the Resource Estimate

Wireframe Domain	Number of Drillhole Intersections	Metres of Drillhole Intersections	Sampled metres assayed by ALS	Metres with digitised Fe results	Total metres with Fe results	Sampled metres with SATMAGAN (Mg) analysis	Metres of density data
HUGFLY	286	5130	765	2453	3218	765	710
HUGFLY-NE	15	160	5	112	117	5	5
KALV	102	1561	416	573	989	416	391
SAND-GULD	52	277	76	127	203	76	59
Total	**455**	**7128**	**1262**	**3265**	**4527**	**1262**	**1165**

13.5 Statistical Analyses & Geostatistics

Based on the wireframes of HUGFLY, KALV and SAND, univariate and bivariate statistical analyses were carried out in order to investigate the non-spatial element distribution (histograms) and inter-element relationships (correlation plots).

A correlation plot of magnetite and iron (Fe) demonstrates that the magnetite of KALV follows a regression equation based on the Fe grade:

$$\textbf{Magnetite \% = 0.0047 * Fe \%}^2 \textbf{ + 1.1142 * Fe \% - 2.7834}$$

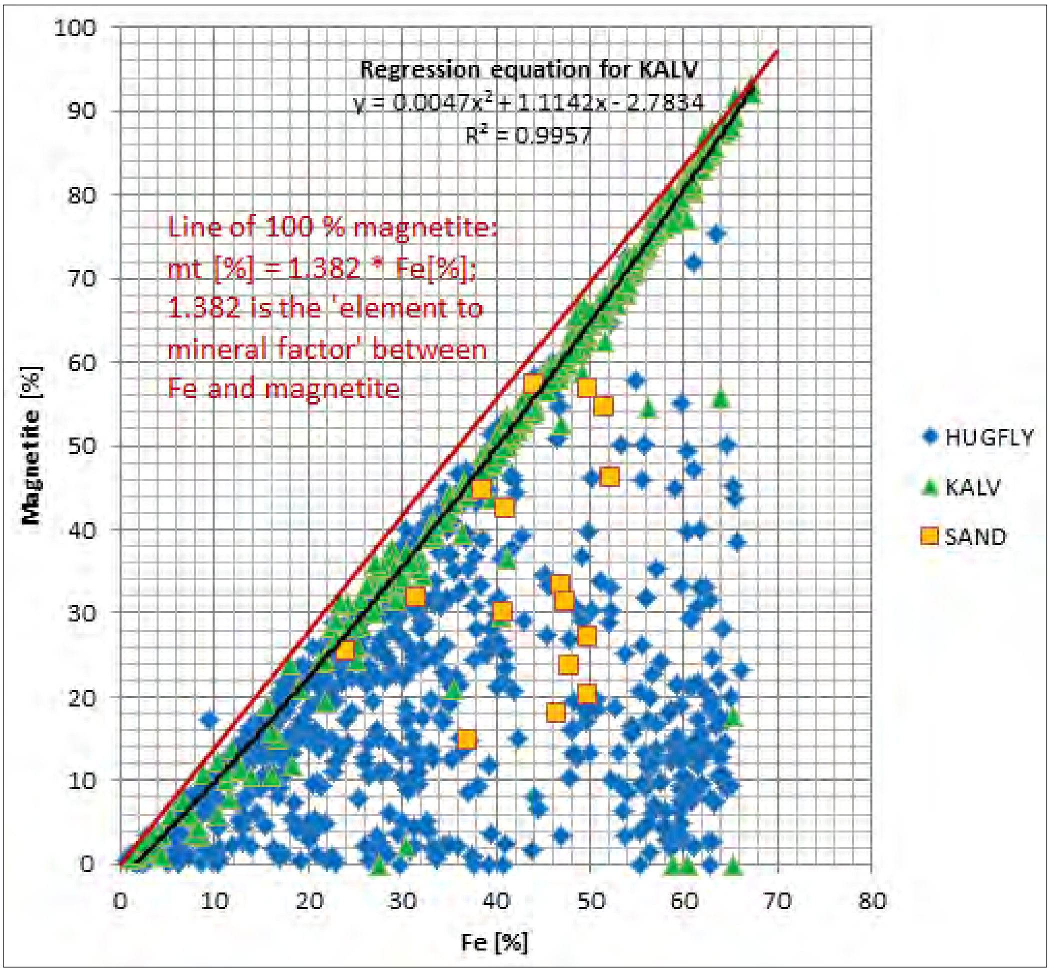


Figure13-6 Correlation Plot of Blötberget Magnetite and Iron

Figure13-6 also demonstrates that the magnetite-hematite ratios of HUGFLY and SAND do not follow a regression line but are varied in their distribution. This effect has been discussed in former reports on the Blötberget field. According to these reports, oxidation of the primary magnetite material has produced large areas of martite mineralisation (haematite formed after replacement of magnetite).

The oxidisation relationship is also shown in the histograms of Fe and magnetite given in Figure 13-8 and Figure 13-9.

The Fe at KALV shows normal distribution since most of the Fe is bound to magnetite. Oxidisation of the HUGFLY and SAND zones causes a bimodal distribution of Fe bound to primary magnetite and Fe bound to martite (as an oxidisation product of magnetite). Consequently in KALV, magnetite is more highly concentrated than in HUGFLY or SAND (Figure 13-8).

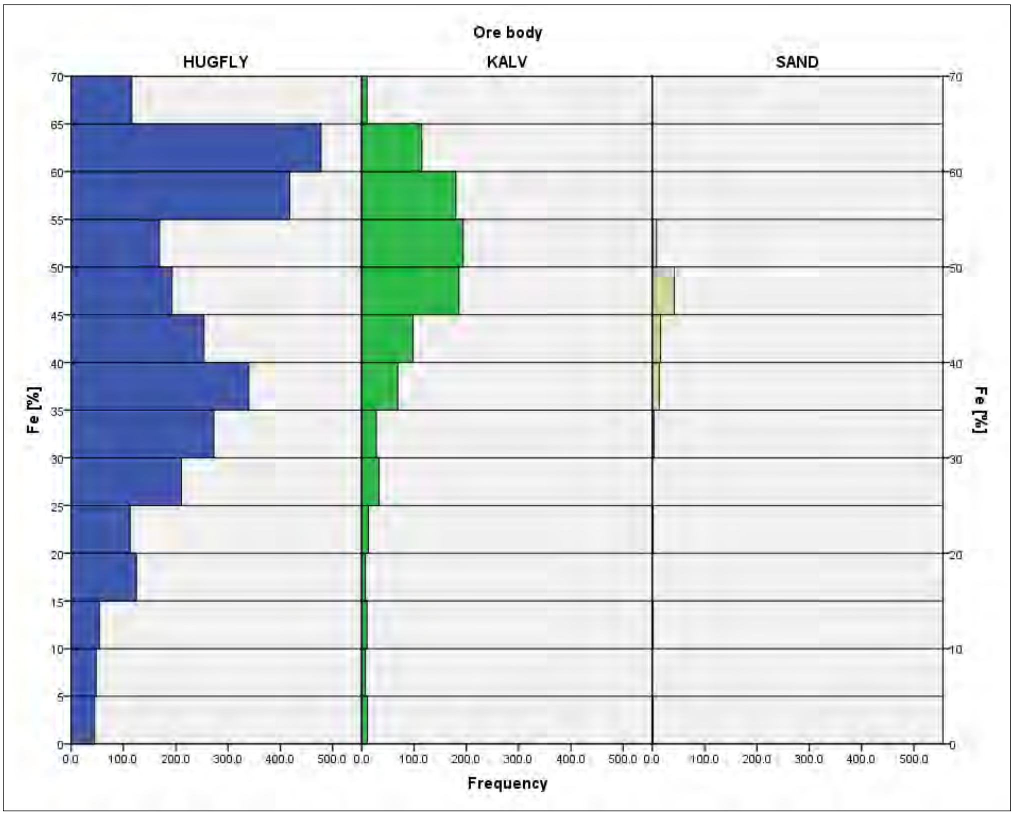


Figure 13-7 Histogram of Fe for HUGFLY, KALV and SAND

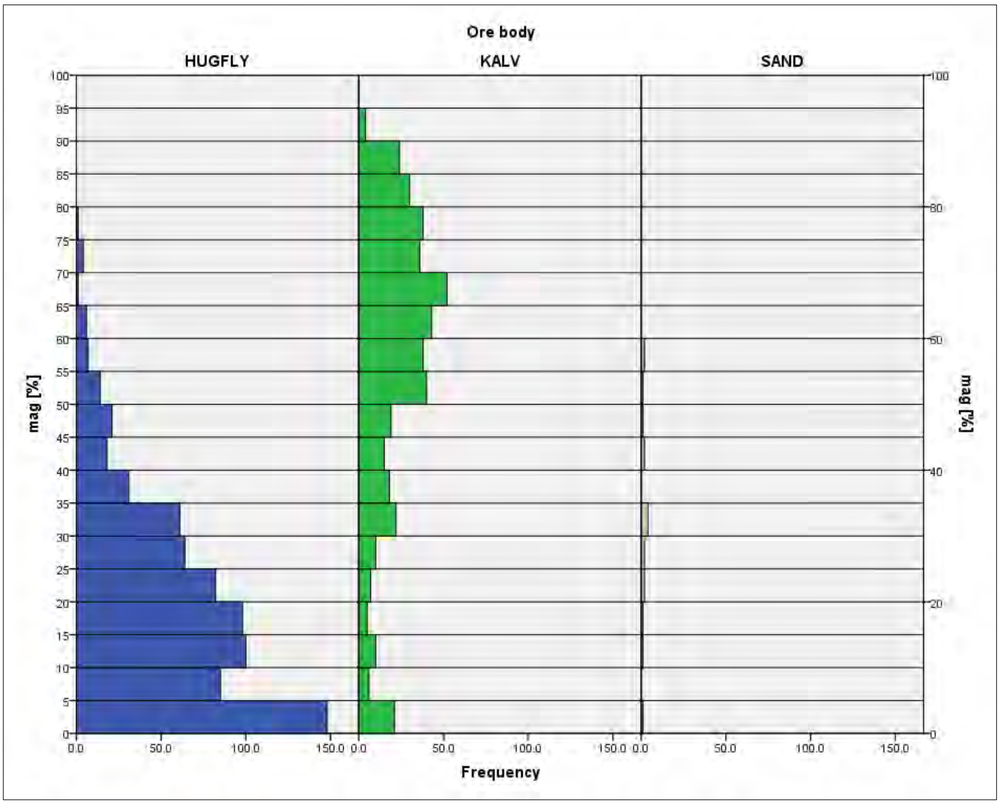


Figure 13-8 Histogram of magnetite for HUGFLY, KALV and SAND

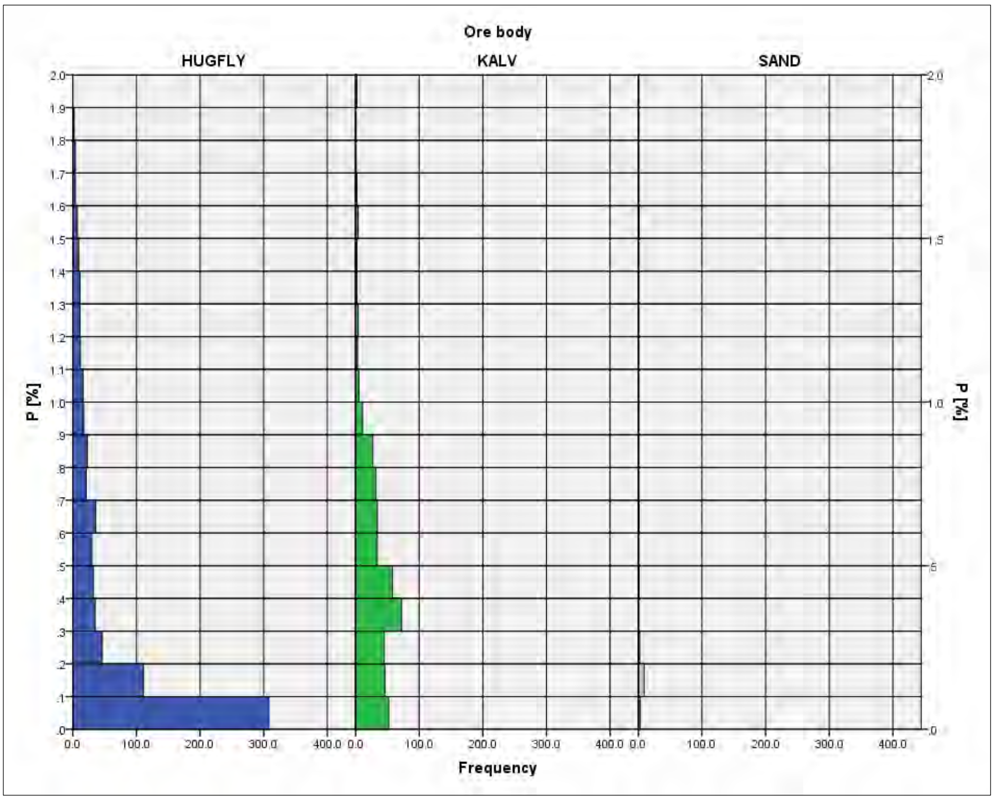


Figure 13-9 Histogram of P for HUGFLY, KALV and SAND

13.5.1 Bulk Density

The bulk density determined by the levels of magnetite and hematite and thus with the grade of total Fe bound to magnetite and hematite. Based on this approach, a regression equation has been used which allows a bulk density to be calculated from the Fe grade:

Density = 0.0003 * Fe %² + 0.0157 * Fe % + 2.6605

All blocks of the block model which have a minimum volume portion of wireframe HUGFLY, KALV or SAND of 0.1 % have been attributed with its associated bulk density using the regression equation stated above.

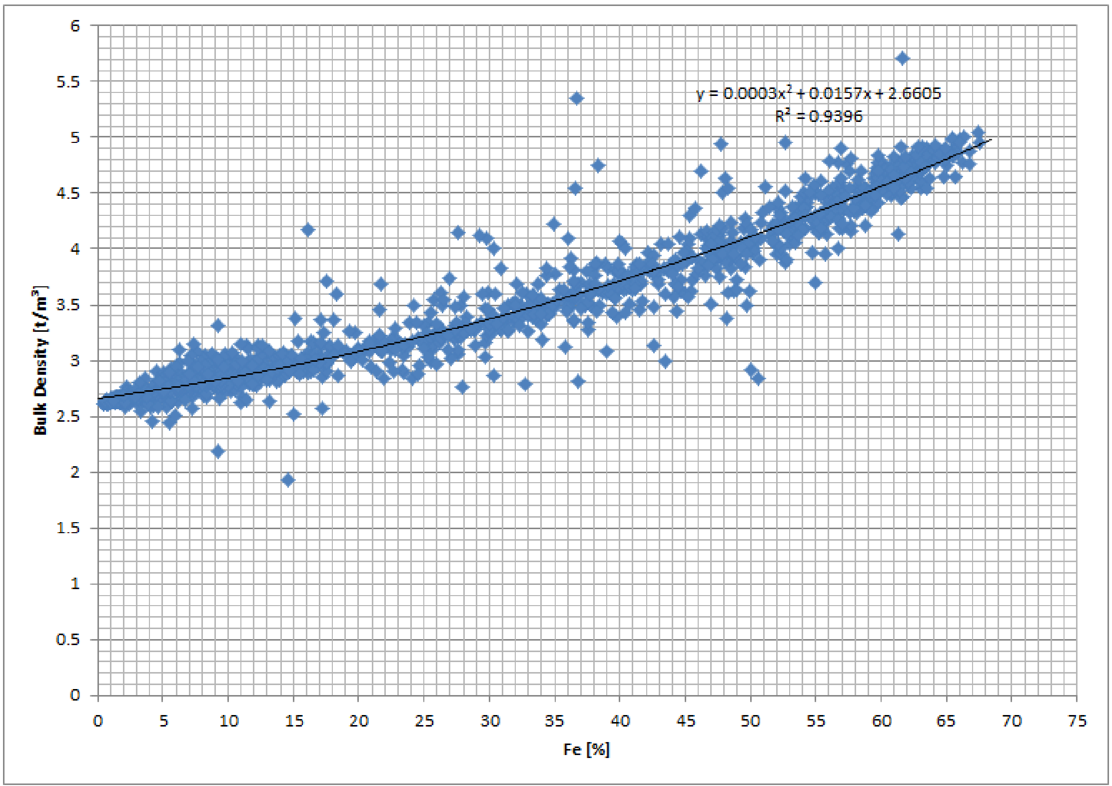


Figure 13-10 Correlation/regression curve of bulk density vs. assayed Fe grade (1744 samples)

13.5.2 Grade Capping

Histograms for Fe, magnetite and P have been checked for isolated high grades (“**outliers**”). No outliers which could bias the interpolation have been found, hence an upper grade cut has not been applied to the dataset.

13.5.3 Compositing

Compositing ensures that all assays will have the same influence on geostatistical analyses and interpolation.

A total of 90 % of all samples are less than 4.5 m in length. However, most parts of the model are covered by the samples recovered from the 2012 and 2014 drill programmes which have a shorter sampling interval. A total of 90 % of all these later samples are less than two metres in length. This two metres sample length has been defined as the optimal composite length based on the frequency distribution of lengths of all samples from obtained from the 2012 and 2014 drilling programmes.

In previous estimates no sample grade has been assigned to internal waste or other ‘barren’ country rock intervals. Equally, other intervals which historically have not been sampled or assayed for Fe have been assigned a nominal grade of contained iron. DMT has calculated a grade of 8 % Fe to be applied as the average grade of all other country and waste rock sampled and assayed in the mineralised zones of HUGFLY, KALV and SAND.

Intervals not assayed for phosphorus were not assigned a grade for phosphorus.

After tagging mineralised zones into the database, composite samples were prepared from assays by using a downhole compositing tool in Surpac, and tagged to the three main mineralised zones of HUGFLY, KALV and SAND. Sample lengths have been used by DMT as a weighing factor. Chemical grades of Fe, magnetite and P have been composited. The composite is accepted for the interpolation phase if 50 % of a two metre target length is achieved.

Table 13-2 Percentiles of sample lengths

Percentiles	All samples [3,804]	Historic samples [2,089]	Re-assay and 2012/14 samples [1,715]
10	0.60	0.44	0.80
20	0.95	0.75	1.00
30	1.00	1.12	1.00
40	1.00	1.58	1.00
50	1.30	2.05	1.00
60	1.75	2.60	1.10
70	2.10	3.27	1.31
80	2.90	3.95	1.80
90	4.18	5.58	2.00

13.5.4 Mineralisation Continuity & Variography

Variography studies of the composite data were carried out to support the mineral resource estimation work.

As there is distinction between the magnetite-rich ore in KALV and the hematite-rich ore in HUGFLY/SAND, variography has been carried out for Fe in KALV and in HUGFLY/SAND separately.

The variograms of Fe in KALV and in HUGFLY/SAND indicate that the ranges and the sills are very similar (Table 13-3). This implies a similar spatial distribution of Fe in the magnetite-rich KALV and the hematite-rich HUGFLY and SAND.

For KALV, the magnetite has been calculated based on the regression equation established previously. There appears to be no correlation between Fe and magnetite in HUGFLY and SAND, hence magnetite has be interpolated separately from Fe in HUGFLY and SAND.

Omni-directional variography has been undertaken for all composite data of each ore type (domains) separately with a spatial orientation of -45 degree dip and 145 degree dip direction (strike N55°E). Attempts at directional variography were unsuccessful due to the sparse data within the modelled domains which prevented meaningful interpretation and accurate modelling.

All omni-directional variograms for hematite (Fe) and magnetite (Mag) show reasonable structure, allowing reliable variogram models to be produced (Figure 13-11, Figure 13-12 and Figure 13-13).

For the variography analysis of Phosphorous, all sub-domains have been combined into a single domain on which to undertake the geostatistical study, due to the limited data in some of the domains. The nugget and ranges are relatively easily generated, providing an appropriate level of confidence. All variograms were modelled using a fixed nugget effect of 0 which is appropriate for this continuous, seam-like iron deposit.

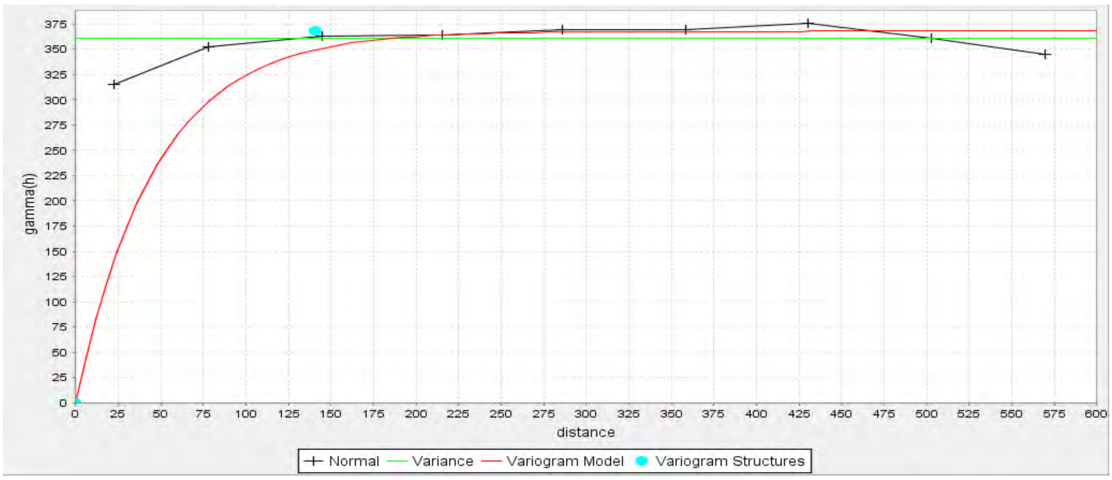


Figure 13-11 Variogram of Fe in HUGFLY/SAND

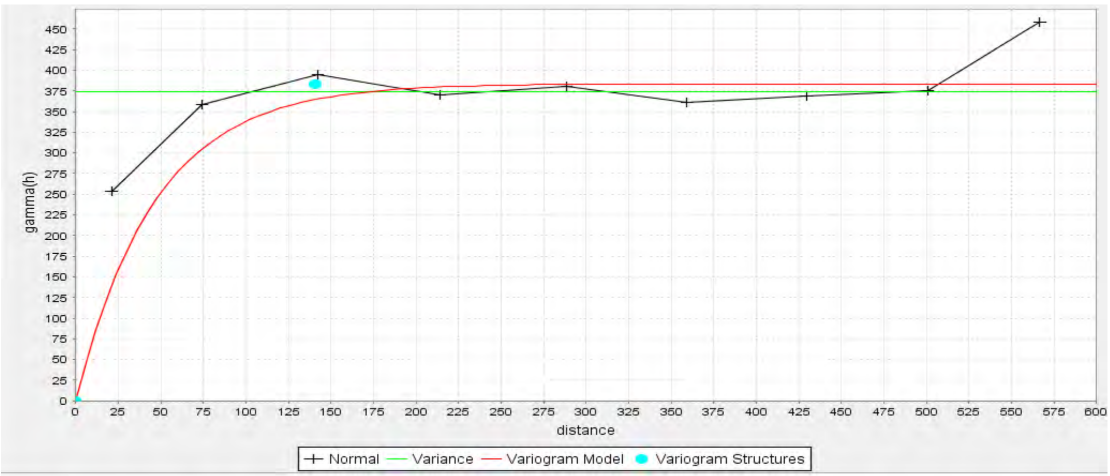


Figure 13-12 Variogram of Hematite in KALV

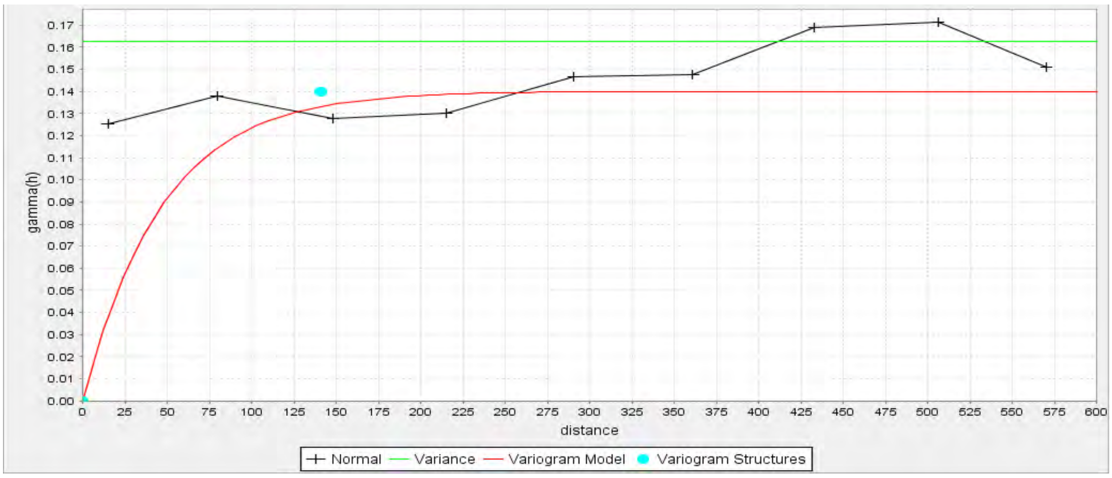


Figure 13-13 Combined domain variogram of P in all zones

Table 13-3 Nugget, sill and range from variograms for Hematite (Fe), Magnetite (Mag) and P

Zone	Nugget	Sill	Range
Fe in HUGFLY and SAND	0	367	140
Fe in KALV	0	380	140
Mag in HUGFLY and SAND	0	175	140
P in HUGFLY, SAND and KALV	0	0.14	140

13.5.5 Interpolation Search Parameters & Grade Interpolation

The variography results allowed for grade estimates for each of the two modelled domains of magnetite-rich ore of KALV and hematite-rich ore of HUGFLY and SAND to be performed using Ordinary Kriging ("**OK**"), applying hard boundaries to the two different estimation domains.

OK has been carried out in three passes for each domain, and the search ellipse parameters for the individual domains are included in Table 13-4.

OK is used to inform the parent cells, with a discretisation of 10 × 5 × 10 in the X, Y, and Z directions respectively. The dip and rotation of the ellipse has been adapted to the overall dip and strike of the domains. The dip direction of major axis has been set to 152°. To honour the curved structure of the domains perpendicular to strike direction, the dip of the major axis has been set to 35° above -400 m and to 50° below -400 m.

The first search uses the 2/3 variogram range, the second search is double this, and the third search is four times the size. These multiple searches ensure all blocks within the modelled mineralised domains are interpolated a grade value. The minimum number of samples was set to three and the maximum number of samples was set to 15 (Table 13-4).

Grade has been estimated into the block model with properties as described in Section 13.8.

Table 13-4 Search parameters for each of the applied passes of OK

Parameter	Max -Major Search Distance m	Max-Major / (Minor) Search Ratio m
1st Pass	100	16 (=6.25)
2nd Pass	200	8 (=25)
3rd Pass	400	4 (=100)

13.6 Resource Classification

The definitions for resource categories used in this report are consistent with the JORC Code 2012.

Under the JORC classification system, a Mineral Resource is defined as:

…"a concentration or occurrence of natural, solid, inorganic or fossilised organic material in or on the Earth's crust in such form and quantity and of such grade or quality that it has reasonable prospects for 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."

Resources are classified into Measured, Indicated and Inferred categories based upon geological knowledge and confidence (Figure 13-14).

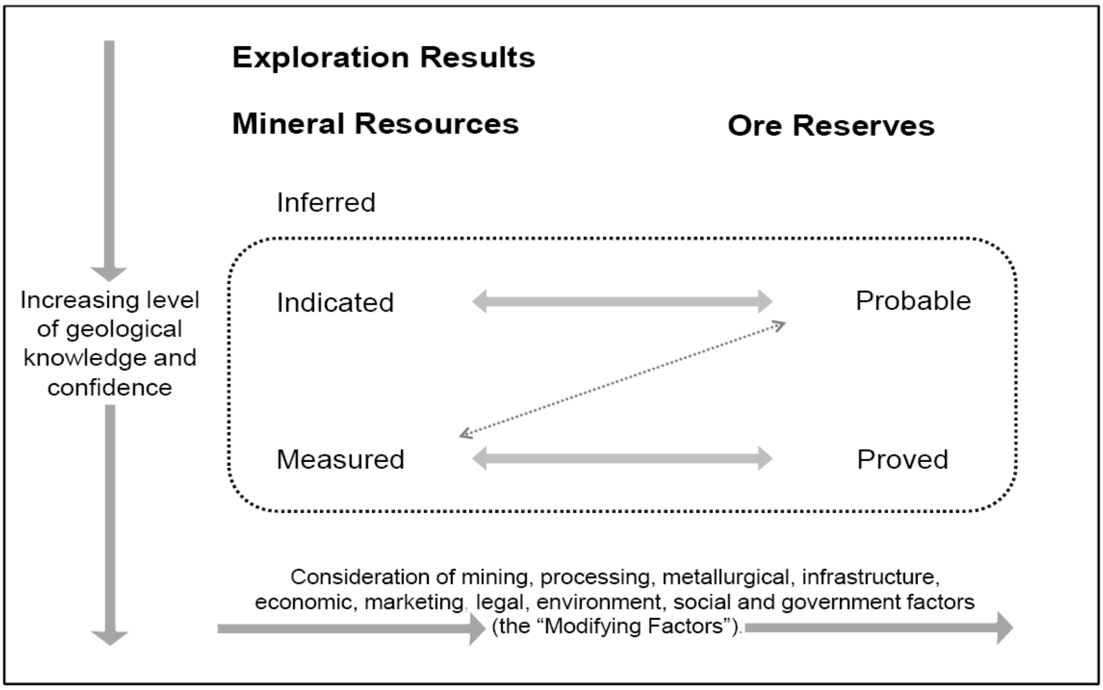


Figure 13-14 Relationship between Exploration Results, Mineral Resources & Ore Reserves

Resource classification within mineralisation envelopes is generally based on drillhole spacing, grade continuity, and overall geological continuity. The distance to the nearest composite and the number of drillholes are also considered in the classification.

In classifying the resource estimate, the following key factors have been considered:

- Confidence in data quantity and specifically sample spacing of Fe and magnetite data;
- Confidence in the geological interpretation and continuity (geological complexity); and
- Confidence in mineralisation / grade continuity (complexity of spatial grade distribution).

Considering the above, the following criteria have been applied for classification into the various mineral resource categories for this estimate:

13.6.1 Measured Resources

- The Measured Resource has changed from 42.5 Mt in 2015 to 45.4 Mt in 2017. This increase of Measured Resource results from the re-interpretation of SAND wireframe in the license area of 2015 'Blötbergsgruva K nr 1', which results in an extended mineralized body and hence, increased tonnage. In addition results from corrected drill hole deviations of several holes from the 2014 drilling programme and the subsequent updated wireframes of HUGFLY and KALV in the boundary pillar area between Blotberget and Guldkannan license areas has also contributed a small additional increase in Measured Resource for 2017 in 'Blötbergsgruva K nr 1'.
- Due to the reduced confidence levels relating to the data support and spatial distribution of sample points within the pending Guldkannan licence area, no additional Measured Resources have been added to this MRE from the license area 'Blötbergsgruva K nr 2'.

The following approaches were applied to the Blötberget concession area only.

- All blocks whose distance to the nearest magnetite sample is less than 2/3 of the variogram range (i.e. <100 m) - excluding distally located drill hole BB_75-001.
- All blocks which are surrounded by measured blocks; and
- All blocks near the historic underground workings.

13.6.2 Indicated Resources

- Blötberget mining licence area: All blocks whose distance to the nearest magnetite sample is equal or above 90 m and less than the full variogram range of 140 m - including distally located drill hole BB_75-001.
- Pending Guldkannan licence area : All blocks whose distance to the nearest magnetite sample is less than 2/3 of the variogram range (i.e. <100 m)

13.6.3 Inferred Resources

- All blocks within the Blötberget and Guldkannan licence areas which are not defined as Measured or Indicated but are included in the interpreted wireframes, excluding 'mined out' blocks.

13.7 Preliminary Economic & Mining Assumptions

Initially, DMT did not apply any economic cut-off grades or mining criteria to the global resource estimate which was generated within the confines of the wireframes.

DMT used the wireframes and a set of technical and economic input assumptions, summarised in Table 13-5, to create a preliminary block model, using Geovia Surpac software, in order to constrain the estimated Mineral Resources and to demonstrate reasonable prospects for eventual economic extraction.

Commodity price assumptions are based on typical China import sales, over the past five years, of iron ore fines (62 % Fe) (Figure 13-15).

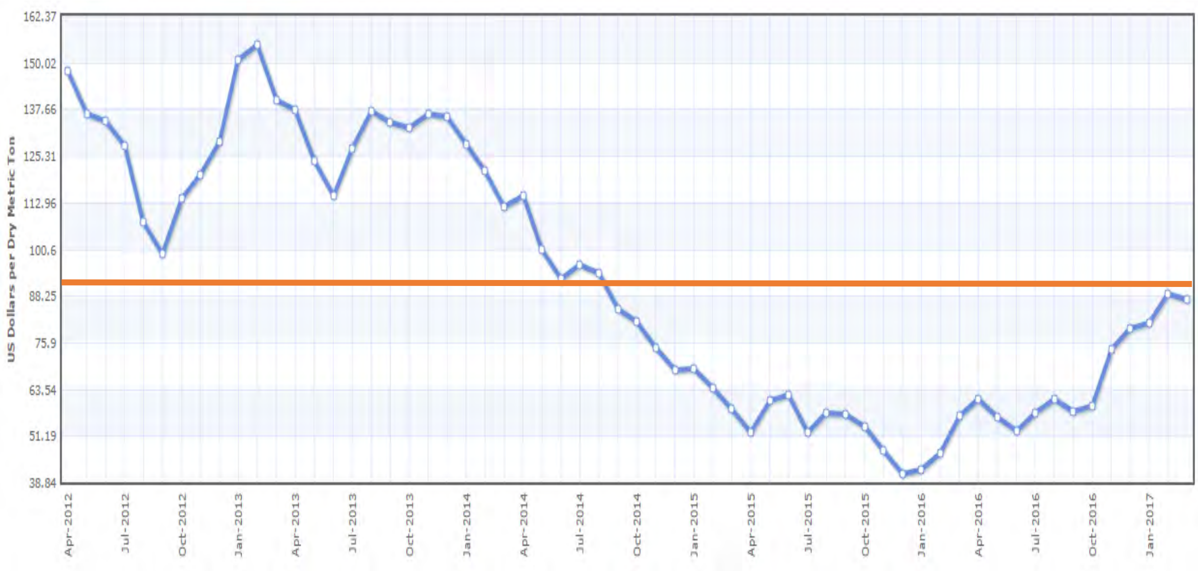


Figure 13-15 Five year historic China import spot price (FR Tianjin port) – Orange line = $90 Per Dry Metric Tonnes

Source: Index Mundi

Using preliminary economic input parameters for the proposed mining method, processing and selling-related costs (Table 13-5), the cut-off grade has been estimated by applying the below formula:

$$\frac{\text{Costs for mining plus processing [US\$/t ore]}}{\left(\frac{\text{Price of concentrate [US\$/t conc]}}{\text{Fe grade of concentrate [Fe[\%]/t conc]}}\right)} * \frac{1 + \text{Dilution [fraction]}}{\text{Processing recovery [fraction]}} = Fe\ Cutoff\ grade$$

Table 13-5 Block Model preliminary economic input parameters

Parameter	Cost/Value t/Revenue

Costs for mining plus processing [US$/t ore]	25
Price of concentrate [US$/t conc.]	90
Fe grade of concentrate [Fe[%]/t conc.]	62
Dilution [fraction]	0.2
Processing recovery [fraction]	0.9

The wireframe shells provide a constraint for the reported block model resources based on the JORC definition of Mineral Resources having "reasonable prospects for economic extraction".

When the basic economic input parameters (Table 13-5) are applied to the wireframes, an indicative COG of 23 % Fe is arrived at.

A tonnage / grade sensitivity study has been carried out by DMT at COGs ranging from 0 % to 60 % Total Fe in 5% increments (Table 13-6). A COG of 25 % has been highlighted as this is the closest increment to the estimated COG of 23% Total Fe.

Table 13-6 Fe grade cut-off sensitivity results

Fe cut-off %	Volume Mm^3	Tonnage Mt	Density t/m^3	Fe %	Magnetite %	Hematite %	Magnetite proportion %	Hematite proportion %	Phosphorous %
0.00	21.0	75.0	3.6	34.6	26.7	21.9	0.54	0.46	0.43
5.00	20.9	74.6	3.6	34.8	26.8	22.0	0.54	0.46	0.43
10.00	20.1	72.5	3.6	35.5	27.3	22.5	0.54	0.46	0.44
15.00	19.1	69.5	3.6	36.5	28.1	23.2	0.54	0.46	0.45
20.00	17.2	63.7	3.7	38.2	29.3	24.3	0.54	0.46	0.47
25.00	14.5	55.1	3.8	40.7	31.4	25.7	0.54	0.46	0.49
30.00	11.9	46.3	3.9	43.2	34.0	26.5	0.55	0.45	0.51
35.00	9.5	37.9	4.0	45.5	36.9	26.9	0.58	0.42	0.54
40.00	7.0	28.7	4.1	48.1	40.5	26.9	0.60	0.40	0.58
45.00	4.3	18.3	4.2	51.2	44.4	27.4	0.62	0.38	0.59
50.00	2.0	8.8	4.4	55.4	48.4	29.2	0.63	0.37	0.64
55.00	0.9	4.3	4.6	58.7	46.6	35.7	0.57	0.43	0.72
60.00	0.3	1.4	4.8	61.8	50.6	36.0	0.59	0.41	0.66

Note: For Measured and Indicated Resources only

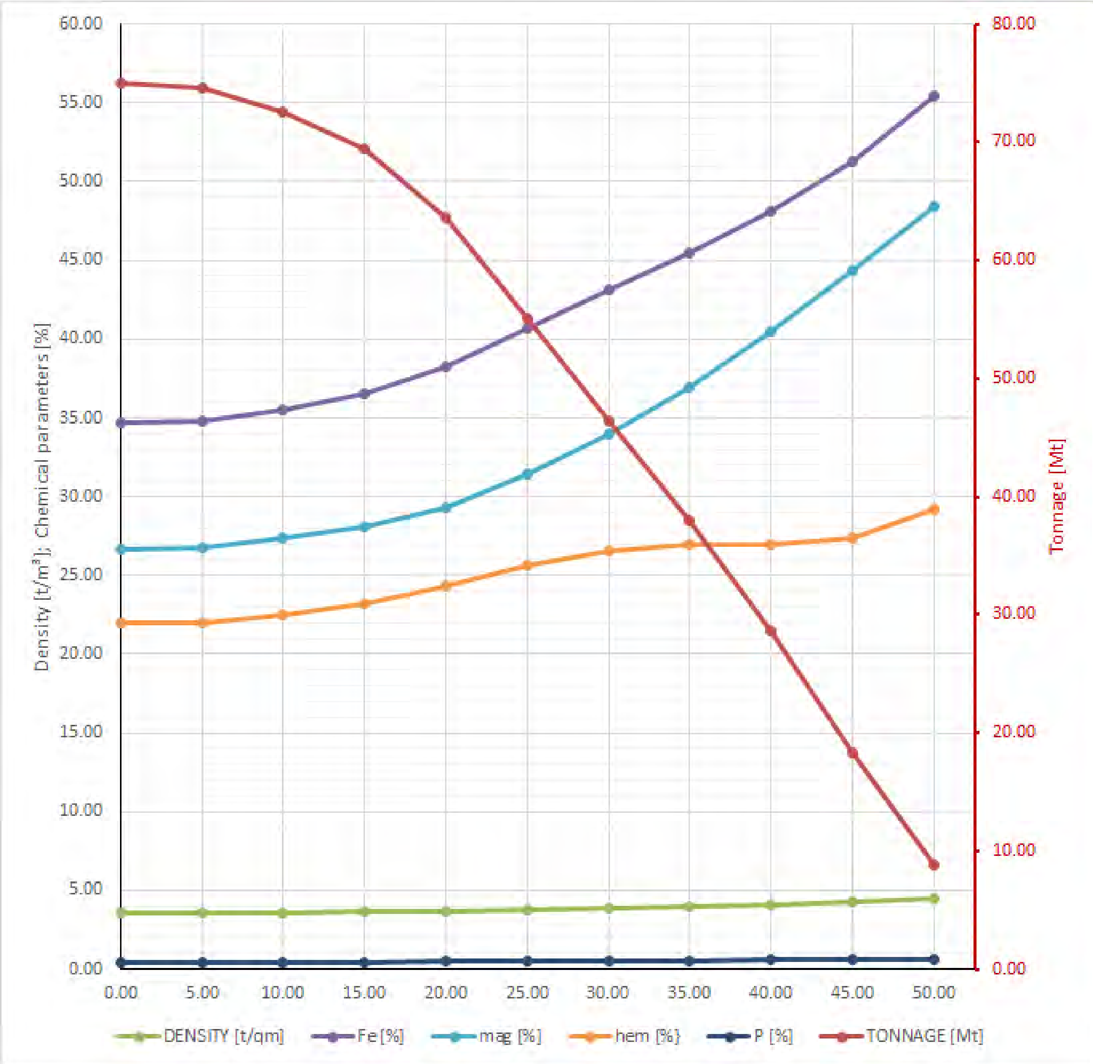


Figure 13-16 Resource Grade-Density-Tonnage Curves

13.8 Block Model

The block model uses regular block size of 10 m length (x), 5 m width (y) and 10 m height (z). These block dimensions are considered to be the most appropriate, considering the geometry of the mineralisation and the proposed mining method. The block model is rotated to the same strike as the mineralisation, N55°E.

The maximum dimensions of the block model are 2,300 m along strike and 1,940 m perpendicular to strike (down-dip); adapted to the drilled area and license area. The total elevation ranges from 200 m to -1,200 m. The total number of blocks is 1,413,356. No sub-blocking is applied.

Attributes have been added to the block model and populated. Detailed explanations about the attributes are given in Appendix A of this report.

For all blocks lying within or intersected by the wireframes, partial percentage attributes have been created named I1 for HUGFLY, I2 for KALV, I3 for SAND and I4 for HUGFLY-NE. These attributes add a volume portion ranging from 0.000 to 1.000 (i.e.

0-100 %) to each block lying within or intersected by these wireframes, which has been used for volume correction in the resource estimate (Figure 13-17).

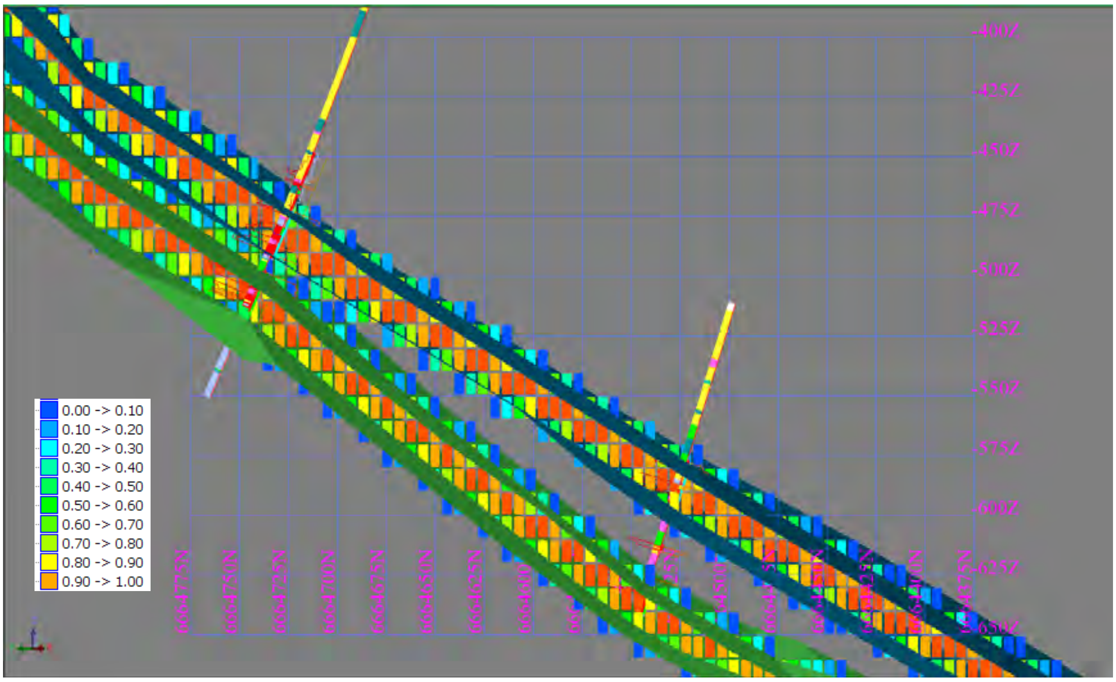


Figure 13-17 Example Section showing attribute 'ore_total_perc' ranging from 0 to 1

According to the majority percentage of I1 to I4, each block is coded with 1 (HUGFLY),2 (KALV),3 (SAND) or 4 (HUGFLY-NE) in the attribute 'm-majr' showing the mineralized domain(Figure 13-19).

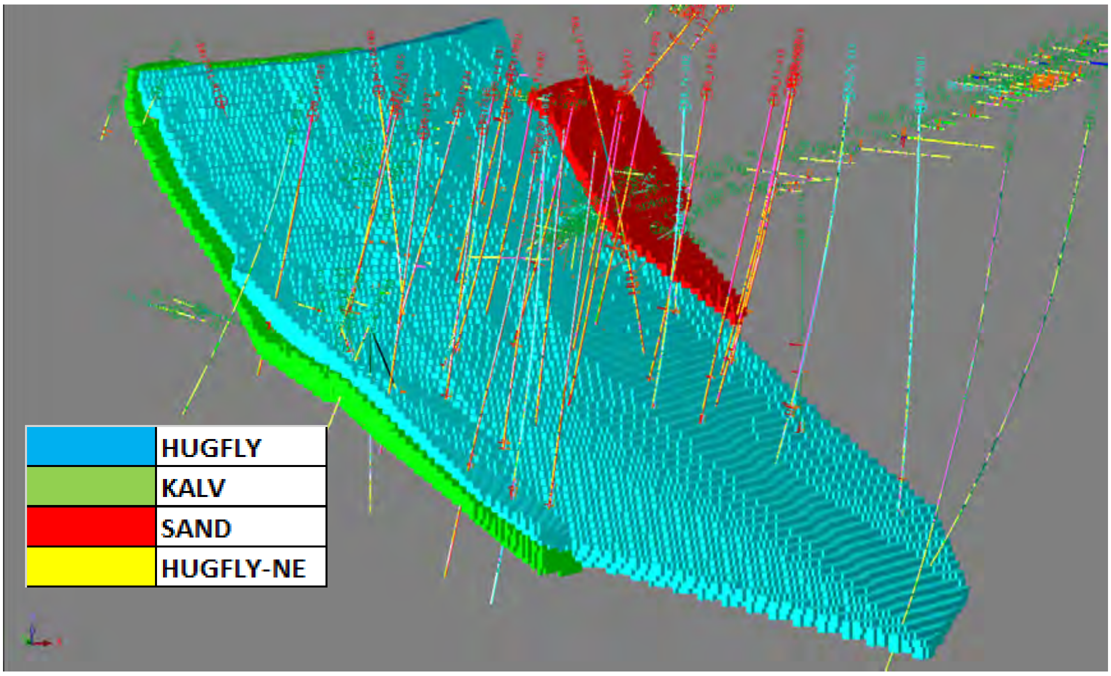


Figure 13-18 Blötberget (2015) 3D view to N showing attribute 'geol' with integer values

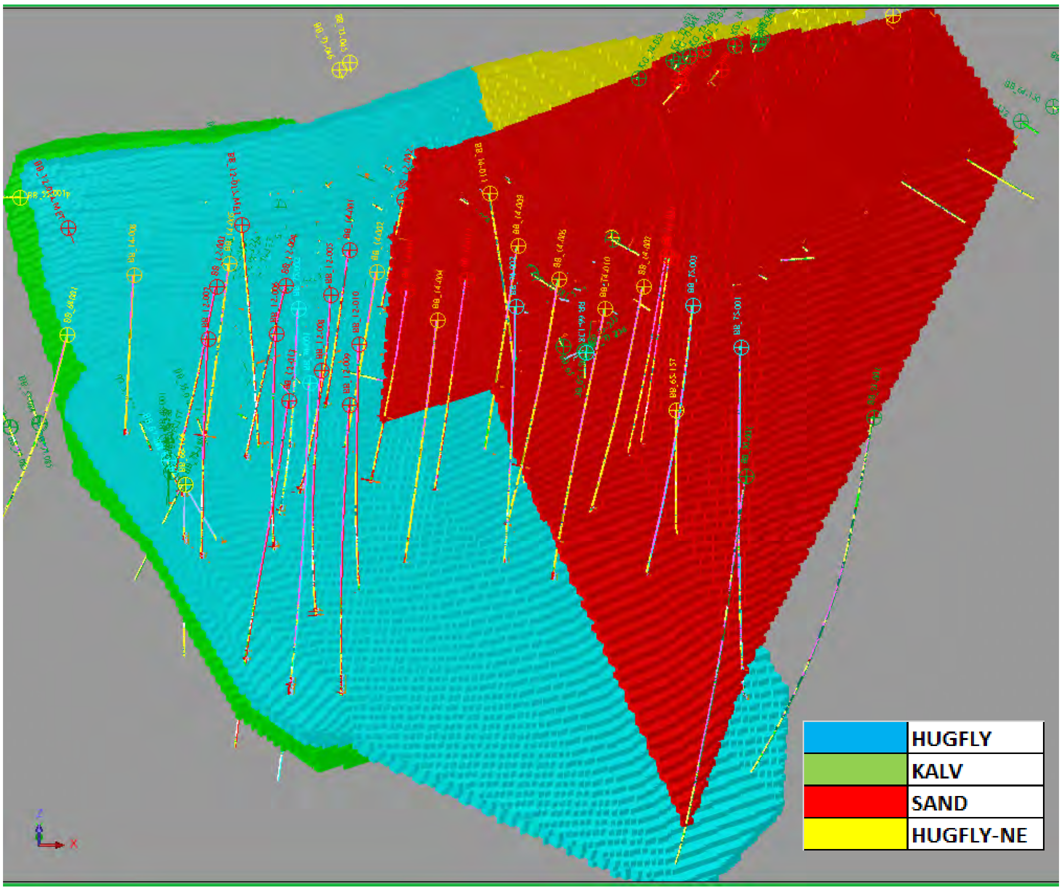


Figure 13-19 Blötberget and north eastern extension, Guldkannan (2017)- 3D view to N showing attribute 'geol' with integer values

A set of geometrical attributes for geology (block ID for each wireframe), topography (g_topo), license area (g_conc) or mined out area (g_mined) have been assigned to the block model.

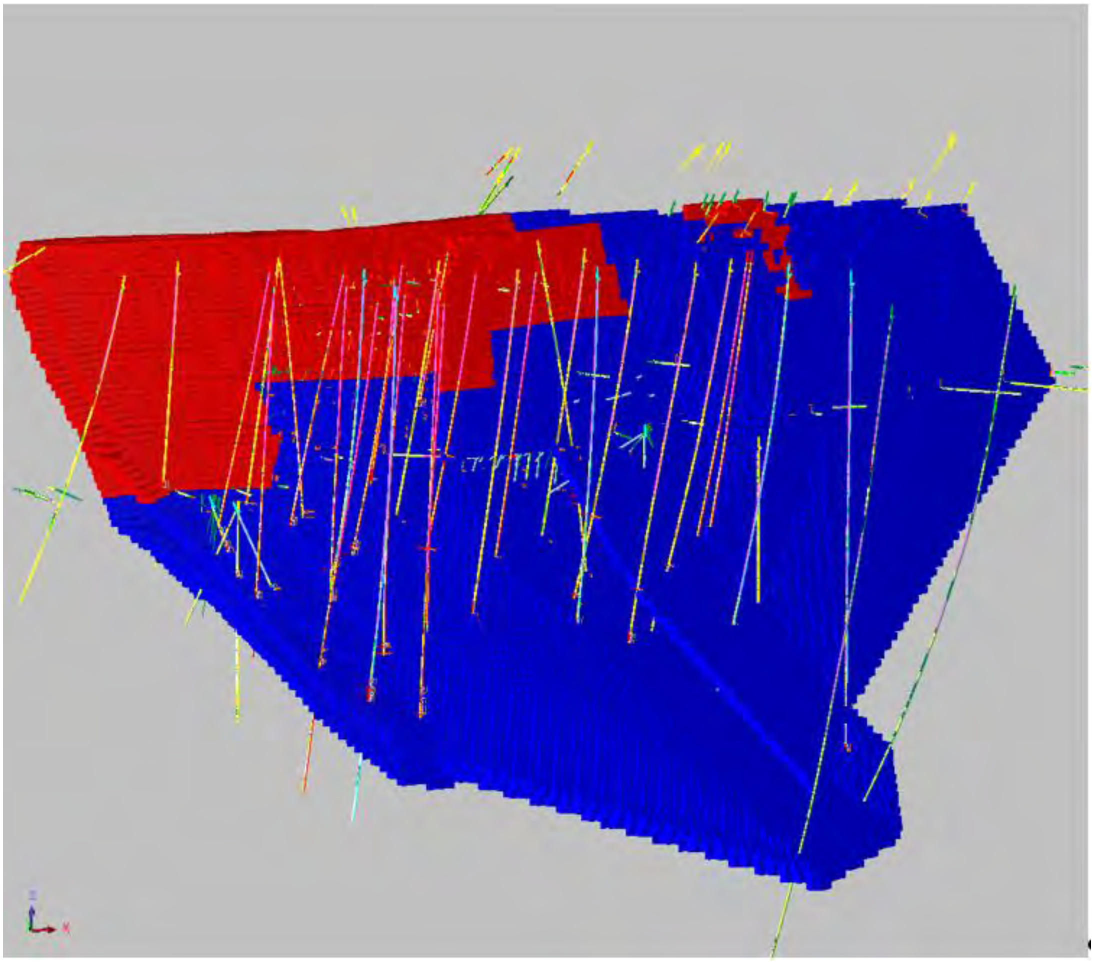


Figure 13-20 3D view to N showing attribute 'g_mined'

Note: Red = mined ; Blue = not mined

Furthermore three fault planes were attributed to the model with an influence distance of 10 m to each side (g_fault).

Grades were interpolated into quality attributes separately for each of the four domain attributes I1 (volume percentage of HUGFLY), I2 (volume percentage of KALV), I3 (volume percentage of SAND) and I4 (volume percentage of HUGFLY-NE) for total Fe (I1_q1 to I4_q1), magnetite (I1_q2 to I4_q2) and P (I1_q4 to I4_q4).

For I2 (KALV), the magnetite was not interpolated but assigned to each block with the help of a regression formula based on the interpolated grade of Fe.

Hematite (I1_q3 to I4_q3) was calculated from total Fe and magnetite under the assumption that all Fe not bound to magnetite is bound to hematite.

Afterwards quality attributes of these four domains were averaged weighted by tonnage to an overall attribute summarizing all domains: I91_q1 to I91_q4 (Figure 13-21, Figure 13-22, Figure 13-23, Figure 13-24 and Figure 13-25).

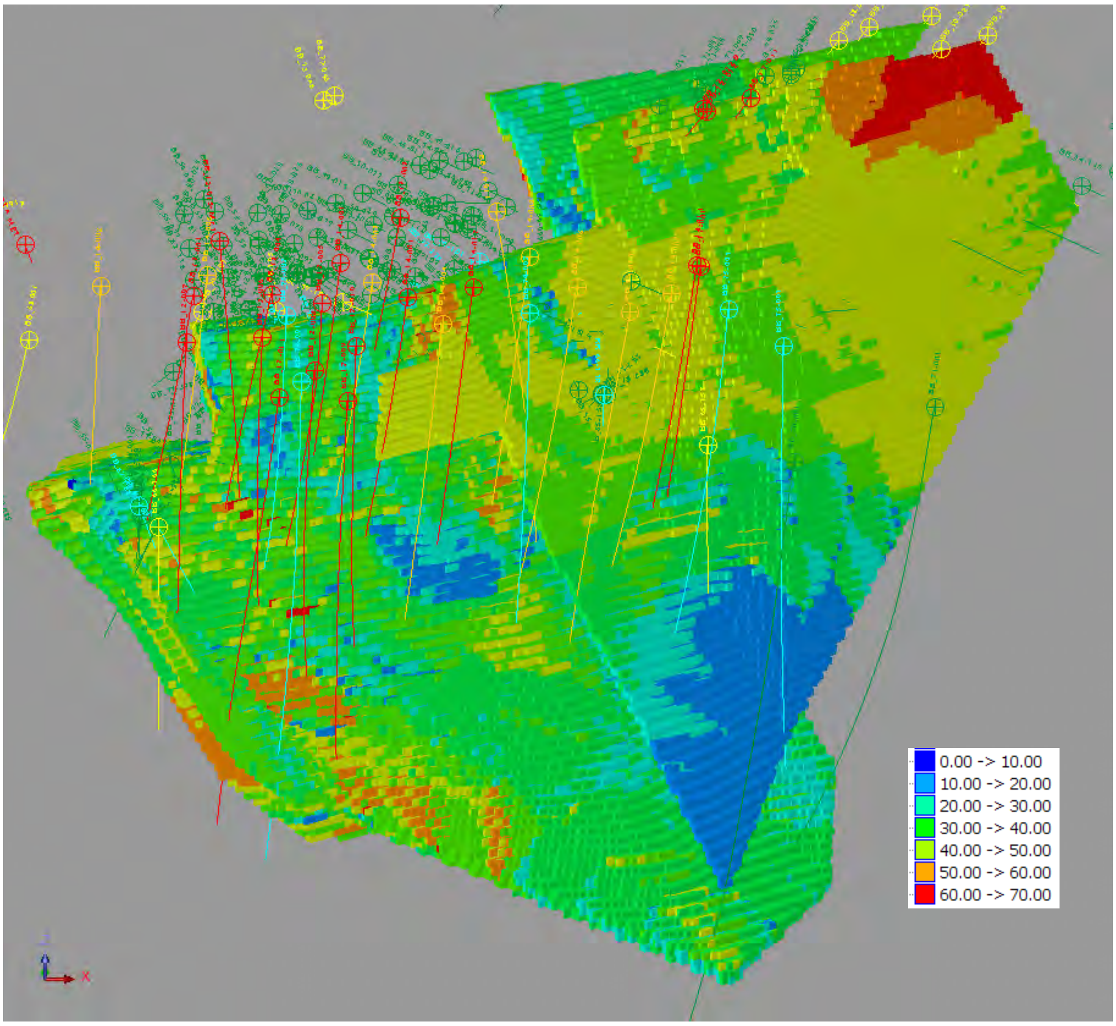


Figure 13-21 Blötberget & Guldkannan : 3D view to N showing total Fe [%] in mineralization: attribute 'l91_q1'

Note: Includes hematite and magnetite-rich ore

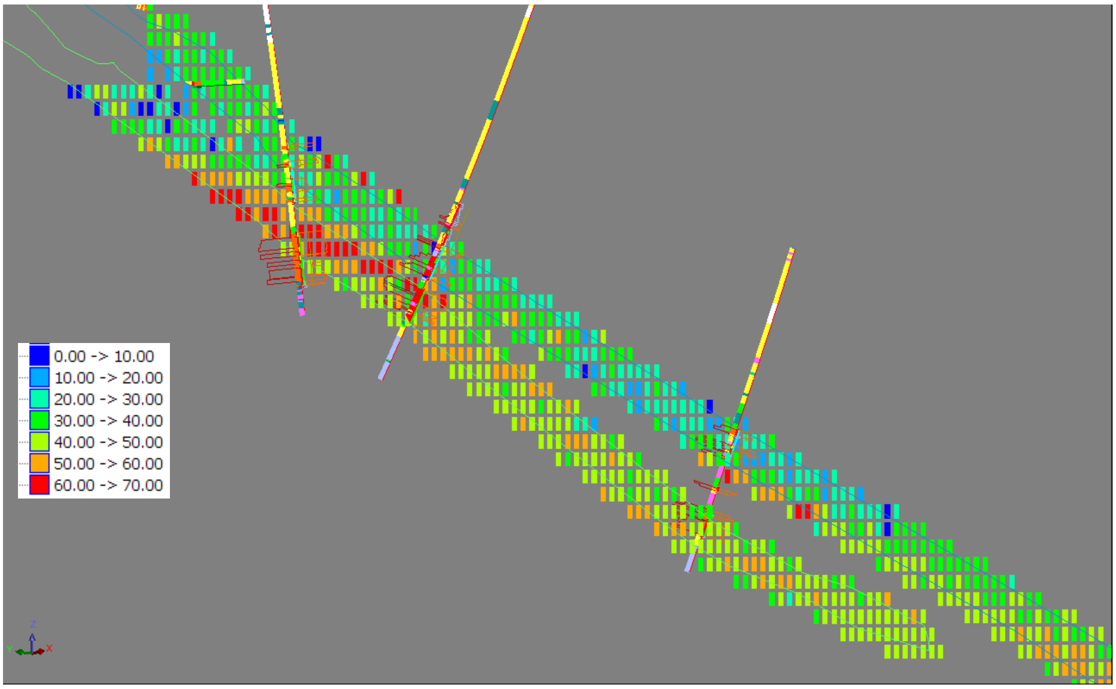


Figure 13-22 Example cross section showing distribution of total Fe [%]; attribute l91_q1

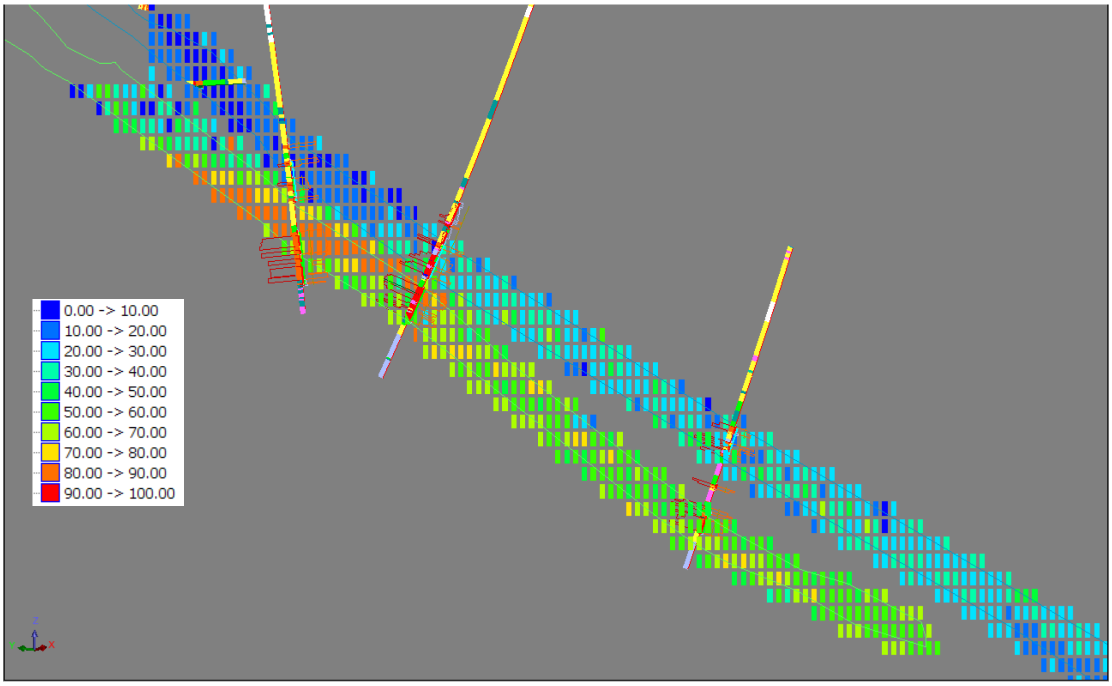


Figure 13-23 Example cross section showing distribution of magnetite [%]; attribute l91_q2

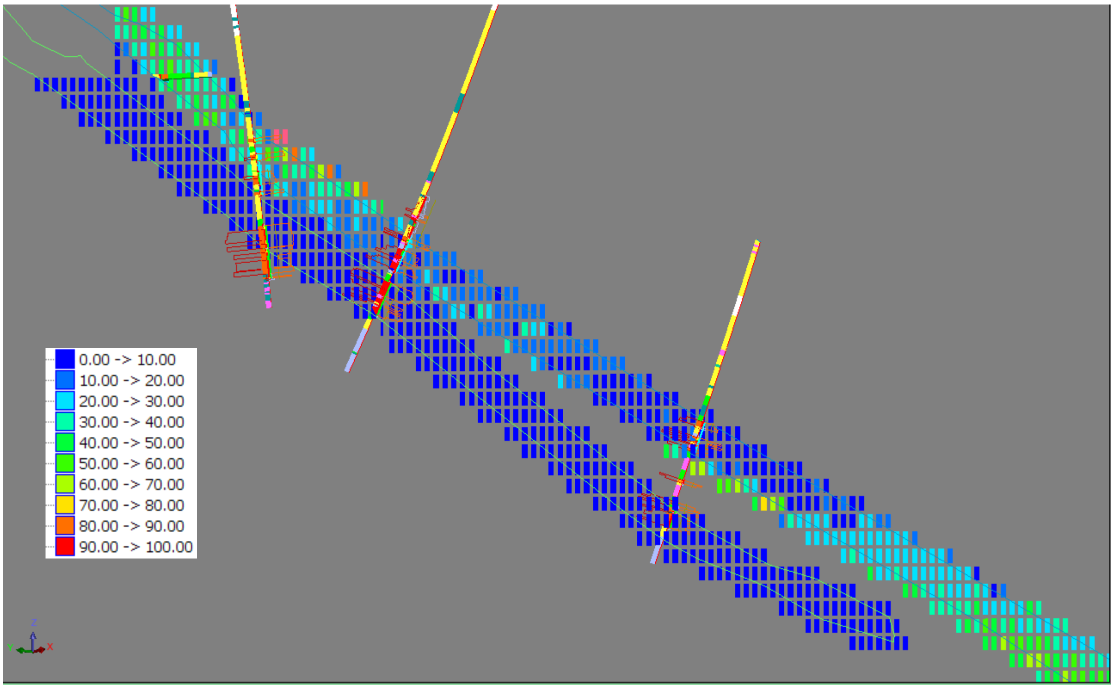


Figure 13-24 Example cross section showing distribution of hematite [%]; attribute I91_q3

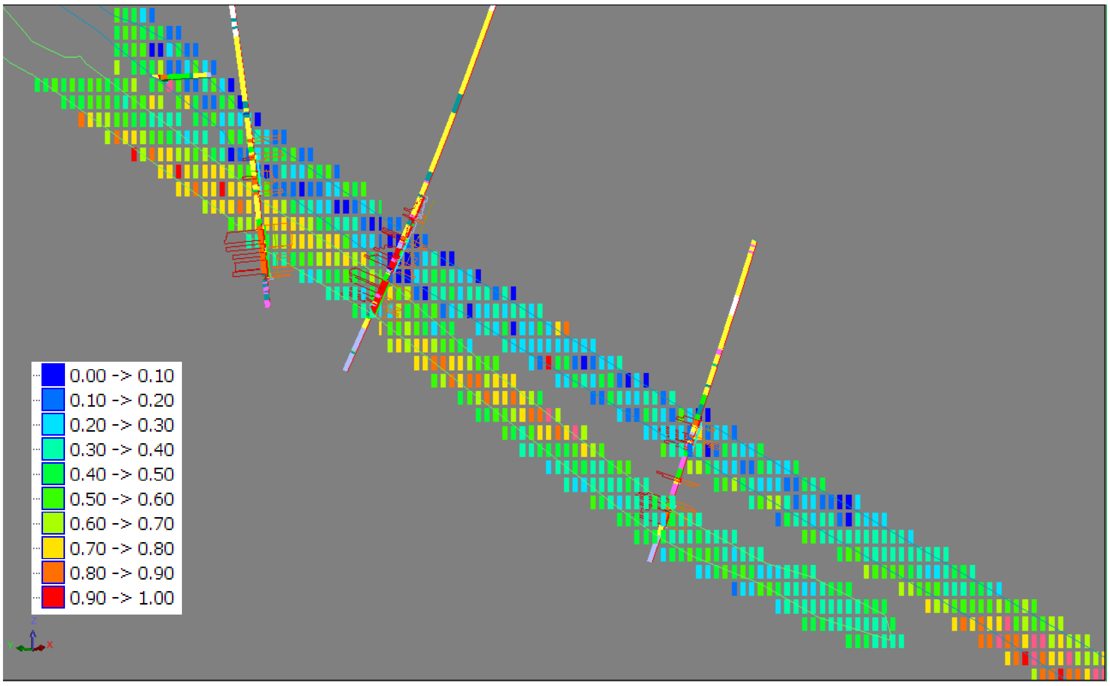


Figure 13-25 Example cross section showing distribution of P [%]; attribute I91_q4

The bulk density was assigned to each block with the help of a regression formula based on the interpolated grade of Fe; (I1_d to I4_d)

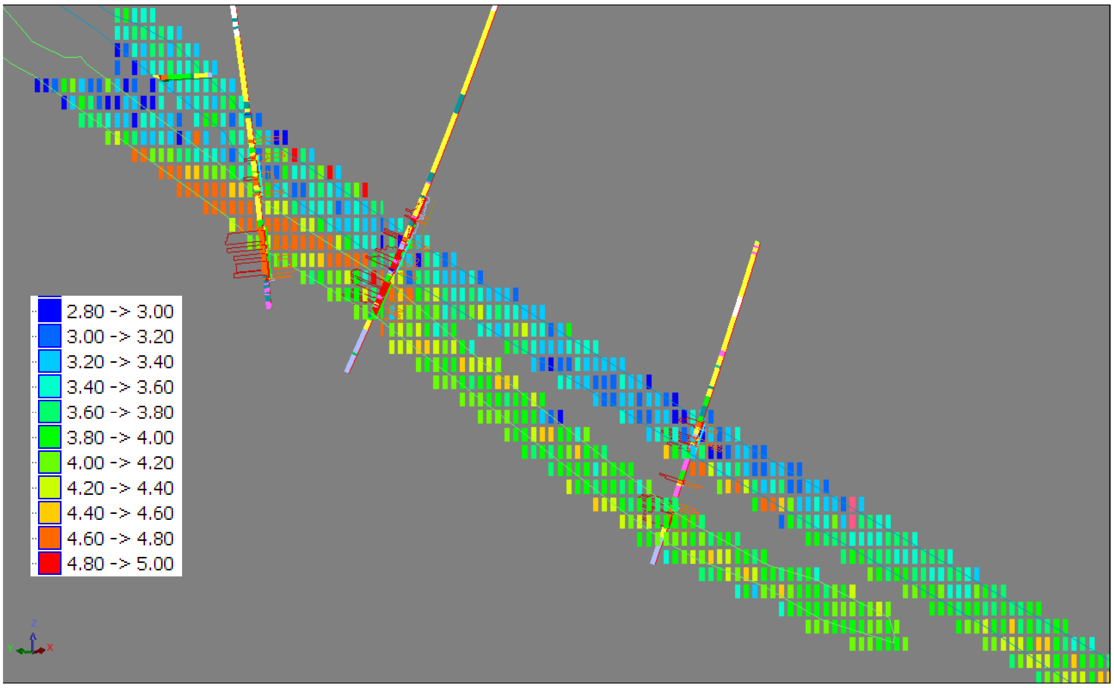


Figure 13-26 Example cross section showing ore density distribution [%]; attribute I91_d

Based on grades of magnetite and hematite to each block a magnetite (I1_q5 to I4_q5) and hematite ((I1_q6 to I4_q6) proportion was calculated this way that both proportions sum up to 1 (100%).

In addition to mineralized bodies also waste rock geology was attributed to the block model, using inverse distance weighting, following the curved structure of the mineralized body. For each block a percentage attribute of corresponding lithology has been interpolated. Based on the maximum percentage in each block the corresponding lithology was coded to the attribute l_majr. This method is assessed as applicable to set-up a first waste rock model considering the layered structure of host rocks. The lithology codes are described in Appendix C – Block Model Attributes.

Appendix D
Block Model Attributes & Codes

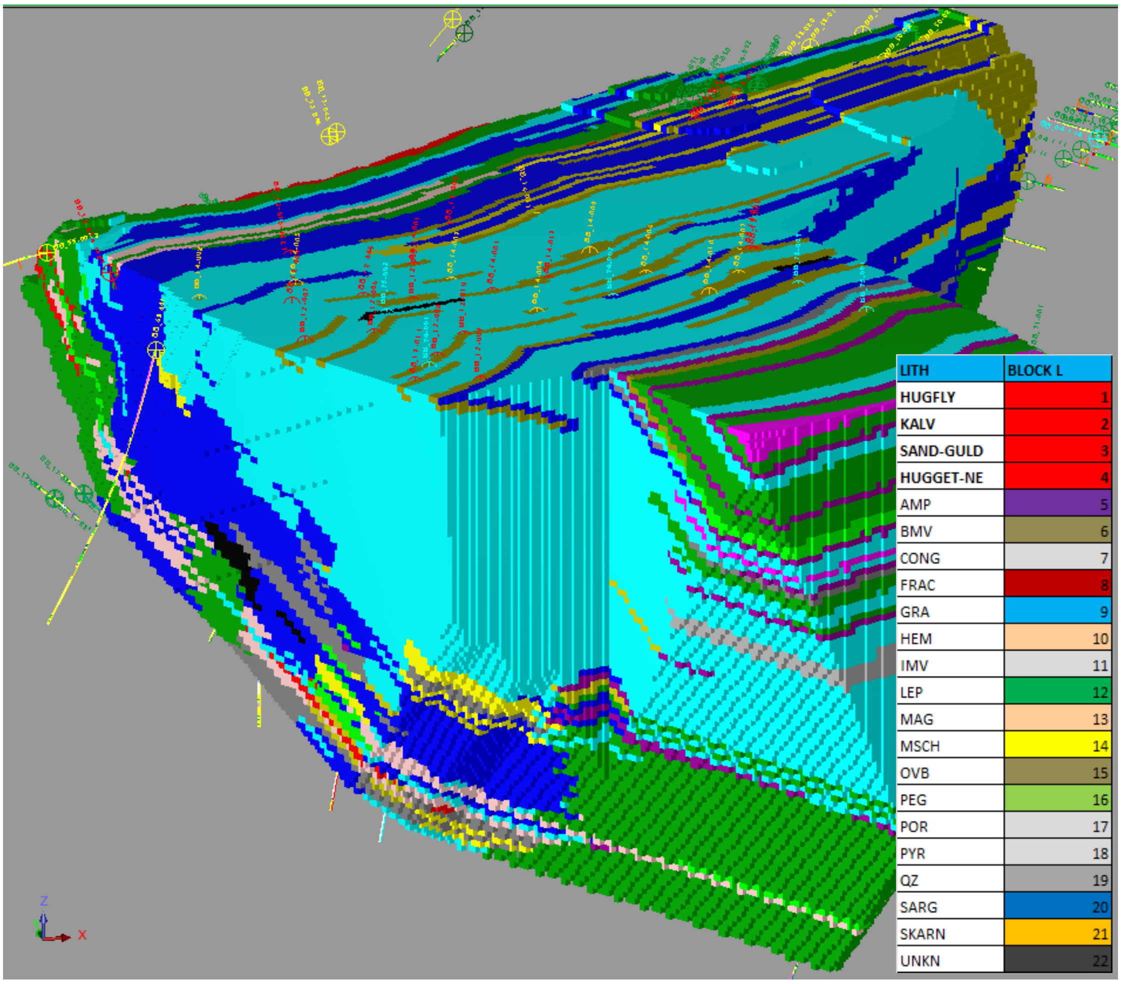


Figure 13-27 Full rock model showing waste rock lithologies hosting the mineralized domains

13.9 Model Validation

In order to check that the grade interpolation has worked appropriately, the interpolated block model has been validated against the corresponding domained composites using the following techniques:

- Comparison of wireframe volumes with the block model volume;
- Visual inspection of block grades in plan and section and comparison with drill hole grades; and
- Statistical comparison of global block grades and composite grades within mineralised domains (mean and frequency plots).

Table 13-7 Comaprison of wireframe to block model volumes

Domain / Zone	Wireframe Volume Mm³	Block Model Volume Mm³
HUGFLY	15.0	15.0
KALV	5.4	5.4
SAND	3.4	3.4

HUGFLY-NE	2.1	2.1

A statistical comparison of global block grades and composite grades within mineralised domains has been carried out using mean and frequency plots. These have demonstrated a close correlation (Figure 13-28).

The comparison illustrates that no obvious bias has been introduced during the block modelling process. The model blocks are slightly higher grade than their corresponding composites in the low-grade range. The opposite is true in the high-grade range; however, as shown in Figure 13-28 the two data sets are closely aligned. The frequency distribution of interpolated block data follows the distribution of composite data and shows the typical smoothing (upgrading of the lower grade mineralisation and downgrading of the higher grade mineralisation).

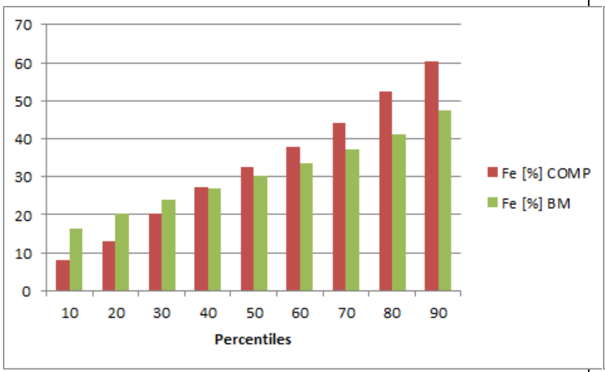
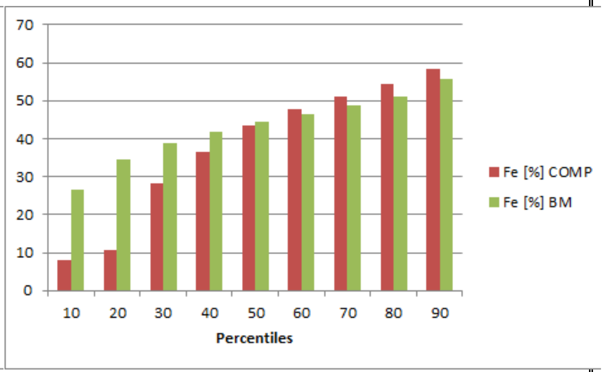
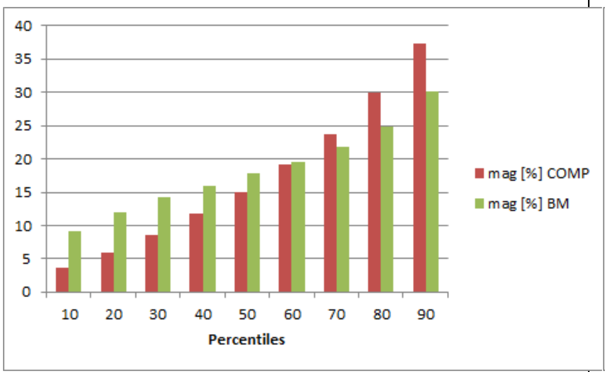
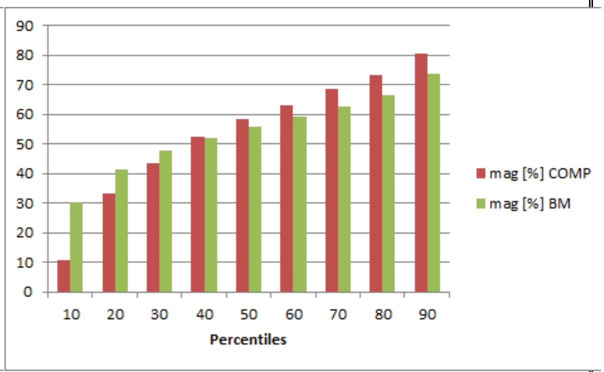
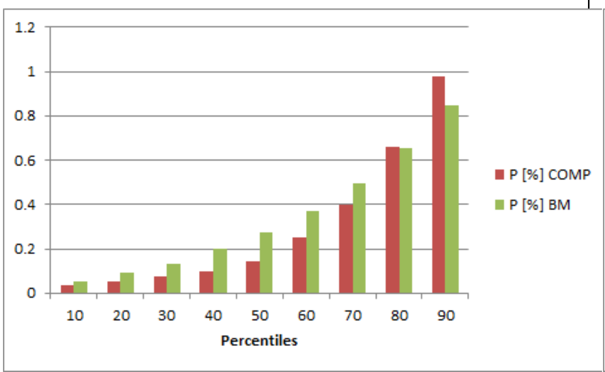
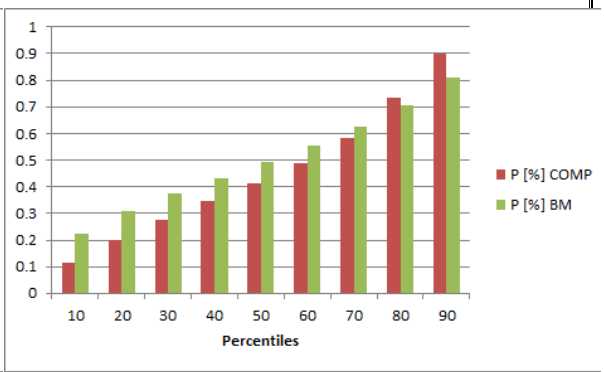
<table>
<tr><th>HUGFLY; HUGFLY-NE; SAND (hematite-rich ore)</th><th>KALV (magnetite-rich ore)</th></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Mean (Composite) = 33.2
Mean (Block Model) = 31.1</td><td>Mean (Composite) = 37.5
Mean (Block Model) = 42.7</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Mean (Composite) = 18.2
Mean (Block Model) = 19.0</td><td>Mean (Composite) = 53.1
Mean (Block Model) = 53.9</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>Mean (Composite) = 0.36
Mean (Block Model) = 0.39</td><td>Mean (Composite) = 0.48
Mean (Block Model) = 0.52</td></tr>
</table>

Figure 13-28 Frequency distribution of data for composites and the block model

On the basis of its review and validation procedures, DMT is of the opinion that the block model is valid and acceptable for estimating Mineral Resources.

The reader should note that a Mineral Resource **is not** an Ore Reserve as it has not been demonstrated to be economically mineable.

According to the JORC Code, Measured and Indicated Resources can be converted to Proved and Probable Ore Reserves when consideration of mining, processing, metallurgical, infrastructure, economic, marketing, legal, environment, social and government factors; ("**the Modifying Factors**") has been carried out (Figure 13-14).

The figure below illustrates the spatial distribution of Measured, Indicated and Inferred Mineral Resources within the Blötberget deposit.

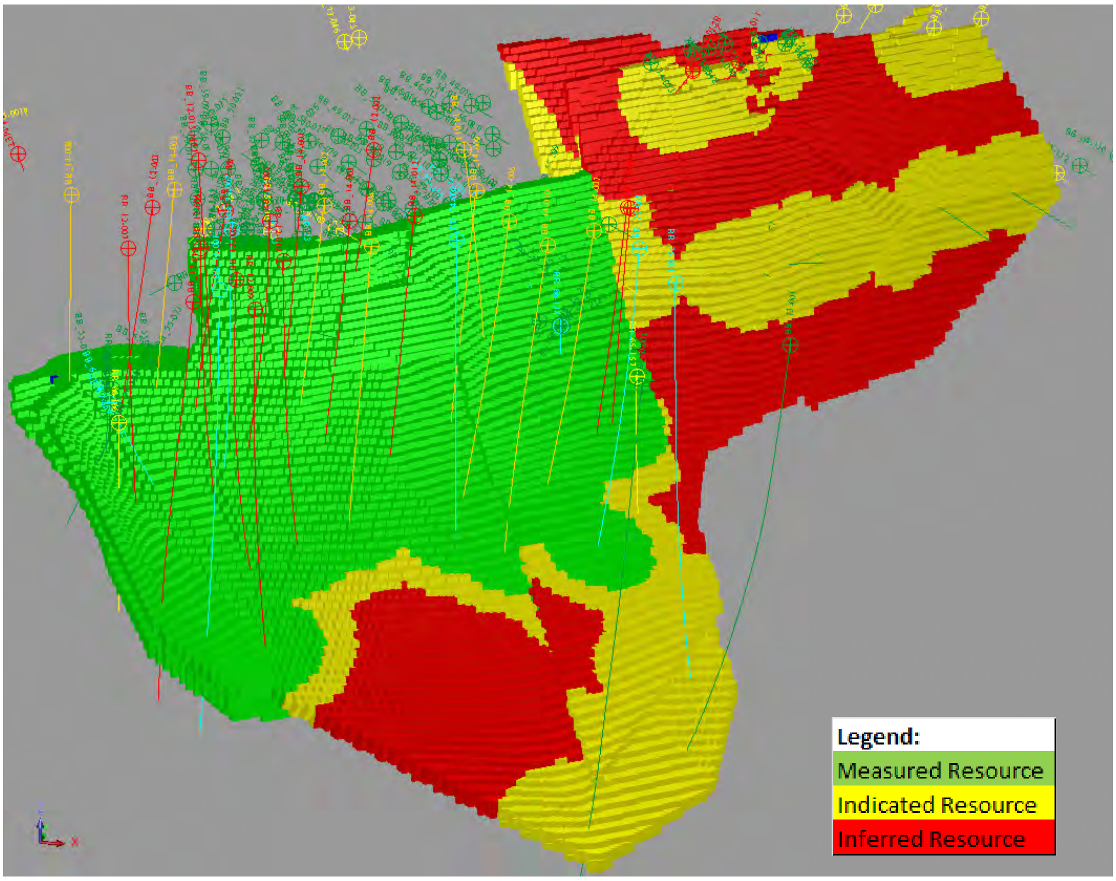


Figure 13-29 Blötberget / Guldkannan 2017 Resource Block Model

13.10 Previous JORC Compliant Mineral Resource Estimates

Previous JORC Compliant MRE's have been undertaken by GeoVista, Sweden. GeoVista's initial MRE estimate was carried out in 2011, with subsequent updates in 2012, and 2014.

The GeoVista January 2014 MRE established a COG based on similar preliminary economic assumptions to those made in this DMT resource estimate. However, the parameters were not applied to the 2014 resource statement.

Table 13-8 therefore compares the resource estimates of 2014 and 2015 without a COG applied (i.e. 0 % Fe Total).

The January 2014 MRE did not allow for the loss of volume and tonnage created by the former mined out areas in the upper levels of the mine. Subsequently, and due to improved information, the 2015 estimate has excluded some areas that have been mined out or are believed to be "un-mineable" areas.

Since the 2014 MRE, additional resources have been added in the 'Wedge - Betsta' areas a result of the 2014 drilling programme. In 2014, no Fe grade (i.e. 0 %) was applied to the internal waste or country rock material, whereas the 2015 estimate has applied an 8 % average Fe grade to these parts of the block model.

The additional material recently explored from the Wedge area connects the two bodies HUG and FLY, to create HUGFLY. The upgrading of the January 2014 Inferred Resource for HUG and FLY (low Fe grade) to Measured and Indicated Resources leads to slightly lower Fe grades for Measured and Indicated Resources of HUGFLY but the overall tonnage has approximately doubled.

The DMT 2015 MRE shows a slightly higher tonnage for SAND but a lower Fe grade.

Estimates for density, magnetite, hematite and mag-hem ratios were not available in the 2014 MRE.

Table 13-8 Historic Estimates - Comparison of GeoVista 2014, estimate and DMT estimate March 2015

Resource Category	Resource Estimate 2014			Resource Estimate 2015		
	Tonnage Mt	Fe %	P %	Tonnage Mt	Fe %	P %
Measured	10.7	34.3	0.3	53.7	37.0	0.46
Indicated	27.4	44.8	0.5	8.5	31.1	0.43
Measured + Indicated	**38.1**	**41.9**	**0.4**	**62.2**	**36.2**	**0.46**
Inferred	21.7	33	0.4	10.5	27.3	0.48
Total	**59.8**	**38.6**	**0.4**	**72.7**	**34.9**	**0.46**

Note: These resources are **global** estimates with no cut-off parameters applied and are for comparison purposes only

The 2015 MRE focused on the mineralized bodies of HUGFLY and KALV plus a small part of SAND within the confines of the Blötberget mining licence area, the MRE for 2017 includes the extended parts of HUGFLY (HUGFLY-NE) and of SAND, north east within the pending Guldkannan licence.

While the concentration for Fe and P is similar, the overall magnetite portion has decreased because more of the hematite-dominated type mineralization is observed from data derived from samples within Guldkannan, which is included in the 2017 estimate.

While the MRE for 2017 has largely confirmed the 2015 MRE for HUGFLY and KALV for tonnage and grade, additional tonnage for SAND and HUGFLY-NE has been modelled and estimated with corresponding grades (Table 13-9 & Table 13-10)

Considering an overall Mineral Resource Estimate error (interpretation and interpolation) of 10 % for Measured and up to 20 % for Indicated Resources, comparisons shows the 2017 MRE consistent with geological continuity of mineralisation into the Guldkannan licence area. .

Measured Resources have changed marginally from 42.5 Mt in 2015 to 45.4 Mt in 2017. This increase of Measured Resource results from the re-interpretation of SAND wireframe in the license area of 'Blötbergsgruva K nr 2', extending the mineralized body and hence increasing tonnage. A smaller increase also results from the corrected drill hole data of 2014 drilling programme and, accordingly, the updated wireframes of HUGFLY and KALV in the boundary pillar license area of 2015 'Blötbergsgruva K nr 1'.

Table 13-11 Comparison of DMT estimate of March 2015 and April 2017

Resource Estimate	Fe Cut-off % Fe	Resource Category	Volume Mm³	Tonnage Mt	Density t/m³	Fe %	Magnetite %	Hematite %	Magnetite proportion %	Hematite proportion %	Phos. %
2015	25	Measured	11.1	42.5	3.8	41.9	36.8	21.9	0.63	0.37	0.51
2015	25	Indicated	1.4	5.3	3.7	38.2	30.5	23.2	0.57	0.43	0.50
2015	25	Measured + Indicated	**12.5**	**47.8**	**3.8**	**41.5**	**36.1**	**22.0**	**0.62**	**0.38**	**0.51**
2015	25	Inferred	1.5	5.4	3.5	33.5	23.5	23.5	0.50	0.50	0.52
2017	25	Measured	11.9	45.4	3.8	41.7	34.5	23.8	0.58	0.42	0.48
2017	25	Indicated	2.7	9.6	3.6	36.2	16.9	34.3	0.34	0.66	0.51
2017	25	Measured + Indicated	**14.5**	**55.1**	**3.8**	**40.7**	**31.4**	**25.7**	**0.54**	**0.46**	**0.49**
2017	25	Inferred	3.3	11.8	3.6	36.1	15.9	35.1	0.33	0.67	0.51

Table 13-12 Comparison of DMT estimate of Measured+Indicated Resources of March 2015 and April 2017 for

Resource Estimate	Fe Cut-off % Fe	Deposit	Volume Mm³	Tonnage Mt	Density t/m³	Fe %	Magnetite %	Hematite %	Magnetite proportion %	Hematite proportion %	Phos. %
2015	25	HUGFLY	7.2	26.5	3.7	38.5	20.4	34.0	0.37	0.63	0.5
2015	25	KALV	5.0	19.8	4.0	45.6	58.0	5.2	0.92	0.08	0.54
2015	25	SAND	0.4	1.4	3.8	40.6	25.4	31.8	0.44	0.56	0.25
2015	25	**TOTAL**	**12.5**	**47.8**	**3.8**	**41.5**	**36.1**	**22.0**	**0.62**	**0.38**	**0.51**
2017	25	HUGFLY	7.3	27.0	3.7	38.1	17.8	36.2	0.35	0.65	0.46
2017	25	KALV	5.0	19.7	4.0	44.9	57.0	5.2	0.91	0.09	0.55
2017	25	SAND	1.5	5.7	3.8	41.7	16.8	42.2	0.30	0.70	0.37
2017	25	HUGFLY_NE	0.8	2.8	3.5	34.0	13.2	34.9	0.28	0.72	0.48
2017	25	**TOTAL**	**14.5**	**55.1**	**3.8**	**40.7**	**31.4**	**25.7**	**0.54**	**0.46**	**0.49**

13.11 Estimate of Mineral Resources

DMT has prepared a Mineral Resource estimate for the Blötberget Project, to include the pending Guldkannan licence area, with a drillhole database cut-off date of 10th March, 2017.

The Resource Model has an effective date of 28th April, 2017 and the Mineral Resource Estimate has an issue date of 05th May 2017.

DMT applied basic mining and economic parameters (Table 13-5), including commodity price and wireframe assumptions, to estimate a cut-off grade for resource estimation of 25 % Fe (Total).

The total Measured and Indicated Resource estimated for the Blötberget Project, at a preliminary economic cut-off Grade of 25 % Fe, is 55.1 Mt at a grade of 40.7 % Fe (Total) and 0.5 % P.

1) HUGFLY contains an estimated 27.0 Mt of Measured and Indicated Resources at a grade of 38.1% Fe (Total) and 0.5% P.
2) KALV contains an estimated 19.7 Mt of Measured and Indicated Resources at a grade of 44.9 % Fe (Total) and 0.6 % P.
3) SAND contains an estimated 5.7 Mt of Measured and Indicated Resources at a grade of 41.7% Fe (Total) and 0.4% P.
4) HUGFLY-NE contains an estimated 2.8 Mt of Indicated Resources at a grade of 34.0% Fe (Total) and 0.5% P.

Of the total estimated contained Fe (Meas.+ Ind.), the magnetite proportion is estimated at 54% and the hematite at 46%.

DMT has reported all the material of magnetite-rich ore of KALV and hematite-rich ore of HUGFLY, HUGFLY-NE and SAND contained within the Resource Block Model limited by the licence areas and excluding the material mined out by historical mining activities.

DMT considers all of the mineral resources reported as Measured and Indicated have a 'reasonable prospect of economic extraction', given appropriate economic and technical considerations.

Table 13-13 and Table 13-14 summarise the Mineral Resource estimate for the Blötberget Project as of 05th May, 2017 The Block Model has been constrained using basic economic and mining parameters and the Mineral Resources are estimated at a COG of 25%.

Table 13-13 Measured and Indicated Resources for the Blötberget Iron Ore Project - May 2017

Fe Cut-off % Fe	Resource Category	Volume Mm³	Tonnage Mt	Density t/m³	Fe %	Magnetite %	Hematite %	Magnetite proportion %	Hematite proportion %	Phos. %
25	Measured	11.9	45.4	3.8	41.7	34.5	23.8	0.58	0.42	0.48
	Indicated	2.7	9.6	3.6	36.2	16.9	34.3	0.34	0.66	0.51
	Measured + Indicated	14.5	55.1	3.8	40.7	31.4	25.7	0.54	0.46	0.49
	Inferred	3.3	11.8	3.6	36.1	15.9	35.1	0.33	0.67	0.51

Notes:

1) JORC 2012 definitions were followed for estimating Mineral Resources;
2) Mineral Resources are estimated at a cut-off grade of 25 % Fe;
3) Mineral Resources are estimated using a five year historical average price of US$ 90 per tonne (Source: IndexMundi); and
4) Figures may not total due to rounding errors.

Table 13-14 Deposit specific Resources for the Blötberget Iron Ore Project - May 2017

Fe Cut-off % Fe	Deposit	Volume Mm³	Tonnage Mt	Density t/m³	Fe %	Magnetite %	Hematite %	Magnetite proportion %	Hematite proportion %	Phos. %
25	HUGFLY	7.3	27.0	3.7	38.1	17.8	36.2	0.35	0.65	0.46
	HUGFLY-NE	0.8	2.8	3.5	34.0	13.2	34.9	0.28	0.72	0.48
	KALV	5.0	19.7	4.0	44.9	57.0	5.2	0.91	0.09	0.55
	SAND	1.5	5.7	3.8	41.7	16.8	42.2	0.30	0.70	0.37
	TOTAL	14.5	55.1	3.8	40.7	31.4	25.7	0.46	0.49	0.54

Notes:

1) JORC 2012 definitions were followed for estimating Mineral Resources;
2) Mineral Resources are estimated at a cut-off grade of 25 % Fe;
3) Mineral Resources are estimated using a five year historical average price of US$ 90 per tonne (Source: IndexMundi); and
4) Figures may not total due to rounding errors.

13.12 Conclusions

The Blötberget apatite-iron oxide deposit is located in the western part of the intensely mineralised Paleoproterozoic Bergslagen Province in south central Sweden.

The deposits in the neighbouring area occur along a ~40 km long, broad zone. This zone of mineralisation is the third largest iron ore deposit in Sweden by production, only outnumbered by the giant Kirunavaara and Malmberget iron ores in Norrbotten, northern Sweden.

The mineralised zone at Blötberget appears as a set of vertically narrow, elongated lenses dipping 50°–70° to the SE. Airborne geophysical surveys and historical drillholes indicate that mineralisation extends to a depth of at least 900 m below surface.

The Blötberget field consists of five mineralised bodies, from west to east, these are: Kalgruven; Flygruven; Hugget and Betsta (The Wedge); Sandell.

Mining and exploration in the Ludvika area has been carried out in different periods since the 1600's. The majority of this small scale mining was focused on iron production.

NIO applied for a mining concession within the Blötberget area in October 2010 and it was granted by the Mining Inspectorate of Sweden in August 2011. The mining concession, which runs for 25 years with possibility of extension, implies the right of exploitation and utilisation of iron, rare earths, and apatite. The environmental permit for this Project was granted in late March 2014.

The Hugget and Kalvgruvan/ Flygruvan zones had previously been mined down from near-surface to the 200 m and 240 m levels respectively. The units dip towards the southeast at between 50° and 55° in the near-surface mined-out areas, and flatten at depth to ~25°.

A drilling programme was undertaken by NIO during the summer and winter of 2012 and was completed in November 2012. This 16 hole programme included drilling to confirm the quality of historical drilling data, as well as infill and step-out drilling. NIO completed 16 drillholes totalling 7,430 m of drilling.

The 2014 drilling programme was designed to investigate the area between Flygruvan/Kalvgruvan and Hugget (formally known as "the wedge" or Betsta area) and to infill the intermediate depth extension of Hugget, in order to improve the confidence of the geological model. 13 drillholes, totalling 7,093 m, were drilled.

'The Wedge' was successfully explored during the 2014 drilling programme and, as a result, Kalvgruvan and Hugget/Flygruvan have now been shown to be continuous zones of mineralisation.

The Guldkannan licence area falls within the existing Blotberget Nr 1 exploration permit area and is adjoining and contiguous with the existing Blötberget mining lease. NIO made application for this mining licence, Blotbergsgruva K nr 2, (an area of 36.65 Ha) in April 2016 and awaits approval from the Swedish mining authorities. The Guldkannan licence area includes abandoned open pit and underground workings, of which there is only limited historical production data. However, although the application for the Guldkannan licence is awaiting approval, NIO requested DMT to complete a revised MRE to take into account and estimate the available Mineral Resources in the pending licence area.

Recent surface drillhole and historic underground drilling sample data were made available to DMT to assess and revise the MRE issued by DMT in April 2015

Some of the drill hole data provided to DMT for the 2015 MRE has changed and / or been added to, which resulted in a modification of the Blotberget Project Block Model and the estimation of additional Mineral Resources within the Guldkannon licence area.

Mine maps and historical drilling data have been collected from various sources and digitised, where possible. Drill core from historical exploration drilling in the Blötberget project area has been recovered, re-logged and re-analysed.

The quality and quantity of data for the Guldkannan tenement were considered not as robust as those available for the DMT study of the Blötberget licence area used in the 2015 MRE study.

DMT was provided with a comprehensive set of historical reports and data which have been collated and used in conjunction with data collected more recently by NIO for Guldkannan in order to estimate and report Mineral Resources for the Blötberget Project in accordance with JORC standards.

In the resource development programme of 2012 and 2014 NIO completed industry standard QA/QC programs to ensure the data is reliable and suitable for mineral resource estimation. The drill / sample density of the resource is adequate for the purpose of Mineral Resource Estimation and is reflected in the JORC compliant resource category classifications of Measured, Indicated and Inferred Mineral Resource.

The Measured Resource has changed from 42.5 Mt in 2015 to 45.4 Mt in 2017. This increase of Measured Resource results from the re-interpretation of SAND wireframe in the license area of 2015 'Blötbergsgruva K nr 1', extending the mineralized zone and hence increasing the estimated Measured Resource tonnage.Corrected drill hole data from the 2014 drilling programme and subsequent updated wireframes of HUGFLY and KALV in the license area of 'Blötbergsgruva K nr 1' also added to the Project's small increased Measured Resource tonnage.

Moreover, there has been a notable addition to the Project global Indicated Resources. Assuming the licence application for the Guldkannan area is approved this will allow NIO to add these Indicated Resources to their future mine plan, as Probable Reserves, once the mining 'modifying' factors have been applied.

DMT has relied heavily upon the information provided by NIO, however DMT has, where possible, verified data provided independently during the site visits.

DMT was able to overlay licence information on the Mineral Resource estimate area to confirm that the deposit is within NIO's license. DMT has not undertaken a legal review of the licences and assume that all the required licences are in place.

The geology of the deposit is fairly well understood and DMT has constructed a wireframe geological model for the Blötberget deposit based upon a combination of logged lithologies and analytical and SATMAGAN magnetite results. This has allowed the splitting of the deposit into geological domains comprising, magnetite-rich material of KALV and hematite-rich material of HUGFLY , HUGFLY-NE and SAND.

DMT has undertaken a statistical study of the data, which demonstrates adequate splitting of the data into single iron population domains, and undertaken a geostatistical study to investigate the grade continuity and to provide grade estimation parameters for Ordinary Kriging.

A Surpac block model using all the available geological and sample analytical test data has defined an iron ore resource. At this stage of the investigation most of the mineral resources of Blötberget have been classified into the Measured and Indicated categories.

As a result of the site visits, data base verification and validation and the geological and model generated therefrom, DMT has estimated the total Measured and Indicated Resources for the Blötberget Project as 55.1 Mt at a grade of 40.7 % Fe (Total) and 0.5 % P at preliminary COG of 25 % Fe. Of the total estimated contained Fe, the magnetite-hematite ratio is estimated at 54:46.

13.13 Recommendations

13.13.1 Further Drilling

In the DMT 2015 MRE for Blötberget it was commented that there is only limited additional geological information that can be gained from further, expensive, surface drilling programmes, and this remains the case.

However, should the pending application for the adjoining Guldkannan licence area be approved then consideration should be given to a surface drill programme within this licence area to further define and improve on the confidence levels of geological model by improving the sample data quality and quantity, generating samples for metallurgical test work to assess the actual magnetite : hematite ore characteristics and to provide valuable geotechnical and hydrogeological information to the mine model for Guldkannan, where there appears to be a paucity of such data.

This surface drilling programme should follow closely the programme parameters used by NIO in the 2014 – 2015 campaign, in form of ‘step out’ down dip phases of drilling.

Firstly to improve on the confidence levels and potentially promote the Indicated Resources in the near surface of Guldkannan. Depending on the NIO’s final mine plan and schedule potentially these upper level Guldkannan Resources could provide the earliest opportunity for ore recovery, as development progresses to the lower levels of the mine (-40 to -200mL).

A second phase of somewhat deeper surface drilling would step out further into the hanging wall to target the band of Inferred Resources between the mined out levels and the -320mL Exploration drive underground drill intersections, potentially redefining the wide red band of Inferred shown in Fig 13-30.

A third phase of surface collared drilling may be considered optional at this stage, but would step out further into the hanging wall to probe the Resources which are Inferred below approximately -50mL. Equally, depending on NIO's overall mining strategy , these deeper Resources could be defined at a much later stage of project development by shorter hole underground drilling from hanging wall cross cuts developed from the -320mL footwall drive.

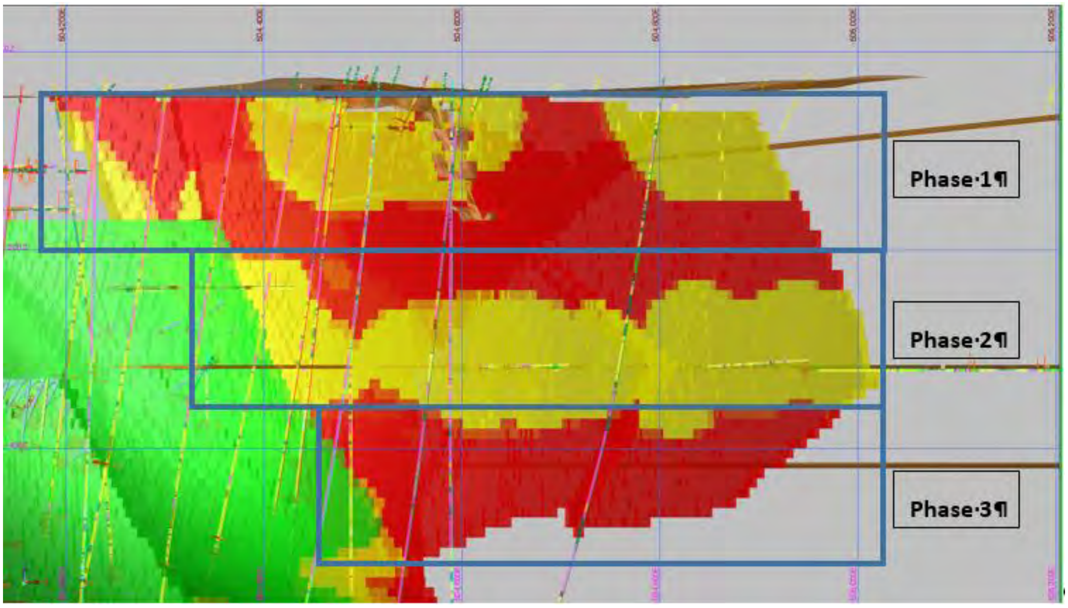


Figure 13-30 View from South to 3D Block model with historic mine drifts showing 3 phases of further drilling proposed to upgrade resources to Measured and Indicated.

Note: (Green – Measured ; Yellow – Indicated ; Red – Inferred)-

Source : DMT

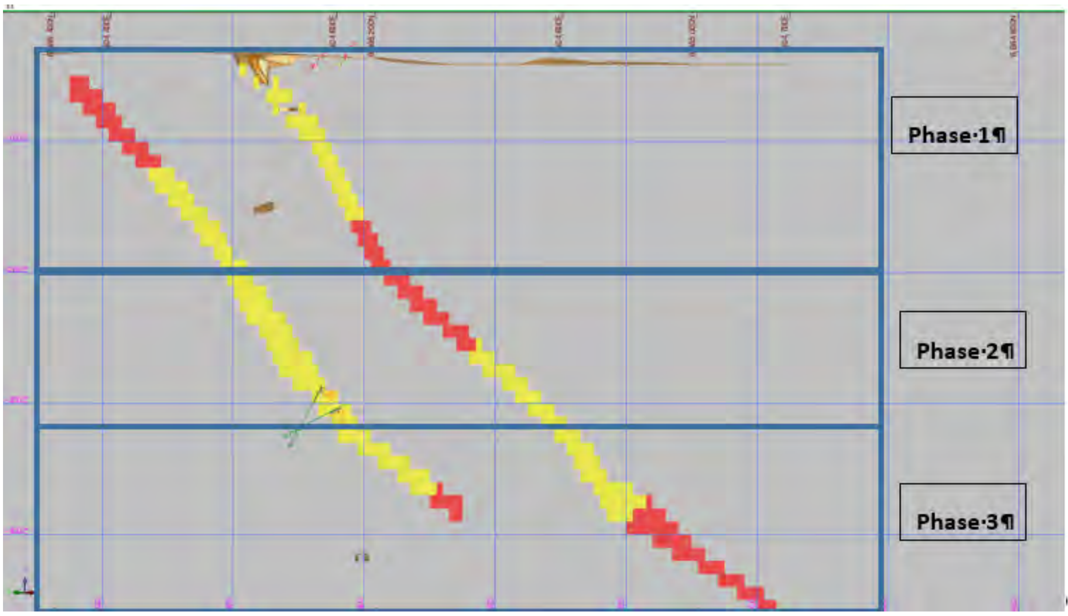


Figure 13-31 Section View from SE to 3D Block model with historic mine drifts showing 3 phases of further drilling proposed to upgrade resources to measured and indicated.

Note: (Yellow – Indicated ; Red – Inferred)-

Source : DMT

The bulk of the upper levels of the Blötberget deposit that have been identified as part of the proposed mine plan are within the Measured Resource category. However, some limited surface drilling for rock mechanical/structural and or metallurgical information for detailed mine planning should be considered. Definition and Grade Control drilling should commence as soon as there is access to the underground areas after dewatering. This close spaced drilling is required to support the transfer of Measured Resources into (Proven) Reserves. The underground drilling should follow a similar drill approach to that used historically, with fan pattern of close spaced drilling into the mine blocks , typically at 35-45 m centres, with wider spaced (100 m) deeper down dip drilling to provide increased confidence in the Indicated area of the resources.

13.13.2 Further Studies

Additional hydro-geological investigations on existing drillholes should be undertaken, as DMT considers that insufficient data exists on the hydrological and hydrogeological conditions for underground mining. Sampling

There was no use of check samples in the historic core re-assay (BGU), this should be addressed as a partial re-run with standards inserted.

The blank samples assayed to date have indicated between 1 % and 2 % Fe. Prior to further analysis being undertaken, the preparation of suitable blanks for insertion into future sample streams should be addressed by NIO.

Check standards have slightly (but consistently) undervalued the results, this should also be corrected ahead of the next phase of core sampling, which will likely be from underground drill locations.

NIO should continue to try to source historical data and drill core for the purposes of re-assaying, re-logging and integration into the current database, particularly for the pending Guldkannan licence area..

14 REFERENCES

Olsson L., Magnetometermätningar Blötberget November 2009. Kopparberg Mineral AB, 2010.

Svenskt Stål, L-O Nisson, Redogörelse för driften vid Blötbergets Gruvor 1979

Blötbergets Gruvor, Redogörelse för driften- År 1975 (document sent to Bergmästarämbetet)

Blötbergets Gruvor, Redogörelse för driften- År 1976 (document sent to Bergmästarämbetet)

Lindholm T., Bäckström, E., Setter, M. 2014. Blötberget - Mineral resource estimate. GeoVista AB GVR14002.

Larsson, M. 2014. Microscopy study on ore samples from Blötberget. BGU

Sillitoe, R.H. & Burrows, D.R., 2003: New field evidence bearing on the origin of the El Laco magnetite deposit, northern Chile; reply. Economic Geology 97, 1501–1502.

Nilsson, K.P., Högdahl, K., Jonsson, E., Troll, V., Weis, F., Persson, L., Majka, J. & Skelton, A. 2013. The Grängesberg apatite-iron ore deposit. Research Report. Geological Survey of Sweden. 45 pp.

Websites

http://en.climate-data.org/location/225352/

http://www.ekonomifakta.se/sv/Fakta/Regional-statistik/Din-kommun-i-siffror/Oversikt-for-region/?region=2085

http://www.urbistat.it/AdminStat/en/se/demografia/dati-sintesi/ludvika/2085/4

http://www.google.co.uk

http://www.indexmundi.com

Competent Person's Consent Form

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Competent Person's Consent Form

Pursuant to the requirements of ASX Listing Rules 5.6, 5.22 and 5.24 and Clause 9 of the JORC Code 2012 Edition (Written Consent Statement)

Report name

Mineral Resource Estimate – Blötberget Iron Ore Project

(insert name or heading of Report to be publicly released ("Report"))

DMT Consulting Limited

(insert name of company releasing the Report)

Blötberget Iron Ore Project

(insert name of the deposit to which the Report refers)

5th May 2017

(Date of Report)

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Statement

I/~~We~~

Florian Lowicki

(insert full name(s))

confirm that I am the Competent Person for the Report and:

- I have read and understood the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).
- I am a Competent Person as defined by the JORC Code 2012 Edition, having five years' experience that is relevant to the style of mineralisation and type of deposit described in the Report, and to the activity for which I am accepting responsibility.
- I am a Member or Fellow of The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists or a 'Recognised Professional Organisation' (RPO) included in a list promulgated by ASX from time to time.
- I have reviewed the Report to which this Consent Statement applies.

I/~~We~~ am a full time employee of

DMT Consulting Limited

(insert company name)

and have been engaged by

Nordic Iron Ore

(insert company name)

To prepare the documentation for

Blötberget Iron Ore Project

(insert deposit name)

On which the Report is based, for the period ended

28 April 2017

(Insert date of Resource statement)

I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest.

I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Mineral Resources.

DMT Consulting Limited
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Web: www.dmt-group.com

Consent

I consent to the release of the Report and this Consent Statement by the directors of:

DMT Consulting Limited

(insert reporting company name)

[signature]	**30th May 2017**
Signature of Competent Person	*Date*
Pr.Sci.Nat Geol. (SACNASP)	**400425/13**
Professional Membership *(insert organisation name)*	*Membership Number*
[signature]	**Tim Horner CGeol CEng P.Geo – Nottingham, UK**
Signature of Witness	*Print Witness Name and Residence* *(e.g. town/suburb)*

Appendix A
Sampling Procedure Manual

Nordic Iron Ore™

Procedure manual

Note: As a prerequisite to carrying these tasks you must firstly have read the specific machinery manuals and procedures from the manufacturer and secondly you must have sign off by a competent trainer before undertaking any task.

1.1 Core handling

1.1.1 Collection of the core from the drilling team.

1.1.2 Make a quick measurement to ensure all core boxes are labelled correctly and that all core blocks are in the correct place.

1.1.3 Make sure all boxes are lifted in a correct way, using two people at the time.

1.1.4 When transporting the core, make sure to use ratchet straps!

1.1.5 Core is to be stored in Grängesberg at Inbox wall.

1.1.6 When geologist starts working with a drill hole, update the DDH-info onto the whiteboard.

1.1.7 Place boxes onto rollers in order i.e. 0.00 tray first. Remember to use wooden core stop at each end of the roller.

1.1.8 Prepare to measure meter marks on core and hole consistency checks.

- You need: Tape measure and a black permanent marker

1.1.9 Meter measuring

- Push all core to the left and match fractures/breakages while measuring metre marks
- Check each box for labelling consistency i.e. core blocks, hole ID, tray number.
- Check that core blocks match tray meterage.
- If there are any issues with this: measure further on and see if it fixes itself, refer to daily drilling protocols then refer to drillers ASAP.
- Check that all markings are legible.
- If mistakes are discovered core boxes and core blocks must be sanded off and relabelled and a note made on the logging of the error. This must then be fed back to the drilling contractor as we could be over or under charged. It is essential that this data is captured otherwise our logging and sampling will be incorrect.

1.2 Logging

1.2.1 Prepare for geological log and sampling.

- Tape measure
- Magnetic pen
- Scribe
- Biro pen
- Hand lens
- Old log/protocol
- Surpac section
- Notepad
- Sample tag book
- Water bottle
- Acid bottle and protective eyewear
- UV-lamp and black towel
- Handheld XRF

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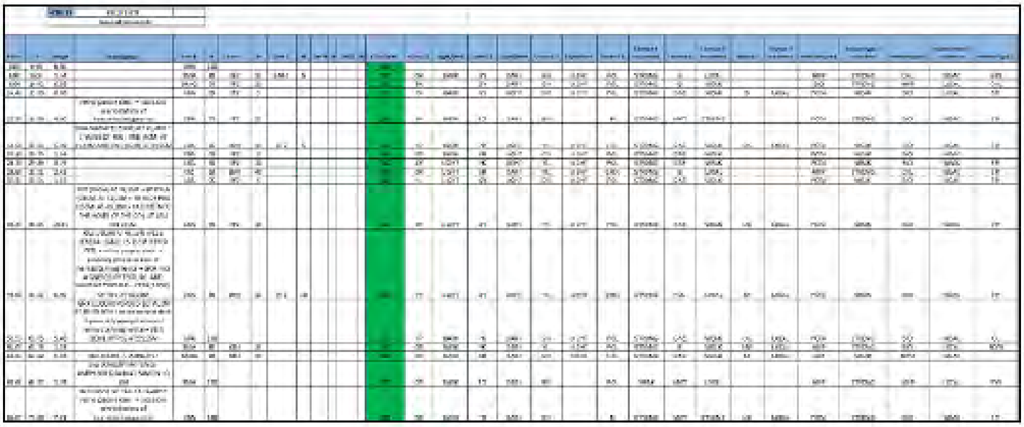
1.2.2 Log using the drop down logging template located on the server. Rename before saving as this will overwrite the blank version. Place template under the respective deposits folder in KARTERINGSLOGG.



1.2.3 Logging should have a 1cm accuracy to boundaries. Core over **1m** should be logged as separate lithologies if there is a change, unless it is ore which should be greater than **30cm**. **If the magnetite or hematite content is 15% or more, always put it as lithology 1.**

1.2.4 Firstly walk along the whole core and note down lithological changes, colour changes, take a mag pen with you and run across as you do so and note magnetic sections. Wet core wherever needed to assist with logging.

1.2.5 Before starting with the XRF and Magnetic Susceptibility, ensure that you have completed training with an experienced and competent person. For the XRF that means a person with a certificate signed by the manufacturer. Mark the test points for XRF and Magnetic Susceptibility with a biro pen. **Make sure the six XRF points are in the same spots as the six Magnetic Susceptibility points**. Use about 10 seconds per XRF sample point, or however long it takes to get a reasonably constant Fe-value. If unsure seek assistance from the NIO geologist on site.

1.2.6 When using the XRF for mineral identification, make sure to have the correct settings and measuring time.

1.2.7 When using the UV lamp, make sure it is set to A/C so you can see both short- and long-wave responsive minerals. **Never look directly into the UV-lamp.**

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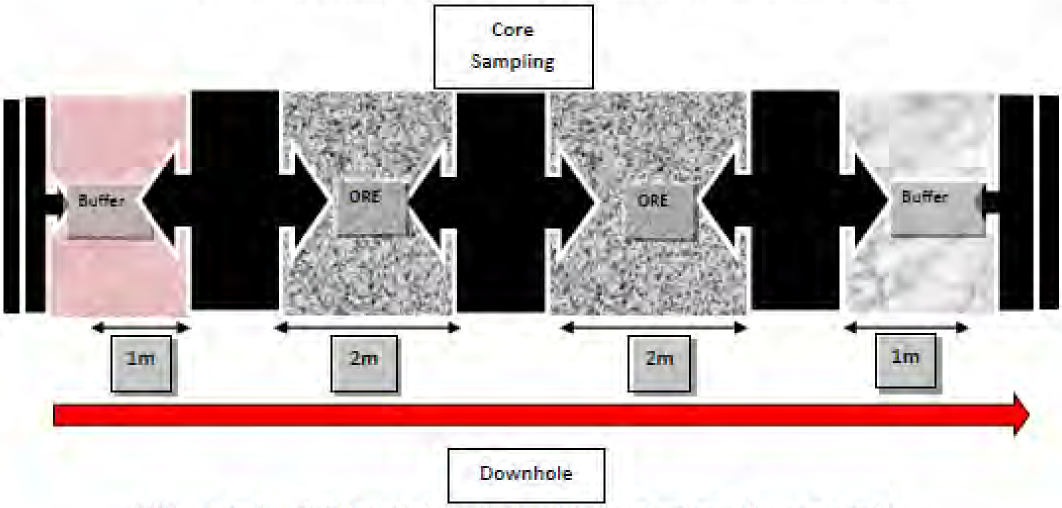
1.3 Sampling of core

1.3.1 Sample all material with Fe over 10%, greater than 50cm in length and **within a mineralised section**. If unsure seek assistance from the NIO geologist on site.



1.3.2 Use lithological boundaries to section the mineralised core. Samples should preferably be <>2m length.

1.3.3 Sample 1m before and 1m after mineralised zone and create these as separate samples.

1.3.4 Mark sample intervals on the core and on the boxes with black permanent marker (see figure above).

1.3.5 Write sample depths with biro pen at start and end of sample intervals on core boxes.

1.3.6 If necessary draw a saw cut line with permanent marker on core.

1.4 Allocating sample ID

1.4.1 Check last sample book used for first sample number and QA/QC insertion type and sequence.

1.4.2 Allocate sample id into sampling tab on the logging spread sheet

1.4.3 Cross check core marking and sample tags for errors

1.4.4 Insert the numbered sample tags into the core box next to the start of the section to be sampled – write hole name on new sample booklet and the sample series used– write date – hole id – total sample length of section- sampler name

- Insert certified standards, blanks and duplicates into the sample train at the rate of one per every 5 samples. Make sure high grade material gets a high grade standard and that the name of the standard used is recorded in the sampling sheet.

1.4.5 Enter data into logging spread sheet and save file under correct directory on server. Update the whiteboard to reflect completion of sampling and add to sawing list under the GEO tab.

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1.5 DCSO and RQD

1.5.1 Start with moving the core over to the v-rail while matching fractures/breakages along the core. Locate the orientation line starting point made by the drillers. You might need to have several runs in the rail at the same time to make a match between two starting points. Use the edge of the v-rail and a red permanent marker to draw the orientation line. If you have any problems with matching the fractures/breakages and the foliation of the rock doesn't give you confidence enough, then skip the orientation line in this section. No data is better than false data.

1.5.2 As you start moving the core back into the box take a careful look at all fractures and separate the manmade fractures from the natural ones. All manmade fractures are marked with a black X. The midpoint of the X should be over both the fracture and the orientation line. If you are unsure leave the fracture as natural.

1.5.3 All natural fractures need to be measured with help of the DCSO tool. Measure the alpha and beta angles as seen in the description from Petro Team Engineering.

1.5.4 While you are holding the core, also estimate the J_R and J_A value for all natural fractures. The estimation is made according to Barton's Q classification chart and added into the same DCSO logging sheet as the information above. Update the whiteboard to reflect completion of DCSO measurements.

1.5.5 When all core is back in the box, do RQD. Start with dividing the core into intervals of similar RQD, zones that have the same RQD value. Mark the edges of each interval with a + using a green permanent marker. Note that all core loss should be recorded in the RQD measurement as RQD 10. If the RQD is the same as the previous zone then it should be merged as one zone and included in the RQD measurement.

- Measure and note each RQD interval
- Measure all core pieces over 10 cm in length. The total length of these pieces divided by the total length of the interval will give you a value that if multiplied with 100 is the RQD value for the interval. All RQD values below 10 are

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recorded as 10! Enter the RQD value in the same software as for DCSO and J_R, J_A. Make sure each row is populated with the corresponding RQD value.

- For core loss or other intervals with RQD 10 make sure they are entered separately into the program. One row for the starting depth and one row for the finishing depth. Make sure to copy the comments from the first to the second row so anyone could easily see that it's the same RQD zone.
- Update the whiteboard to reflect completion of RQD.

1.6 Photographing core

Wet core photograph example

Dry core photograph example

1.6.1 Prepare camera and check if battery is charged (there are two)

1.6.2 Take pictures of each box individually dry and then wet with the Nikon D3100. Check the first few pictures to ensure they have come out correctly i.e. in focus, straight, not too dark or light and no obstructions. Once complete name these photos using the naming convention: VAS_12-011_L1_0.00-13.80_dry or VAS_12-011_L2_13.80-24.70_wet.

1.6.3 Ensure that the orientation line and sampling tags are visible in the picture.

1.6.4 Ensure all photos are then loaded onto the server under their respective folder in G drive before moving onto the next hole. Also ensure to remove your pictures from the camera memory.

- Ensure camera is turned off once finished. Update the whiteboard to reflect completion.

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1.7 Point load

1.7.1 Open the point load template from the G: drive, rename the file to the current hole name.

1.7.2 Ensure you have the geological logging file

1.7.3 Copy the primary logging codes and interval lengths.

1.7.4 If the rock has foliation take six measurements – three parallel and three perpendicular within 15-20cm - close to each other to ensure that the measurements are taken on the "same" rock.

1.7.5 **Select a homogenous piece of core that represents the rock type**. If there is a lot of variation in the core take more readings. If there is a discrepancy and differing rock types haven't been recorded then this needs to be fed back to the geologist.

1.7.6 Perpendicular is the preferred point load test to take if there is nothing else to choose from. If the rock is badly fractured then point load cannot be taken and should be skipped.

1.7.7 Make sure to calibrate the point load each day before taking any measurements. To calibrate; pump until the cones meet and then press the lower cone back to the bottom. Repeat three times. Make sure to use the pumping stick as much as possible when lowering the cone, don't press the arm. When this is done set the display to *ZERO* and *PEAK*.

1.7.8 Between each measurement

- Clean the sides of the cone
- Open the valve
- Press the cone down to at least 7
- Close the valve
- Pump three times
- Set to *ZERO*

1.7.9 Photograph if necessary.

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1.7.10 Make sure the file is saved with the right naming convention under *Geotechnical log -> Point load* folders.

1.7.11 Once point load is complete ensure hole is stored as per Core Storage protocols.

- Pallets containing non-sampled core shall be put in the temporary area. The technician then labels the pallet and moves it to its right place in the storage area.
- Pallets containing sampled core shall be put; near the exit roller by the sawing room, while the actual samples for sawing are temporarily put on a pallet under the "electrical box". After sawing it, the technician returns the sampled pallets onto the pallet containing the remnants of the hole in order and moves completed hole to storage area labeling pallet.
- 22mm core is packed 3*15 boxes for one pallet. 38mm core is packed 3*10 boxes per pallet. 63,5mm core is packed 3*8 boxes per pallet. 51mm core is packed 3*7 boxes per pallet.

1.8 Sawing

1.8.1 Remove the sampling from GEO tab and place it under SÅG tab, print the sawing list.

1.8.2 Read sawing list then take sample bag and mark the bag with the sample number using a black permanent marker

1.8.3 Before you start sawing:

- No personnel is authorized to operate saw without training and sign off by authorized operator.
- Turn the fan on, located under the camera stand.
- Turn the water on, located next to the sink behind the sawing both. One handle for warm water and one handle for cold water.
- Make sure you have the appropriate safety gear on (see the signs next to the door in to the sawing both
- Make sure the size of the core guide matches the size of the core you are about to saw.
- Inspect the blade for wear and tear and make sure it isn't skewed.
- Turn the main switch on and turn the tachometer to 400.

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- When turning everything off, repeat steps in reverse.

1.8.4 Technician - saw a third of the core along the saw cut line (if present or use orientation line) and insert the samples into the sample bags with corresponding sample numbers, and put in the correct sample number in the bag with the sample then update whiteboard.

1.8.5 Load plastic bags into oven for drying overnight minimum 12 hours drying – check moisture content of bags before completing density.

1.9 Density

1.9.1 Note: density measuring is conducted on all drill core samples

1.9.2 Make sure that the water is room temperature by filling it up a day in advance

1.9.3 Make sure that the correct samples and lists are provided by geologist and make sure that the samples all match the list provided.

1.9.4 Ensure that you have completed density training with an experienced and competent person before completing task and if any problems or discrepancies arise during measuring – talk with your supervisor.

1.9.5 Calibrate both scales before use and every 40 samples.

1.9.6 Weigh the sample in the metal bowl try to get at least1.1kg of sample or take the entire sample (you can only weigh what you have) – **Make sure the scale stops before entering value in the density list.**

1.9.7 Weighing in water. Take the first metal bowl and pour the drill core into the colander.

1.9.8 Ensure all material from the metal bowl enters the colander, bang all sample out and clean with a dry cloth and put material into colander as well.

1.9.9 Clean metal bowl with a lightly moistened cloth and allow drying then reuse.

1.9.10 Lower the colander into the water slowly. **Make sure the scale stops before taking reading – this can take a while as the scale is extremely sensitive 0.05g so walking or doors closing can change the result.** Enter the whole value into list.

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1.9.11 Lift the colander out of the water, and put the drill core back into the sample bag (leave bag open and place ready to go to the lab.

1.9.12 Go back to step 1.9.5 and repeat.

1.9.13 Check all data for errors

1.10 Sample dispatch

1.10.1 Fill in the sample batch and save a copy under correct directory on server.

1.10.2 Remove air from sample bag, staple and load into cardboard box. Label the box with "*Nordic Iron Ore Sample no: X-X*".

1.10.3 Maximum weight for each box is 35kg as this is the weight limit of Bussgods.

1.10.4 Send samples to a certified laboratory together with the sample batch.

1.11 Sample Received

1.11.1 Place the "fraktsedel"- paper in the folder called "mottaget gods".

1.11.2 Update the whiteboard

1.12 Magnetic Susceptibility

1.12.1 Taking the measurements

- Make sure to not place the bag on top of a metallic surface during measuring.
- Shake bag to hand homogenise.
- Take measurements on each side and then the bottom, recording results in the spreadsheet Magsus_Satmagan placed on G: drive.

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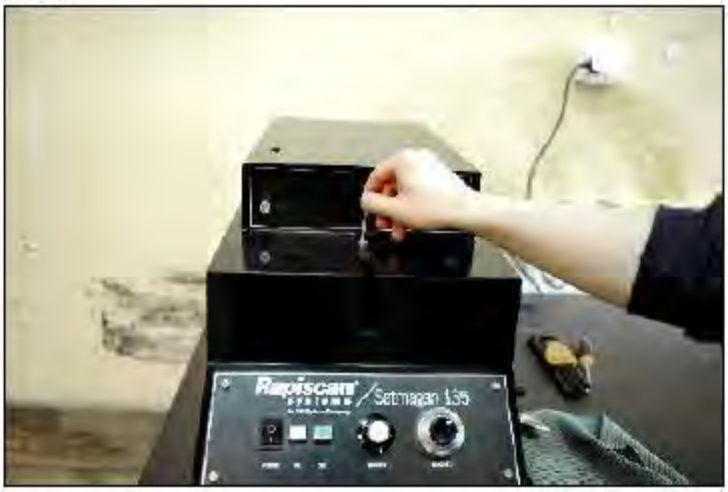
1.13 Satmagan



1.13.1 To prepare the samples –
- Select correct sample and add to ampule ensuring ampule is clean.
- Insert certified standards, blanks and duplicates into the sample train at the rate of one per every 5 samples.

1.13.2 Starting the machine
- Turn power on and let machine warm up for 20 minutes prior to use.
- Run through all ten calibration samples and record in Magsus_satmagan spreadsheet – See training manual.

1.13.3 Taking the measurements
- Fill data into the file called Magsus_Satmagan on G drive.

1.13.4 Update whiteboard to reflect on completion

- Clean all ampules before use ensuring you wear your PPE due to dust:

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Appendix B
List of Historical Geological Maps & Sections

Deposit	old level m	new level m	horizontal	Comments	deposit	old level m	new level m	horizontal
Hugget-Sandell	0	40	Y		Kalvgruvan	0	40	Y
Hugget-Sandell	80	120	Y		Kalvgruvan	10	50	Y
Hugget-Sandell	120	160	Y		Kalvgruvan	20	60	Y
Hugget-Sandell	160	200	Y		Kalvgruvan	25	65	Y
Hugget-Sandell	200	240	Y		Kalvgruvan	30	70	Y
Hugget-Sandell	240	280	Y		Kalvgruvan	45	85	Y
Hugget-Sandell	280-1	320	Y		Kalvgruvan	50	90	Y
Fredmundsaberget	280-2	320	Y	exploration drift to the East	Kalvgruvan	60	100	Y
Fredmundsaberget	280-3	320	Y	exploration drift to the East	Kalvgruvan	70	110	Y
Fredmundsaberget	280-4	320	Y	exploration drift to the East	Kalvgruvan	80	120	Y
Fredmundsaberget	280-5	320	Y	exploration drift to the East	Kalvgruvan	90	130	Y
Hugget-Sandell	330	370	Y		Kalvgruvan	100	140	Y
Hugget-Sandell	380	420	Y		Kalvgruvan	140	180	Y
Hugget-Sandell	430	470	Y		Kalvgruvan	160	200	Y
Hugget-Sandell	480	520	Y		Kalvgruvan	180	220	Y
Hugget-Sandell	530	570	Y		Kalvgruvan	200	240	Y
Vertical section_E1				Overview of vertical section 18-39	Kalvgruvan	220	260	Y
Vertical section_10					Kalvgruvan	260	300	Y
Vertical section_11					Kalvgruvan	280	320	Y
Vertical section_12					Kalvgruvan	300	340	Y
Vertical section_13					Kalvgruvan	320	360	Y
Vertical section_14					Kalvgruvan	340	380	Y
Vertical section_15					Kalvgruvan	360	400	Y

Deposit	old level m	new level m	horizontal	Comments	deposit	old level m	new level m	horizontal
Vertical section_16					Vertical section_1			
Vertical section_17					Vertical section_2			
Vertical section_18					Vertical section_3			
Vertical section_19					Vertical section_4			
Vertical section_20					Vertical section_5			
Vertical section_21					Vertical section_6a			
Vertical section_22					Vertical section_6b			
Vertical section_23					Vertical section_7			
Vertical section_24					Vertical section_8			
Vertical section_25					Profile 1-9 C-D			
Vertical section_26					Profile 1-9 E-F			
Vertical section_27					Profile 3-5 A-B			
Vertical section_28								
Vertical section_29								
Vertical section_30								
Vertical section_31								
Vertical section_32								
Vertical section_33								
Vertical section_34								
Vertical section_35								
Vertical section_36								
Vertical section_37								
Vertical section_38								

Deposit	old level m	new level m	horizontal	Comments	deposit	old level m	new level m	horizontal
Vertical section_39								
Vertical section_40								
Vertical section_41								
Vertical section_42								

Appendix C

Resource Tables

Meas.+Ind. Resource in Concession 2015+2017

TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
0.00	74.95	3.57	34.65	26.68	21.94	0.43	0.54	0.46
5.00	74.63	3.57	34.78	26.78	22.02	0.43	0.54	0.46
10.00	72.53	3.60	35.55	27.34	22.54	0.44	0.54	0.46
15.00	69.50	3.64	36.54	28.10	23.17	0.45	0.54	0.46
20.00	63.68	3.70	38.25	29.35	24.32	0.47	0.54	0.46
25.00	55.08	3.79	40.69	31.43	25.67	0.49	0.54	0.46
30.00	46.34	3.89	43.17	34.02	26.53	0.51	0.55	0.45
35.00	37.94	3.99	45.52	36.89	26.93	0.54	0.58	0.42
40.00	28.65	4.10	48.11	40.48	26.91	0.58	0.60	0.40
45.00	18.33	4.25	51.24	44.37	27.37	0.59	0.62	0.38
50.00	8.77	4.45	55.42	48.39	29.17	0.64	0.63	0.37
55.00	4.26	4.61	58.66	46.58	35.67	0.72	0.57	0.43
60.00	1.39	4.77	61.75	50.57	35.97	0.66	0.59	0.41
65.00	0.05	4.99	65.79	9.93	83.79	0.59	0.11	0.89

Meas. Resource in Concession 2015+2017

TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
0.00	58.73	3.62	36.22	29.88	20.88	0.43	0.58	0.42
5.00	58.49	3.63	36.35	29.99	20.95	0.43	0.58	0.42
10.00	57.26	3.65	36.95	30.48	21.30	0.43	0.58	0.42
15.00	54.84	3.69	38.03	31.38	21.90	0.44	0.58	0.42
20.00	50.68	3.75	39.68	32.76	22.85	0.46	0.58	0.42
25.00	45.44	3.83	41.65	34.51	23.85	0.48	0.58	0.42

TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
30.00	39.88	3.91	43.62	36.62	24.48	0.51	0.59	0.41
35.00	33.14	4.00	45.85	39.49	24.70	0.53	0.61	0.39
40.00	25.38	4.12	48.39	43.28	24.40	0.57	0.64	0.36
45.00	16.71	4.26	51.43	47.03	24.88	0.58	0.66	0.34
50.00	8.39	4.44	55.31	49.86	27.50	0.63	0.65	0.35
55.00	3.99	4.61	58.57	48.86	33.18	0.70	0.60	0.40
60.00	1.25	4.76	61.56	55.13	30.99	0.63	0.65	0.35
65.00	0.03	5.01	66.19	12.60	81.60	0.35	0.14	0.86

Ind. Resource in Concession 2015+2017

TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
0.00	16.23	3.38	28.95	15.07	25.79	0.45	0.41	0.59
5.00	16.13	3.39	29.09	15.15	25.92	0.46	0.41	0.59
10.00	15.26	3.42	30.27	15.56	27.18	0.47	0.39	0.61
15.00	14.66	3.44	30.97	15.82	27.92	0.47	0.39	0.61
20.00	13.00	3.50	32.64	16.05	30.07	0.49	0.37	0.63
25.00	9.64	3.62	36.18	16.89	34.25	0.51	0.34	0.66
30.00	6.45	3.78	40.40	17.92	39.22	0.56	0.32	0.68
35.00	4.80	3.90	43.23	18.90	42.26	0.59	0.32	0.68
40.00	3.27	4.01	45.97	18.71	46.37	0.62	0.30	0.70
45.00	1.63	4.16	49.35	17.05	52.91	0.69	0.25	0.75
50.00	0.39	4.57	57.82	16.70	65.39	0.96	0.21	0.79
55.00	0.27	4.69	60.05	12.42	73.01	0.98	0.15	0.85
60.00	0.13	4.87	63.53	7.93	82.63	0.94	0.09	0.91

TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
65.00	0.02	4.96	65.20	6.00	87.02	0.93	0.06	0.94

Inf. Resource in Concession 2015+2017

TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
0.00	15.24	3.48	32.28	15.53	30.09	0.46	0.38	0.62
5.00	15.24	3.49	32.28	15.53	30.09	0.46	0.38	0.62
10.00	14.97	3.50	32.71	15.67	30.55	0.47	0.37	0.63
15.00	14.80	3.51	32.93	15.72	30.83	0.47	0.37	0.63
20.00	13.75	3.55	34.10	15.90	32.31	0.48	0.36	0.64
25.00	11.75	3.62	36.07	15.90	35.12	0.51	0.33	0.67
30.00	7.65	3.79	40.57	16.16	41.28	0.59	0.29	0.71
35.00	5.82	3.89	43.20	15.95	45.27	0.63	0.27	0.73
40.00	4.11	4.00	45.61	16.18	48.47	0.69	0.26	0.74
45.00	1.82	4.19	50.02	13.92	57.12	0.81	0.20	0.80
50.00	0.70	4.49	56.22	15.79	64.04	0.97	0.20	0.80
55.00	0.47	4.55	57.47	15.76	65.87	0.98	0.20	0.80
60.00	0.07	4.87	63.50	6.20	84.37	0.86	0.07	0.93
65.00	0.01	4.96	65.28	6.00	87.12	0.62	0.06	0.94

Meas.+Ind. Resource in Concession 2015+2017 separated by mineralized body

Layer	TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
HUGFLY	0.00	42.92	3.43	30.87	16.22	27.36	0.40	0.42	0.58
HUGFLY_NE	0.00	3.44	3.44	31.18	12.35	31.81	0.48	0.29	0.71

Layer	TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
KALV	0.00	20.89	3.89	43.37	54.85	5.26	0.54	0.90	0.10
SAND	0.00	7.70	3.55	33.58	14.94	32.55	0.31	0.39	0.61
HUGFLY	5.00	42.90	3.43	30.89	16.23	27.37	0.40	0.42	0.58
HUGFLY_NE	5.00	3.44	3.44	31.18	12.35	31.81	0.48	0.29	0.71
KALV	5.00	20.88	3.89	43.38	54.86	5.26	0.54	0.90	0.10
SAND	5.00	7.41	3.59	34.79	15.46	33.75	0.32	0.39	0.61
HUGFLY	10.00	41.93	3.44	31.40	16.44	27.89	0.40	0.41	0.59
HUGFLY_NE	10.00	3.39	3.45	31.52	12.43	32.21	0.48	0.28	0.72
KALV	10.00	20.77	3.90	43.58	55.13	5.27	0.54	0.90	0.10
SAND	10.00	6.44	3.72	38.76	16.54	38.30	0.35	0.34	0.66
HUGFLY	15.00	39.34	3.49	32.63	16.89	29.18	0.41	0.40	0.60
HUGFLY_NE	15.00	3.30	3.47	32.02	12.55	32.79	0.48	0.28	0.72
KALV	15.00	20.66	3.91	43.74	55.36	5.26	0.55	0.90	0.10
SAND	15.00	6.20	3.76	39.74	16.67	39.58	0.35	0.33	0.67
HUGFLY	20.00	34.21	3.57	34.84	17.26	31.96	0.43	0.38	0.62
HUGFLY_NE	20.00	3.14	3.50	32.80	12.81	33.64	0.48	0.28	0.72
KALV	20.00	20.43	3.92	44.03	55.77	5.25	0.55	0.91	0.09
SAND	20.00	5.91	3.80	40.84	16.73	41.09	0.36	0.31	0.69
HUGFLY	25.00	26.98	3.69	38.14	17.75	36.16	0.46	0.35	0.65
HUGFLY_NE	25.00	2.79	3.54	33.99	13.25	34.90	0.48	0.28	0.72
KALV	25.00	19.66	3.96	44.86	56.98	5.20	0.55	0.91	0.09
SAND	25.00	5.65	3.83	41.69	16.84	42.18	0.37	0.30	0.70
HUGFLY	30.00	20.52	3.82	41.47	18.26	40.41	0.51	0.32	0.68
HUGFLY_NE	30.00	1.84	3.66	37.25	13.60	39.19	0.51	0.25	0.75

Layer	TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
KALV	30.00	18.64	4.00	45.81	58.36	5.11	0.56	0.91	0.09
SAND	30.00	5.34	3.87	42.54	16.64	43.60	0.37	0.29	0.71
HUGFLY	35.00	15.09	3.95	44.72	18.49	44.81	0.56	0.30	0.70
HUGFLY_NE	35.00	1.07	3.80	40.91	16.90	41.01	0.55	0.29	0.71
KALV	35.00	17.15	4.05	46.93	60.05	4.97	0.56	0.92	0.08
SAND	35.00	4.64	3.93	43.98	15.68	46.66	0.40	0.26	0.74
HUGFLY	40.00	10.06	4.11	48.34	18.64	49.84	0.64	0.28	0.72
HUGFLY_NE	40.00	0.45	4.00	45.73	19.92	44.77	0.64	0.31	0.69
KALV	40.00	14.51	4.13	48.59	62.59	4.71	0.57	0.93	0.07
SAND	40.00	3.62	4.01	45.85	15.12	49.91	0.43	0.24	0.76
HUGFLY	45.00	6.10	4.30	52.30	17.59	56.58	0.67	0.24	0.76
HUGFLY_NE	45.00	0.13	4.35	53.32	20.48	55.05	0.81	0.27	0.73
KALV	45.00	10.07	4.25	51.18	66.65	4.22	0.57	0.94	0.06
SAND	45.00	2.03	4.11	48.27	15.80	52.67	0.44	0.23	0.77
HUGFLY	50.00	3.52	4.47	55.83	16.87	62.38	0.71	0.21	0.79
HUGFLY_NE	50.00	0.09	4.49	56.22	23.32	56.26	0.87	0.29	0.71
KALV	50.00	4.92	4.43	55.01	72.80	3.34	0.59	0.95	0.05
SAND	50.00	0.24	4.55	57.43	19.77	61.66	0.65	0.27	0.73
HUGFLY	55.00	2.02	4.60	58.34	17.31	65.50	0.76	0.21	0.79
HUGFLY_NE	55.00	0.07	4.53	57.01	27.40	53.16	0.95	0.34	0.66
KALV	55.00	2.03	4.62	58.76	78.94	2.34	0.67	0.97	0.03
SAND	55.00	0.13	4.83	62.83	6.00	83.62	0.89	0.07	0.93
HUGFLY	60.00	0.54	4.77	61.77	14.93	72.87	0.61	0.17	0.83
HUGFLY_NE	60.00	0.00	4.94	64.17	6.00	85.54	0.35	0.07	0.93

Layer	TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
KALV	60.00	0.74	4.76	61.42	83.39	1.55	0.66	0.98	0.02
SAND	60.00	0.11	4.89	63.97	6.00	85.26	0.90	0.07	0.93
HUGFLY	65.00	0.02	5.02	66.28	6.12	88.44	0.34	0.07	0.94
HUGFLY_NE	65.00	0.00	5.00	67.00	6.00	89.59	0.69	0.06	0.94
KALV	65.00	0.00	4.95	65.04	89.57	0.33	0.45	1.00	0.00
SAND	65.00	0.02	4.96	65.20	6.00	87.02	0.93	0.07	0.94

Meas. Resource in Concession 2015+2017 separated by mineralized body

Layer	TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
HUGFLY	0.00	33.21	3.47	32.22	16.22	29.29	0.38	0.41	0.60
HUGFLY_NE	0.00	0.68	3.53	33.88	14.19	33.75	0.59	0.32	0.68
KALV	0.00	20.68	3.89	43.35	54.83	5.26	0.54	0.90	0.10
SAND	0.00	4.15	3.50	33.08	17.44	29.26	0.18	0.42	0.58
HUGFLY	5.00	33.19	3.47	32.24	16.23	29.31	0.38	0.41	0.60
HUGFLY_NE	5.00	0.68	3.53	33.88	14.19	33.75	0.59	0.32	0.68
KALV	5.00	20.68	3.89	43.36	54.84	5.26	0.54	0.90	0.10
SAND	5.00	3.94	3.56	34.65	18.25	30.66	0.19	0.42	0.58
HUGFLY	10.00	32.35	3.49	32.86	16.47	29.94	0.39	0.40	0.60
HUGFLY_NE	10.00	0.65	3.56	34.80	14.47	34.79	0.60	0.32	0.69
KALV	10.00	20.56	3.90	43.56	55.12	5.26	0.55	0.90	0.10
SAND	10.00	3.71	3.62	36.35	18.91	32.42	0.19	0.40	0.60
HUGFLY	15.00	30.27	3.54	34.25	16.94	31.44	0.40	0.39	0.61
HUGFLY_NE	15.00	0.62	3.60	35.92	14.73	36.12	0.61	0.30	0.70
KALV	15.00	20.45	3.91	43.73	55.34	5.26	0.55	0.90	0.10

Layer	TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
SAND	15.00	3.50	3.67	37.75	19.23	34.08	0.19	0.38	0.62
HUGFLY	20.00	26.59	3.62	36.52	17.29	34.33	0.42	0.36	0.64
HUGFLY_NE	20.00	0.59	3.63	36.77	14.73	37.33	0.63	0.29	0.71
KALV	20.00	20.22	3.92	44.02	55.76	5.25	0.55	0.91	0.10
SAND	20.00	3.28	3.73	39.10	19.58	35.64	0.19	0.37	0.63
HUGFLY	25.00	22.38	3.72	39.14	17.43	37.92	0.45	0.33	0.67
HUGFLY_NE	25.00	0.52	3.71	38.77	15.00	39.91	0.65	0.27	0.73
KALV	25.00	19.45	3.96	44.86	56.97	5.20	0.55	0.91	0.09
SAND	25.00	3.09	3.77	40.16	20.12	36.61	0.19	0.37	0.63
HUGFLY	30.00	18.16	3.83	41.84	17.62	41.59	0.50	0.31	0.69
HUGFLY_NE	30.00	0.44	3.79	40.84	15.32	42.54	0.68	0.26	0.74
KALV	30.00	18.44	4.00	45.81	58.37	5.11	0.56	0.91	0.09
SAND	30.00	2.85	3.81	41.22	20.23	38.01	0.19	0.36	0.64
HUGFLY	35.00	13.62	3.96	44.94	17.69	45.96	0.55	0.29	0.71
HUGFLY_NE	35.00	0.31	3.95	44.52	16.42	46.67	0.71	0.25	0.75
KALV	35.00	16.95	4.05	46.95	60.08	4.96	0.57	0.92	0.08
SAND	35.00	2.27	3.90	43.36	19.71	41.61	0.21	0.32	0.68
HUGFLY	40.00	9.21	4.12	48.53	17.79	50.98	0.63	0.27	0.73
HUGFLY_NE	40.00	0.22	4.07	47.47	18.70	48.53	0.77	0.27	0.73
KALV	40.00	14.32	4.13	48.63	62.66	4.70	0.57	0.93	0.07
SAND	40.00	1.63	4.00	45.60	20.51	43.99	0.23	0.32	0.68
HUGFLY	45.00	5.72	4.30	52.34	17.10	57.15	0.66	0.23	0.77
HUGFLY_NE	45.00	0.10	4.39	54.29	26.19	50.53	0.89	0.34	0.66
KALV	45.00	9.95	4.25	51.23	66.73	4.21	0.57	0.94	0.06

Layer	TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
SAND	45.00	0.94	4.09	47.71	22.77	44.66	0.19	0.34	0.66
HUGFLY	50.00	3.32	4.47	55.82	16.61	62.64	0.69	0.21	0.79
HUGFLY_NE	50.00	0.07	4.51	56.53	27.78	52.08	0.92	0.35	0.65
KALV	50.00	4.92	4.43	55.02	72.80	3.34	0.59	0.96	0.05
SAND	50.00	0.08	4.24	50.91	38.94	32.50	0.09	0.55	0.45
HUGFLY	55.00	1.89	4.60	58.41	17.17	65.75	0.73	0.21	0.79
HUGFLY_NE	55.00	0.07	4.53	57.04	29.29	51.25	0.98	0.36	0.64
KALV	55.00	2.03	4.62	58.76	78.94	2.34	0.67	0.97	0.03
SAND	55.00	0.00							
HUGFLY	60.00	0.52	4.77	61.77	14.88	72.93	0.58	0.17	0.83
HUGFLY_NE	60.00	0.00							
KALV	60.00	0.74	4.76	61.42	83.39	1.55	0.66	0.98	0.02
SAND	60.00	0.00							
HUGFLY	65.00	0.02	5.02	66.28	6.12	88.44	0.34	0.07	0.94
HUGFLY_NE	65.00	0.00							
KALV	65.00	0.00	4.95	65.04	89.57	0.33	0.45	1.00	0.00
SAND	65.00	0.00							

Ind. Resource in Concession 2015+2017 separated by mineralized body

Layer	TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
HUGFLY	0.00	9.71	3.28	26.25	16.21	20.76	0.45	0.45	0.55
HUGFLY_NE	0.00	2.76	3.42	30.52	11.89	31.33	0.45	0.28	0.72
KALV	0.00	0.21	3.97	44.95	56.88	5.43	0.43	0.91	0.09
SAND	0.00	3.55	3.61	34.16	12.02	36.41	0.47	0.35	0.65

Layer	TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
HUGFLY	5.00	9.70	3.28	26.26	16.22	20.77	0.45	0.45	0.55
HUGFLY_NE	5.00	2.76	3.42	30.52	11.89	31.33	0.45	0.28	0.72
KALV	5.00	0.21	3.97	44.95	56.88	5.43	0.43	0.91	0.09
SAND	5.00	3.46	3.63	34.94	12.27	37.27	0.48	0.35	0.65
HUGFLY	10.00	9.59	3.28	26.47	16.34	20.95	0.45	0.45	0.55
HUGFLY_NE	10.00	2.74	3.42	30.74	11.95	31.59	0.45	0.28	0.72
KALV	10.00	0.21	3.97	44.95	56.88	5.43	0.43	0.91	0.09
SAND	10.00	2.73	3.85	42.02	13.34	46.29	0.55	0.26	0.74
HUGFLY	15.00	9.06	3.31	27.23	16.73	21.62	0.46	0.45	0.55
HUGFLY_NE	15.00	2.68	3.44	31.11	12.05	32.02	0.45	0.27	0.73
KALV	15.00	0.21	3.97	44.95	56.88	5.43	0.43	0.91	0.09
SAND	15.00	2.71	3.86	42.31	13.35	46.68	0.56	0.26	0.74
HUGFLY	20.00	7.62	3.36	28.99	17.17	23.68	0.48	0.43	0.57
HUGFLY_NE	20.00	2.54	3.46	31.87	12.36	32.77	0.45	0.27	0.73
KALV	20.00	0.21	3.97	44.95	56.88	5.43	0.43	0.91	0.09
SAND	20.00	2.63	3.89	43.02	13.17	47.89	0.57	0.24	0.76
HUGFLY	25.00	4.60	3.51	33.29	19.34	27.59	0.52	0.41	0.59
HUGFLY_NE	25.00	2.27	3.50	32.91	12.85	33.76	0.44	0.28	0.72
KALV	25.00	0.20	3.98	45.27	57.34	5.41	0.42	0.91	0.09
SAND	25.00	2.57	3.91	43.53	12.91	48.88	0.58	0.23	0.77
HUGFLY	30.00	2.36	3.71	38.66	23.13	31.34	0.61	0.43	0.57
HUGFLY_NE	30.00	1.40	3.62	36.13	13.06	38.15	0.46	0.25	0.75
KALV	30.00	0.20	3.99	45.44	57.59	5.40	0.42	0.91	0.09
SAND	30.00	2.49	3.93	44.04	12.54	49.99	0.58	0.21	0.79

Layer	TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
HUGFLY	35.00	1.47	3.87	42.70	25.98	34.17	0.68	0.44	0.56
HUGFLY_NE	35.00	0.76	3.74	39.44	17.09	38.72	0.48	0.30	0.70
KALV	35.00	0.20	4.00	45.51	57.69	5.39	0.42	0.91	0.09
SAND	35.00	2.38	3.95	44.57	11.84	51.48	0.58	0.20	0.80
HUGFLY	40.00	0.85	4.03	46.36	27.79	37.54	0.75	0.44	0.56
HUGFLY_NE	40.00	0.24	3.93	44.12	21.05	41.30	0.52	0.34	0.66
KALV	40.00	0.19	4.00	45.70	57.97	5.36	0.42	0.92	0.09
SAND	40.00	1.99	4.02	46.05	10.70	54.78	0.59	0.17	0.83
HUGFLY	45.00	0.38	4.27	51.65	24.99	47.99	0.90	0.35	0.65
HUGFLY_NE	45.00	0.04	4.23	50.86	6.00	66.52	0.60	0.08	0.92
KALV	45.00	0.12	4.06	46.95	59.90	5.16	0.40	0.92	0.08
SAND	45.00	1.09	4.13	48.76	9.75	59.63	0.66	0.14	0.86
HUGFLY	50.00	0.20	4.48	56.04	21.31	58.08	1.04	0.27	0.73
HUGFLY_NE	50.00	0.02	4.43	55.03	6.00	72.48	0.67	0.08	0.92
KALV	50.00	0.01	4.26	51.51	67.08	4.24	0.48	0.94	0.06
SAND	50.00	0.16	4.70	60.50	10.77	75.36	0.91	0.14	0.86
HUGFLY	55.00	0.13	4.54	57.30	19.43	61.82	1.09	0.24	0.76
HUGFLY_NE	55.00	0.01	4.51	56.61	6.00	74.73	0.73	0.07	0.93
KALV	55.00	0.00							
SAND	55.00	0.13	4.83	62.83	6.00	83.62	0.89	0.07	0.93
HUGFLY	60.00	0.03	4.77	61.71	15.97	71.72	1.09	0.19	0.82
HUGFLY_NE	60.00	0.00	4.94	64.17	6.00	85.54	0.35	0.07	0.93
KALV	60.00	0.00							
SAND	60.00	0.11	4.89	63.97	6.00	85.26	0.90	0.07	0.93

Layer	TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
HUGFLY	65.00	0.00							
HUGFLY_NE	65.00	0.00	5.00	67.00	6.00	89.59	0.69	0.06	0.94
KALV	65.00	0.00							
SAND	65.00	0.02	4.96	65.20	6.00	87.02	0.93	0.07	0.94

Inf. Resource in Concession 2015+2017 separated by mineralized body

Layer	TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
HUGFLY	0.00	8.14	3.38	29.37	17.03	24.37	0.44	0.43	0.57
HUGFLY_NE	0.00	3.73	3.51	33.07	14.53	32.25	0.51	0.33	0.67
KALV	0.00	0.00							
SAND	0.00	3.37	3.73	38.43	13.01	41.49	0.49	0.30	0.70
HUGFLY	5.00	8.13	3.38	29.37	17.03	24.37	0.44	0.43	0.57
HUGFLY_NE	5.00	3.73	3.51	33.07	14.53	32.25	0.51	0.33	0.67
KALV	5.00	0.00							
SAND	5.00	3.37	3.73	38.43	13.01	41.49	0.49	0.30	0.70
HUGFLY	10.00	8.13	3.38	29.39	17.04	24.38	0.44	0.43	0.57
HUGFLY_NE	10.00	3.71	3.51	33.20	14.57	32.39	0.51	0.33	0.67
KALV	10.00	0.00							
SAND	10.00	3.13	3.80	40.74	13.39	44.40	0.51	0.27	0.73
HUGFLY	15.00	8.02	3.38	29.60	17.13	24.60	0.44	0.43	0.57
HUGFLY_NE	15.00	3.70	3.51	33.25	14.59	32.45	0.51	0.33	0.67
KALV	15.00	0.00							
SAND	15.00	3.08	3.81	41.24	13.40	45.10	0.52	0.27	0.73
HUGFLY	20.00	7.11	3.43	31.12	17.64	26.24	0.45	0.42	0.59

Layer	TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
HUGFLY_NE	20.00	3.66	3.52	33.43	14.68	32.61	0.51	0.33	0.67
KALV	20.00	0.00							
SAND	20.00	2.99	3.84	42.03	13.26	46.38	0.53	0.25	0.75
HUGFLY	25.00	5.29	3.54	34.08	18.17	29.92	0.51	0.38	0.62
HUGFLY_NE	25.00	3.51	3.53	33.85	14.79	33.10	0.51	0.33	0.67
KALV	25.00	0.00							
SAND	25.00	2.95	3.85	42.26	13.14	46.83	0.53	0.24	0.76
HUGFLY	30.00	2.47	3.82	41.43	23.52	34.89	0.67	0.41	0.59
HUGFLY_NE	30.00	2.33	3.65	36.98	12.58	39.87	0.56	0.24	0.76
KALV	30.00	0.00							
SAND	30.00	2.85	3.87	42.77	12.71	48.00	0.54	0.23	0.77
HUGFLY	35.00	1.99	3.91	43.73	24.64	37.04	0.73	0.41	0.59
HUGFLY_NE	35.00	1.35	3.77	40.18	12.35	44.67	0.56	0.22	0.78
KALV	35.00	0.00							
SAND	35.00	2.48	3.94	44.42	10.96	52.18	0.59	0.18	0.82
HUGFLY	40.00	1.48	4.01	45.93	25.89	38.88	0.78	0.41	0.59
HUGFLY_NE	40.00	0.70	3.88	42.73	12.10	48.58	0.57	0.20	0.80
KALV	40.00	0.00							
SAND	40.00	1.92	4.03	46.41	10.18	55.83	0.66	0.16	0.84
HUGFLY	45.00	0.59	4.32	52.68	22.66	51.87	0.97	0.31	0.69
HUGFLY_NE	45.00	0.08	4.08	47.50	20.70	46.50	0.89	0.31	0.69
KALV	45.00	0.00							
SAND	45.00	1.15	4.14	48.82	8.97	60.52	0.73	0.13	0.87
HUGFLY	50.00	0.42	4.46	55.59	21.16	57.59	1.05	0.27	0.73

Layer	TFe Cutoff [%]	Tonnage [Mt]	Density [t/qm]	Fe [%]	mag [%]	hem [%}	P [%]	mag prop [%]	hem prop [%}
HUGFLY_NE	50.00	0.01	4.52	56.91	25.09	55.42	0.97	0.32	0.68
KALV	50.00	0.00							
SAND	50.00	0.27	4.53	57.16	7.26	74.21	0.84	0.09	0.91
HUGFLY	55.00	0.28	4.49	56.15	22.11	57.40	1.09	0.28	0.72
HUGFLY_NE	55.00	0.01	4.59	58.32	24.27	58.28	0.97	0.30	0.70
KALV	55.00	0.00							
SAND	55.00	0.19	4.65	59.44	6.00	78.78	0.81	0.07	0.93
HUGFLY	60.00	0.01	4.78	61.90	8.88	79.32	1.06	0.10	0.90
HUGFLY_NE	60.00	0.00	5.06	67.00	6.00	89.59	0.60	0.06	0.94
KALV	60.00	0.00							
SAND	60.00	0.07	4.87	63.60	6.00	84.72	0.85	0.07	0.93
HUGFLY	65.00	0.00							
HUGFLY_NE	65.00	0.00	5.06	67.00	6.00	89.59	0.60	0.06	0.94
KALV	65.00	0.00							
SAND	65.00	0.01	4.96	65.20	6.00	87.02	0.62	0.07	0.94

Appendix D
Block Model Attributes & Codes

Attribute Name	Type	Decimals	Background	Description
g_conc_2015	Integer	null	-99	license area: 1 blocks within license boundary of 2015
g_conc_2015_perc	Real	3	0	license area: volume fraction within license boundary
g_conc_2017	Integer	null	-99	license area: 1 blocks within additional license boundary of 2017
g_conc_2017_perc	Real	3	0	license area: volume fraction within license boundary
g_conc	Integer	null	-99	license id (2015: 1: 2017:2)
g_topo	Integer	null	-99	digital terrain model: 1 blocks below digital terrain model (rocks)
g_topo_perc	Real	3	0	digital terrain model: volume fraction below digital terrain model (rocks)
g_mined	Integer	null	-99	historical mining activities (code 1: material already mined out; -99 material still available)
g_fault	Integer	null	-99	fault zones; areas where rock can be fractured, no significant offset could be observed from these faults)
l1	Real	3	0	attributed volume fraction of HUGFLY ranging from 0 (0%) to 1 (100%)
l2	Real	3	0	attributed volume fraction of KALV ranging from 0 (0%) to 1 (100%)
l3	Real	3	0	attributed volume fraction of SAND-GULD ranging from 0 (0%) to 1 (100%)
l4	Real	3	0	attributed volume fraction of HUGFLY-NE ranging from 0 (0%) to 1 (100%)
l_majr	**Integer**	**null**	**-99**	**major lithology; see legend:**
l91	**Real**	**3**	**0**	**summed volume fraction of cummulated ore bodies: =l1+l2+l3=l4**
l92	**Real**	**3**	**0**	**summed volume fraction of cummulated waste bodies (non ore): 1-l91**
l1_q1	Real	3	-99	IDW interpolated concentration of Fe diluted with non-mineralized intervals as 8%Fe intervals [%] in HUGFLY
l1_q2	Real	3	-99	IDW interpolated concentration of mt [%] in HUGFLY
l1_q3	Real	3	-99	calculated concentration of hem [%] in HUGFLY; = (Fe-(mt*0.7236))*(1/0.6994) under the assumption that all Fe not bound to mag is bound to hem
l1_q4	Real	3	-99	IDW interpolated concentration of P [%] in HUGFLY
l1_q5	Real	3	-99	calculated proportion of mt [%] in HUGFLY; = mt/(mt+hem)
l1_q6	Real	3	-99	calculated proportion of hem [%] in HUGFLY; = hem/(mt+hem)
l2_q1	Real	3	-99	IDW interpolated concentration of Fe diluted with non-mineralized intervals as 8%Fe intervals [%] in KALV
l2_q2	Real	3	-99	calculated concentration of mt [%] in KALV; = 0.0047*(Fe^2)+1.1142*Fe-2.7834
l2_q3	Real	3	-99	calculated concentration of hem [%] in KALV; = (Fe-(mt*0.7236))*(1/0.6994) under the assumption that all Fe not bound to mag is bound to hem

Attribute Name	Type	Decimals	Background	Description
I2_q4	Real	3	-99	IDW interpolated concentration of P [%] in KALV
I2_q5	Real	3	-99	calculated proportion of mt [%] in KALV; = mt/(mt+hem)
I2_q6	Real	3	-99	calculated proportion of hem [%] in KALV; = hem/(mt+hem)
I3_q1	Real	3	-99	IDW interpolated concentration of Fe diluted with non-mineralized intervals as 8%Fe intervals [%] in SAND-GULD
I3_q2	Real	3	-99	IDW interpolated concentration of mt [%] in SAND-GULD
I3_q3	Real	3	-99	calculated concentration of hem [%] in SAND-GULD; = (Fe-(mt*0.7236))*(1 /0.6994) under the assumption that all Fe not bound to mag is bound to hem
I3_q4	Real	3	-99	IDW interpolated concentration of P [%] in SAND-GULD
I3_q5	Real	3	-99	calculated proportion of mt [%] in SAND-GULD; = mt/(mt+hem)
I3_q6	Real	3	-99	calculated proportion of hem [%] in SAND-GULD; = hem/(mt+hem)
I4_q1	Real	3	-99	IDW interpolated concentration of Fe diluted with non-mineralized intervals as 8%Fe intervals [%] in HUGFLY-NE
I4_q2	Real	3	-99	IDW interpolated concentration of mt [%] in HUGFLY-NE
I4_q3	Real	3	-99	calculated concentration of hem [%] in HUGFLY-NE; = (Fe-(mt*0.7236))*(1 /0.6994) under the assumption that all Fe not bound to mag is bound to hem
I4_q4	Real	3	-99	IDW interpolated concentration of P [%] in HUGFLY-NE
I4_q5	Real	3	-99	calculated proportion of mt [%] in HUGFLY-NE; = mt/(mt+hem)
I4_q6	Real	3	-99	calculated proportion of hem [%] in HUGFLY-NE; = hem/(mt+hem)
I91_q1	**Real**	**3**	**-99**	**tonnage weighted averaged concentration of Fe [%] of cummulated ore bodies**
I91_q2	**Real**	**3**	**-99**	**tonnage weighted averaged concentration of P [%] of cummulated ore bodies**
I91_q3	**Real**	**3**	**-99**	**tonnage weighted averaged concentration of hem [%] of cummulated ore bodies**
I91_q4	**Real**	**3**	**-99**	**tonnage weighted averaged concentration of mt [%] of cummulated ore bodies**
I91_q5	**Real**	**3**	**-99**	**calculated proportion of tonnage weighted averaged mt [%] in HUGFLY-NE; = mt/(mt+hem)**
I91_q6	**Real**	**3**	**-99**	**calculated proportion of tonnage weighted averaged hem [%] in HUGFLY-NE; = hem/(mt+hem)**
I1_d	Real	3	-99	attributed density of HUGFLY; = 0.0003*(Fe^2)+(0.0157*Fe)+2.6605
I2_d	Real	3	-99	attributed density of KALV; = 0.0003*(Fe^2)+(0.0157*Fe)+2.6605
I3_d	Real	3	-99	attributed density of SAND-GULD; = 0.0003*(Fe^2)+(0.0157*Fe)+2.6605
I4_d	Real	3	-99	attributed density of HUGFLY-NE; = 0.0003*(Fe^2)+(0.0157*Fe)+2.6605

Attribute Name	Type	Decimals	Background	Description
I91_d	**Real**	**3**	**-99**	**tonnage weighted average density [t/m³] of cummulated ore bodies**
I92_d	**Real**	**3**	**-99**	**tonnage weighted average density [t/m³] of cummulated waste bodies 2.9**
Dist	Real	3	-99	distance to nearest magnetite sample
dist_catg	Integer	null	-99	distance category based on variography
Rclass	**Integer**	**null**	**-99**	**class of compliante resource: in the old concession of 2015: 1 measured (dist=>0m and dist <90m), 2 indicated (dist=>90m and dist <140m), 3: inferred (dist=>140m); in the new concession of 2017: 2 indicated (dist=>0m and dist <90m), 3 inferred (dist=>90m)**

LITH	SOURCE	Codes of Attribute I-majr	FREQ m logged
HUGFLY	solid wf_I1	1	
KALV	solid wf_I2	2	
SAND-GULD	solid wf_I3	3	
HUGGET-NE	solid wf_I4	4	
AMP	interpolated	5	291
BMV	interpolated	6	605
CONG	interpolated	7	9
FRAC	interpolated	8	95
GRA	interpolated	9	1 499
HEM	interpolated	10	491
IMV	interpolated	11	4
LEP	interpolated	12	2 278
MAG	interpolated	13	1 563
MSCH	interpolated	14	153
OVB	interpolated	15	83
PEG	interpolated	16	1 295
POR	interpolated	17	5
PYR	interpolated	18	0
QZ	interpolated	19	314
SARG	interpolated	20	1 634
SKARN	interpolated	21	245
UNKN	interpolated	22	223

Appendix D

Table A

JORC CODE, 2012 EDITION – TABLE 1 FOR TECHNICAL REPORT ON THE RESOURCE ESTIMATE, BLÖTBERGET IRON ORE PROJECT, LUDVIKA, CENTRAL SWEDEN

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.* • *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.*	• All data from 2012 and 2014 have been acquired based on standard operating procedures ("**SOPs**"). Surface historical drillholes have been re-surveyed and a number of historical drillholes have been re-logged and re-assayed. • All samples collected in the 2012 and 2014 program are from drilling with BQ size core as the most common diameter in historic drill core, and from drilling with HQ as most common diameter in drilling program of 2012 and 2014. • Mineralisation of magnetite and hematite is clearly visible allowing direct sample selection. However, magnetite and magnetite altered to martite are not clearly to distinguish from visual inspection. All material with Fe over 5-10 % (determined with hand held XRF, magnetic pull and geological competence), greater than 50 cm in length and within a mineralised section, is selected for sampling. Sampling lengths are constrained within lithological boundaries in order to assist with sectioning of the mineralised core. Sampled core of similar composition is split into 2 m lengths. In addition to sampling mineralised core, 1 m of hanging wall (material above the identified mineralised section) and 1 m of footwall (material below) was sampled for each mineralised sample to enable boundary definition of the mineralised zones. • All analyses results were produced by the accredited laboratory ALS Global in Vancouver. The analyses program of 2012 and 2014 was quality controlled by implementation of QA/QC sample set in each batch of 15-20 samples sent to ALS (blanks, duplicates and certified reference material) in order to verify the applied sample preparation, digestion and analysis methods producing results for Fe and P on an acceptable level of confidence.

Criteria	JORC Code explanation	Commentary
		• Magnetite was analyzed in-house by Nordic Iron Ore (NIO) using Satmagan device on pulps sent back by ALS to NIO. A blank and duplicate are implemented in each batch of 5 samples. Cross checks were done by ALS Global using Davis Tube Recovery (DTR) in order to verify the applied Satmagan technique producing results for magnetite on an acceptable level of confidence.
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• Drilling was done using a conventional wire-line diamond drilling machine. Most of the recent NIO drilled intersections are in HQ core size. Core was not oriented. Only one hole for metallurgical purposes was orientated.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• Overall records of recoveries are not available. However, checks on selected mineralized core runs were made by comparison of length of core run and actual core located into the box. Additionally the rock mechanical behavior of the consistently very compact rocks implies that core recovery might generally be above 90 % for the 2012 and 2014 drilling program. In consequence, a sample bias due to preferential loss/gain of fine/coarse material. which could materially affect the representativeness of assay results is not obvious.
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• Geological logging is adequate and to satisfactory industry standard to correlate drill holes in support of a resource estimate. Geotechnical logging has been similarly recorded, in preparation of mining studies. • Logging was done on standardized sheets and each drill hole was logged completely. • A total of 6,036 m has been re-logged from historical core, 7,385 m from 2012 and 7,046 m from 2014 program. • Logged intersected mineralization sums up 1,523 m (928 m HUGFLY, 455 m KALV, 79 m SAND, 62 m HUGFLY-NE) • Additional 26,530 m historical geological logs are available for which no core is available anymore. The majority is from underground holes. • Total Intersected mineralization sums up 7,129 m (5,130 m HUGFLY, 1,561 m KALV, 277 m SAND, 161 m HUGFLY-NE)
Sub-sampling techniques and	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and*	• Sample preparation included core splitting. Core splitting is done using a diamond saw, with ¼, ⅓, or ½ core sent for analysis. At the beginning of the 2012 drilling and sampling campaign, ½ core was used. This was subsequently changed to ⅓ core, in order to preserve

Criteria	JORC Code explanation	Commentary
sample preparation	*whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	more material for later test work. The re-sampling of the historical core used ¼ core due to the majority of core in Malå having already sampled ½ core historically. • Sample preparation was done in ALS Global. The ALS sample preparation lab crushes to 70% <2 mm and 250g is riffle split off. This 250g is then pulverized into 85% passing 75 microns. From the ALS sample preparation laboratory in Piteå, ampoules of approximately 250 g of the crushed and milled material is sent to ALS in Vancouver for analysis. • Sampling methodology and preparation of the final aliquot is appropriate for this type of deposit.
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	• All selected analytical techniques are total in nature and appropriate for the type of mineralisation. • All historical data have been verified by confirmation work using a certified laboratory and strict adherence to QA/QC procedures. • Based on the laboratory results for QA/QC sample sets (for chemistry: blanks, duplicates, certified reference material; for mineralogy of magnetite: ALS Davis Tube Recovery for in-house Satmagan), the sample size and core recovery, the applied procedures for drilling and subsequent sampling, sample preparation, digestion and analysis are assessed to have produced reliable and representative chemical data of Total Fe and P and mineralogical data of magnetite.
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• During the site visits by the QP intersections have been inspected and compared with logs and exposures in the mine. • In total 31 historic holes (6,036 m) were re-logged and re-assayed in order to verify sampling and assaying of the historic drill holes. The historic assay data for Fe and P could be reproduced on an acceptable level of confidence. • Twin drilling was not done, because historic core was still available to be re-sampled and re-assayed and re-logged. Furthermore historic survey data were available for these holes, which were re-measured for some holes and could be assessed as reliable. • There was no adjustment of assay data. • A total of three QAQC samples were inserted into the sample stream for every 15-20 samples sent to ALS, processed and included a blank, certified reference material and a duplicate.

Criteria	JORC Code explanation	Commentary
		• Bulk density of samples was determined on appr. 1 kg sawed representative drill core based on specific gravity measured by 'weight in air – weight in water' method. In total, samples of 1948 m were measured for density. The weighing machines used during this process are calibrated before use and after every 40 samples using an accredited 1 kg calibration weight supplied by the manufacturer. • QAQC data verified ALS laboratory methods of sample preparation, digestion and analysis . Assay data of historical programs could be re-produced by re-sampling and re-assaying historic drill core.
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• The location of all historic drillholes and geological underground maps have been converted from a local mining grid to map datum SWEREF99-TM. A local height reference system has been established, the current "zero" for which is 226.15 m below the RH2000 height system. The work of geo-referencing and coordinate conversion has been done by the Tyréns Company, Sweden. • Drillhole collar surveying was completed by Ludvika Kommun ("LK") after the completion of the 2012 and 2014 drilling programmes. LK surveyed drillhole collar locations (X, Y, and Z), dip and azimuth using high resolution Real Time Kinetic ("RTK") Global Positioning Systems ("GPS"). During the 2014 programme, LK also re-surveyed historic drillhole locations to confirm the translation of historic coordinates. • All coordinates and height data given in this report are in the projected reference system SWEREF99-TM + RH2000 minus 227.95 m. • Drill hole deviation of 9 drill holes of 2014 drilling program have changed since DMT MRE in 2014. This was explained by NIO using another DTH tool producing more reliable results than the device used before. In consequence DMT re-interpreted the wireframes of HUGFLY and KALV changing slightly the resource estimate for these bodies.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• The drilling of 2012 and 2014 program covers the majority of mineralized extent with a data spacing ranging from appr. 70 m to 120 m in the license 'Blötbergsgruva K nr 1', which is appropriate for this type of continuous seam-shaped deposit. In opposite, only one drill hole of the 2012 program stands in the license 'Blötbergsgruva K nr 2'. The majority of drill holes in Blötbergsgruva K nr 2 are historic holes. These historic holes are distributed typically close to the

Criteria	JORC Code explanation	Commentary
		historic mine workings. The majority of the mineralization in the license 'Blötbergsgruva K nr 2' is not covered by drilling. The result is that only a few samples have magnetite data available for SAND, HUGGET-NE has no magnetite data available. • Sample compositing was applied to generate a sample population of 2 m.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• Considering the curved structure of the seam-shaped mineralization, the 2012/2014 drilling was planned to intersect the mineralization perpendicular from hanging wall surface positions. The majority of historic holes are drilled in fans from mining drifts in the footwall or cross cuts to the hanging wall and thus are intersecting the mineralization at varying angles and at relatively close spacing, compared to the surface collared holes. The majority of the mineralization still existent is covered by more or less equally spaced drill holes of 2012 and 2014 program. Hence, a bias due to drill orientation or sampling is not indicated.
Sample security	• *The measures taken to ensure sample security.*	• All drill samples from the 2012 and 2014 drill programmes were collected under direct supervision of NIO Project staff from the drill rig and remained within the custody of NIO up to the moment the samples were delivered to the ALS, Piteå laboratory. • Samples, including duplicates, blanks and certified reference materials are stored in the secure Grängesberg storage area within the locked and fenced Grängesberg core facility. • Chain of custody procedures with laboratory supplied sample submittal forms, were completed in triplicate for the sample shipments, and copies also emailed directly to the laboratory ahead of delivery. All samples dispatched are assigned tracking IDs which enabled the laboratory and NIO to track consignments to ensure all samples are accounted for. • DMT believes that the sample preparation, dispatch and transit procedures for samples from the 2012 and 2014 drill programmes are in accordance with industry best practice.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• During the site visits by the QP intersections have been inspected and compared with logs and exposures in the mine. • In total 31 historic holes (6,036 m) were re-logged and re-assayed in order to verify sampling and assaying of the historic drill holes. The historic assay data for Fe and P could be reproduced on an

Criteria	JORC Code explanation	Commentary
		acceptable level of confidence. • No material issues were identified.

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• A legal due diligence on the mineral tenements, their ownership and current status thereof has not been executed. • NIO currently holds 12 exploration permits, which together cover an area of 3,044.36 hectares. NIO currently holds two mining concessions - Blötbergsgruva K nr 1 and Håksbergsgruva K nr 1, covering an area of 262.7 ha. • All areas, besides those covered by the Väsman concession and parts of the Håksberg concessions are so called “brownfield” sites and have previously been worked and contain abandoned mines. • NIO applied for a mining concession within the Blötberget area in October 2010 and it was granted in August 2011. The mining concession, which runs for 25 years with possibility of extension, implies the right of exploitation and utilisation of iron, rare earths, and apatite. The environmental permit for this Project was granted in June 2014. • The mining lease application, submitted in April 2016, for Blotbergsgruva K nr 2 (36.65 Ha), the area immediately north east of, and contiguous with the existing Blötberget mine licence and is referred to as ‘Guldkannan’. NIO is awaiting final approval of the mining licence by the relevant government authorities.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• The Geological Survey of Sweden (“SGU”) performed regional airborne geophysical surveys over the area. In the 1960’s, an airborne magnetometry and gamma spectrometry survey was completed. This was carried out with 250 m line spacing at a height of 30 to 60 m. The resultant map shows measured variations in the magnetic total field after the Earth's magnetic reference field (DGRF 1965.0) • A ground magnetic anomaly survey of the Vulcanus and Blötberget

Criteria	JORC Code explanation	Commentary
		project areas was conducted in 1950 by ABEM geophysics, on behalf of Stora Kopparberg. The results of this survey assisted in focussing historical drilling campaigns. In 1967 Terratest (now owned by ABEM) reinterpreted the existing data • From 1942 until 1977, the deposits were systematically diamond drilled for definition and extension. In areas where mining was on-going or planned, regular drillhole fans, spaced 30 m apart, were drilled from underground positions in drifts. Deeper parts of the deposits were investigated with wider spaced drilling (~100 m). Most of the drillholes (~80 %) are collared underground in both the hanging and footwalls, and in some cases, mineralised zones. All of these drillholes had varying dips and azimuths. Only the drillholes probing the deeper, down dip parts of the deposit, were drilled from the surface. • The deeper drillholes, drilled in the late 1960’s and early 1970’s, were initially drilled with 52 mm core with step down to 32mm core and then 22mm core in the deeper parts of the hole. Drilling has been carried out in the past by contractors as well as by the mining companies themselves. • A total of 456 drillholes have been drilled historically at Blötberget, totalling 50,261 m. The majority is located in one of the two concessions or in the nearby adjoining areas • All digitised historical drillholes either have locations and surveys in mine maps, or in supplementary documentation. Where possible, collars have been located in the field and verified by NIO.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Blötberget apatite-iron oxide deposit is located in the western part of the intensely mineralised Paleoproterozoic Bergslagen Province in south central Sweden. The Province is dominated by several generations of intrusive rocks, which enclose inliers of metasedimentary and metavolcanic rocks. The metasedimentary and metavolcanic inliers are of great importance as they host an overwhelming majority of the more than 6,000 known metallic mineral deposits and prospects in the Province. These rocks have been subjected to multiple-phase deformation and metamorphism under mainly greenschist to amphibolites facies conditions. The host rocks to the Blötberget iron mineralisation have traditionally been classified as belonging to the ”leptite formation”, i.e. mainly felsic to, more rarely, intermediate, regionally metamorphosed (c. 1.90–1.87 Ga)

Criteria	JORC Code explanation	Commentary
		volcanic rocks. • The mineralisation at Blötberget is a so-called "apatite lake ore" which, besides the iron minerals magnetite and hematite, also contains the phosphorus mineral apatite. The mineralised zone at Blötberget appears as a set of vertically narrow, elongated lenses dipping 50°–70° to the SE. Airborne geophysical surveys and historical drillholes indicate that mineralisation extends to a depth of at least 900 m below surface. The Blötberget field consists of five mineralised bodies, from west to east, these are: Kalvgruvan (KALV); Flygruvan (FLY); Hugget & Betstamalmen (HUG); and Sandellmalmen (SAND). • Within the Guldkannan licence area (application pending) there are two mineralised areas, from east to west referred to as; Guldkannan, the north easterly continuation of Sandellmalmen (SAND) and; Carslvard, thenorth easterly continuation of Hugget-Flygruvan (HUGFLY-NE). • The Blötberget deposit is referred to as a Kiruna type deposit although the exact origin is still disputed.
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* o *easting and northing of the drill hole collar* o *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* o *dip and azimuth of the hole* o *down hole length and interception depth* o *hole length.* • *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	• Because of amount of drilling only a summary is provided here. All details are listed in the report. • Number of holes: 456 • Number of metres drilled: 50,261
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.*	• Average grades of mineral resource statement for chemical parameters TFe, P, magnetite and hematite are weighted by volume percentage of mineralization and density of mineralization. • For the purpose of modelling, internal waste within mineralization, for which no assay data are available TFe values have been set to 8% Fe. This “diluted TFe” has been used as representative dataset for compositing and interpolation.

Criteria	JORC Code explanation	Commentary
	• *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• Chemical parameters have been composited at 2 m composite length in order to achieve a sound data set for ordinary kriging interpolation. • Histogram analysis has shown that all values of assay data or composites belong to consistently domained sample populations. Outliers are not obvious. Hence upper grade cuts have not been applied.
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	• All holes of 2012 and 2014 program have been drilled perpendicular to mineralization; 3D geological modelling, interpretation and interpolation is considers the true thickness of mineralized layers.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• All maps, sections and diagrams of relevance for data verification, data analysis and interpretation are given in the report.
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• All primary data have been verified and assessed as representative and unbiased. The model validation has shown that model data have been reproduced primary data on an acceptable level. No biased interpolation causing over-or underestimation is obvious.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• All procedures of data acquisition relevant for resource modelling and estimate and results thereof have been validated and assessed as suitable to produce reliable and representative results. • Bulk sampling for metallurgical testing is validated to be representative for the resource model and estimate. • Geotechnical data logged on drill core should be used for further analysis prior to start of mining.
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• Further drilling is recommended in Blötbergsgruva K nr 2 to investigate the composition of the mineralized layers and to provide sample data where none currently exists. A program for further work is given in the report.

Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code explanation	Commentary
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* • *Data validation procedures used.*	• Primary data gathered by NIO in the field were recorded directly to electronic database. • Historical drilling data of survey, geology and chemistry were available on paper logs. • All paper data has been transferred to an electronic database. • Historical assay data of Fe and P were confirmed by re-assaying 31 historic drill holes (samples of 950 m) • Historic survey data were confirmed by re-survey a couple of surface holes. • Assay results returned to the project from ALS Global laboratory in Vancouver were received in Excel format. In total, 2122 m were sampled and assayed. • • Procedures were checked on-site during site visits of the responsible QP (TH and FL) and assessed as appropriate to produce reliable and representative data. • All data were compiled to MS Access data base. All data in the database were checked for errors, completeness and consistency. •
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	• The responsible QPs (TH and FL) have made three site visits in 2014 and 2015. The first visit focused on an appraisal of the ongoing exploration programme by NIO in 2014, and to understand the local conditions of the mineralisation. The second visit focused on a bulk sampling program which was supported to get a representative bulk sample from the outcrop, The third visit was done by FL (QP) responsible for the geological modelling and block model, with focus on data availability, compilation and validation.
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource*	• Geological and structural interpretation of the mineralized area has been based on historic surface and underground mine maps and drill hole logging of 2012 and 2014 program by a variety of qualified staff working for NIO. • The interpretation of the mineralization follows the concept of lateral continuous layers affected by folding and faulting. All mineralized

Criteria	JORC Code explanation	Commentary
	estimation. • *The factors affecting continuity both of grade and geology.*	layers are outcropping along a slightly curved strike direction of 55°N. The lowermost layer KALV, the central layer HUGFLY (plus HUGFLY-NE) and uppermost layer SAND had previously been mined down from near-surface to the 250 m and 350 m levels respectively. The units dip towards the southeast at between 50° and 55° in the near-surface mined-out areas, and flatten at depth to ~25°. • Three fault planes could be modelled from data of maps and drill logs. Based on data spacing a material offset in mineralization is not obviously. • The domain interpretation of three mineralized layers is based on geology and chemical data of Fe and magnetite, particularly the composition, viz. the ratio of magnetite to hematite. • While KALV shows high and consistent magnetite concentration (almost 60 % magnetite at a mag-hem ratio of 9/1, HUGFLY (plus HUGFLY-NE) and SAND show a varying ratios of magnetite and hematite and in average a lower magnetite concentration (20 to 25 % magnetite at a mag-hem ratio of 4/6). Oxidization processes caused by weathering or alteration might be the reason for this. • For the Blötberget area it is reported that the mineralisation relates to sub-aerial terrestrial volcanism. This has caused a partial oxidation of the primary magnetite mineralisation and hence produced large areas of martite (haematite formed after replacement of magnetite) mineralisation (GeoVista Resource Estimate, January 2014). • Mineralized layers are hosted by hosted by the Svecofennian, 1.91–1.89 Ga felsic metavolcanic rocks.
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	• Mineralization as classified as measured, indicated and inferred extends for some 1,800 m along strike, 1,000m in width and extending to a depth of some 850m (-50 m to -900 m SL). • In license 'Blötbergsgruva K nr 1' KALV, HUGFLY and SAND had previously been mined down from near-surface to the -250 m and -350 m levels respectively. In license 'Blötbergsgruva K nr 2' SAND was mined in some parts down to -170 level.

Criteria	JORC Code explanation	Commentary
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).* • *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	• The block model uses regular block size of 10 m length (x), 5 m width (y) and 10 m height (z). These block dimensions are considered to be the most appropriate, considering the geometry of the mineralisation and the proposed mining method. The block model is rotated to the same strike as the mineralisation, N55°E. • The maximum dimensions of the block model are 2,300 m along strike and 1,940 m perpendicular to strike (down-dip); adapted to the drilled area and license area. The total elevation ranges from 200 m to -1,200 m. The total number of blocks is 1,413,356. No sub-blocking is applied. • The cell size is chosen to correspond with the morphology of the mineralized layers, sampling and composite intervals and mining requirements. • Sample lengths of the 2012 and 2014 program reach 2.0 m at 90P. Thus this 2 m was used for composite lengths. • Histogram analysis has shown that values of chemical parameters Fe, magnetite and P belong to consistent domained sample populations (normal distributed). Outliers are not obvious. Thus upper grade cuts were not required to be applied. • For the purpose of modelling internal waste within interpreted domains, for which no assay data are available Fe values have been set to 8%. This Fe diluted has been used as representative dataset for compositing and interpolation. • Chemical parameters have been composited at 2 m composite length in order to achieve a sound data set for interpolation. • Grade interpolation was carried out using ordinary kriging (OK) based on parameters resulting from variography. • OK was applied in three passes to Fe, magnetite and P. These parameters have been interpolated for each domained layer separately based on the corresponding set of composites. • The dip and rotation of the ellipse has been adapted to the overall dip and strike of the domains. The dip direction of major axis has been set to 152°. To honour the curved structure of the domains perpendicular to strike direction, the dip of the major axis has been set to 35° below -400 m and to 50° above -400 m. • The first search uses the 2/3 variogram range, the second search is double this, and the third search is four times the size. These multiple searches ensure all blocks within the modelled mineralised

Criteria	JORC Code explanation	Commentary
		domains are interpolated a grade value. The minimum number of samples was set to three and the maximum number of samples was set to 15 • For KALV are clear correlation between Fe and magnetite is obvious. Thus the resulting regression equation was used to calculate magnetite from Fe in order to honor the consistent mag-hem ratio. • Hematite was not interpolated but calculated from TFe and magnetite under the assumption that all Fe which is not bound to magnetite will be bound to hematite. • A clear correlation between Fe and density could be established overall all mineralized layers considering the similar density of hematite and magnetite. The resulting regression equation was used to calculate the density from TFe concentration in the block model. • Average grades of mineral resource statement for chemical parameters of TFe, magnetite, hematite and P are weighted by volume percentage and bulk density of mineralized layers. • In general there is good comparison between the resource estimate of April 2015 and May 2017 and the historic estimates. Additional tonnes is a result of the additional or modified exploration data available for the 2017 estimate and extended interpretation of wireframes. • A statistical comparison of global block grades, composite grades and primary data within mineralized domains has been done on mean and frequency of quality data, which demonstrate a close match. It illustrates that no obvious bias has been introduced during block modeling.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• Tonnages and grades were estimated on a dry basis.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• A preliminary economic cut-off grade assumption has been done in order to constrain the estimated mineral resource and to demonstrate reasonable prospects for eventual economic extraction, a cut-off grade of 25 % TFe has been applied. • A tonnage / grade sensitivity study has been carried out at cut-off grades ranging from 0 % TFe to 60 % TFe.

Criteria	JORC Code explanation	Commentary
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	• Preliminary opex cut-off grade assumption was done using preliminary economic input parameters for the proposed mining method, processing and selling-related costs. The cut-off grade has been estimated by applying the below formula: $\frac{\text{Costs for mining plus processing [US\$/t ore]}}{\left(\frac{\text{Price of concentrate [US\$/t conc]}}{\text{Fe grade of concentrate [Fe[\%]/t conc]}}\right)} * \frac{1+\text{Dilution [fraction]}}{\text{Processing recovery [fraction]}} = Fe\ Cutoff\ grade$ Price of Concentrate is based on last 5 year average FOB
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	• Historic mines were operating many years until 1979, which demonstrates the viability of economic extraction. In addition, the resource estimate is part of a feasibility study including optimization of extraction. • Processing studies were done by Tata Steel Consulting Ltd.
Environmen-tal factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	• The Blotberget and district iron ore mines ceased production relatively recently (late 1970's) . Infrastructure and Tailings and waste management facilities are still in place and will be utilized as part of the NIO feasibility study. • Environmental including preliminary hydrological and hydrogeological studies have been carried out as part of the project PFS.
Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* • *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.* • *Discuss assumptions for bulk density estimates used in the*	• Bulk densities used are based on measurements made on dried half core samples representative for the mineralization and the major types of waste rocks. • While in mineralized domains the density was attributed to block model using regression equation based on Fe to density correlation, a density of 2.9 t/m³ was attributed to all waste rock material in the block model based on average of measured waste rock densities. • Bulk density of samples was determined on appr. 1 kg sawed representative drill core based on specific gravity measured by

Criteria	JORC Code explanation	Commentary
	evaluation process of the different materials.	'weight in air – weight in water' method. In total, samples of 1948 m were measured for density. The weighing machines used during this process are calibrated before use and after every 40 samples using an accredited 1 kg calibration weight supplied by the manufacturer.
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*	• Resource classification within mineralisation envelopes is generally based on drillhole spacing, grade continuity, and overall geological continuity. The distance to the nearest composite and the number of drillholes are also considered in the classification. • In classifying the resource estimate, the following key factors have been considered: o Confidence in data quantity and specifically sample spacing of Fe and magnetite data; o Confidence in the geological interpretation and continuity (geological complexity); and o Confidence in mineralisation / grade continuity (complexity of spatial grade distribution). • Considering the above, the following criteria have been applied for classification into the various mineral resource categories for this estimate: • Measured Resources o Due to the reduced confidence levels relating to the data support and spatial distribution of sample points within the pending Guldkannan licence area, no additional Measured Resources have been added to this MRE of 2017 from those previously estimated in the 2015 MRE in license area of 2017 'Blötbergsgruva K nr 2'. However, measured resource has changed from 42.5 Mt in 2015 to 45.4 Mt in 2017. This increase of measured resource results from the re-interpretation of SAND wireframe in the license area of 2015 'Blötbergsgruva K nr 1', which results in an extended mineralized body and hence increased tonnage. A slighter effect also results from corrected drill hole deviation of 2014 drilling programme and accordingly updated wireframes of HUGFLY and KALV in in the license area of 2015 'Blötbergsgruva K nr 1'. o The following approaches were applied to the Blötberget concession area only.

Criteria	JORC Code explanation	Commentary
		o All blocks whose distance to the nearest magnetite sample is less than 2/3 of the variogram range (i.e. <100 m) - excluding distally located drill hole BB_75-001. o All blocks which are surrounded by measured blocks; and o All blocks near the historic underground workings. • Indicated Resources o Blötberget mining licence area: All blocks whose distance to the nearest magnetite sample is equal or above 90 m and less than the full variogram range of 140 m - including distally located drill hole BB_75-001. o Pending Guldkannan licence area : All blocks whose distance to the nearest magnetite sample is less than 2/3 of the variogram range (i.e. <100 m) • Inferred Resources o All blocks within Blötberget and Guldkannan licence areas which are not defined as Measured or Indicated but are included in the interpreted wireframes, excluding 'mined out' blocks.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	• In general there is good comparison between the resource estimate of April 2015 and May 2017 and the historic estimates. Additional tonnes is a result of the additional or modified exploration data available for the 2017 estimate and extended interpretation of wireframes.
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.*	• Statistical and visual validation and checking of the block model confirm it performs as expected globally and locally in plan and section within the 2017 drill database and structural comparison with surface and underground mapping confirm mineralized zones to outcrop where expected and be the approximate thickness as indicated by the block model. • Model validation, the drilling grid and observation of the grade and mineralization continuity lead DMT to consider the central part of the deposit suitable for a measured resource category and peripheral areas suitable for an indicated and inferred resource category. • Further exploration work is recommended in order to upgrade inferred resource to indicated or measured resource.

Criteria	JORC Code explanation	Commentary
	• *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	• Locally limited effects of intrusive rocks could affect the mineralization and the probable influence of faulting might affect the mining activities. This should be investigated prior mining. • For the purpose of reconciliation, grade control drilling should be done during mining activities.

Section 4 Estimation and Reporting of Ore Reserves (Not Applicable)

(Criteria listed in section 1, and where relevant in sections 2 and 3, also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves	• *Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.* • *Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.*	•
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	•
Study status	• *The type and level of study undertaken to enable Mineral Resources to be converted to Ore* • *Reserves.* • *The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.*	•
Cut-off parameters	• *The basis of the cut-off grade(s) or quality parameters applied.*	•
Mining factors or assumptions	• *The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by*	•

Criteria	JORC Code explanation	Commentary
	optimisation or by preliminary or detailed design). • *The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.* • *The assumptions made regarding geotechnical parameters (eg pit slopes, stope sizes, etc), grade control and pre-production drilling.* • *The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).* • *The mining dilution factors used.* • *The mining recovery factors used.* • *Any minimum mining widths used.* • *The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.* • *The infrastructure requirements of the selected mining methods.*	
Metallurgical factors or assumptions	• *The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.* • *Whether the metallurgical process is well-tested technology or novel in nature.* • *The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.* • *Any assumptions or allowances made for deleterious elements.* • *The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.* • *For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?*	•
Environmen-tal	• *The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.*	•
Infrastructure	• *The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.*	•

Criteria	JORC Code explanation	Commentary
Costs	• *The derivation of, or assumptions made, regarding projected capital costs in the study.* • *The methodology used to estimate operating costs.* • *Allowances made for the content of deleterious elements.* • *The derivation of assumptions made of metal or commodity price(s), for the principal minerals and co- products.* • *The source of exchange rates used in the study.* • *Derivation of transportation charges.* • *The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.* • *The allowances made for royalties payable, both Government and private.*	•
Revenue factors	• *The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.* • *he derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.*	•
Market assessment	• *The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.* • *A customer and competitor analysis along with the identification of likely market windows for the product.* • *Price and volume forecasts and the basis for these forecasts.* • *For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.*	•
Economic	• *The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.* • *NPV ranges and sensitivity to variations in the significant assumptions and inputs.*	•
Social	• *The status of agreements with key stakeholders and matters leading to social licence to operate.*	•
Other	• *To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:* • *Any identified material naturally occurring risks.* • *The status of material legal agreements and marketing arrangements.*	•

Criteria	JORC Code explanation	Commentary
	• *The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.*	
Classification	• *The basis for the classification of the Ore Reserves into varying confidence categories.* • *Whether the result appropriately reflects the Competent Person's view of the deposit.* • *The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).*	•
Audits or reviews	• *The results of any audits or reviews of Ore Reserve estimates.*	•
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.* • *It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	•

Section 5 Estimation and Reporting of Diamonds and Other Gemstones

(Criteria listed in other relevant sections also apply to this section. Additional guidelines are available in the 'Guidelines for the Reporting of Diamond Exploration Results' issued by the Diamond Exploration Best Practices Committee established by the Canadian Institute of Mining, Metallurgy and Petroleum.)

Criteria	JORC Code explanation	Commentary
Indicator minerals	• *Reports of indicator minerals, such as chemically/physically distinctive garnet, ilmenite, chrome spinel and chrome diopside, should be prepared by a suitably qualified laboratory.*	•
Source of diamonds	• *Details of the form, shape, size and colour of the diamonds and the nature of the source of diamonds (primary or secondary) including the rock type and geological environment.*	•
Sample collection	• *Type of sample, whether outcrop, boulders, drill core, reverse circulation drill cuttings, gravel, stream sediment or soil, and purpose (eg large diameter drilling to establish stones per unit of volume or bulk samples to establish stone size distribution).* • *Sample size, distribution and representivity.*	•
Sample treatment	• *Type of facility, treatment rate, and accreditation.* • *Sample size reduction. Bottom screen size, top screen size and re-crush.* • *Processes (dense media separation, grease, X-ray, hand-sorting, etc).* • *Process efficiency, tailings auditing and granulometry.* • *Laboratory used, type of process for micro diamonds and accreditation.*	•
Carat	• *One fifth (0.2) of a gram (often defined as a metric carat or MC).*	•
Sample grade	• *Sample grade in this section of Table 1 is used in the context of carats per units of mass, area or volume.* • *The sample grade above the specified lower cut-off sieve size should be reported as carats per dry metric tonne and/or carats per 100 dry metric tonnes. For alluvial deposits, sample grades quoted in carats per square metre or carats per cubic metre are acceptable if accompanied by a volume to weight basis for calculation.* • *In addition to general requirements to assess volume and density there is a need to relate stone frequency (stones per cubic metre or tonne) to stone size (carats per stone) to derive sample grade (carats*	•

Criteria	JORC Code explanation	Commentary
	per tonne).	
Reporting of Exploration Results	• *Complete set of sieve data using a standard progression of sieve sizes per facies. Bulk sampling results, global sample grade per facies. Spatial structure analysis and grade distribution. Stone size and number distribution. Sample head feed and tailings particle granulometry.* • *Sample density determination.* • *Per cent concentrate and undersize per sample.* • *Sample grade with change in bottom cut-off screen size.* • *Adjustments made to size distribution for sample plant performance and performance on a commercial scale.* • *If appropriate or employed, geostatistical techniques applied to model stone size, distribution or frequency from size distribution of exploration diamond samples.* • *The weight of diamonds may only be omitted from the report when the diamonds are considered too small to be of commercial significance. This lower cut-off size should be stated.*	•
Grade estimation for reporting Mineral Resources and Ore Reserves	• *Description of the sample type and the spatial arrangement of drilling or sampling designed for grade estimation.* • *The sample crush size and its relationship to that achievable in a commercial treatment plant.* • *Total number of diamonds greater than the specified and reported lower cut-off sieve size.* • *Total weight of diamonds greater than the specified and reported lower cut-off sieve size.* • *The sample grade above the specified lower cut-off sieve size.*	•
Value estimation	• *Valuations should not be reported for samples of diamonds processed using total liberation method, which is commonly used for processing exploration samples.* • *To the extent that such information is not deemed commercially sensitive, Public Reports should include:* o *diamonds quantities by appropriate screen size per facies or depth.* o *details of parcel valued.* o *number of stones, carats, lower size cut-off per facies or depth.* • *The average $/carat and $/tonne value at the selected bottom cut-off should be reported in US Dollars. The value per carat is of critical importance in demonstrating project value.*	•

Criteria	JORC Code explanation	Commentary
	• *The basis for the price (eg dealer buying price, dealer selling price, etc).* • *An assessment of diamond breakage.*	
Security and integrity	• *Accredited process audit.* • *Whether samples were sealed after excavation.* • *Valuer location, escort, delivery, cleaning losses, reconciliation with recorded sample carats and number of stones.* • *Core samples washed prior to treatment for micro diamonds.* • *Audit samples treated at alternative facility.* • *Results of tailings checks.* • *Recovery of tracer monitors used in sampling and treatment.* • *Geophysical (logged) density and particle density.* • *Cross validation of sample weights, wet and dry, with hole volume and density, moisture factor.*	•
Classification	• *In addition to general requirements to assess volume and density there is a need to relate stone frequency (stones per cubic metre or tonne) to stone size (carats per stone) to derive grade (carats per tonne). The elements of uncertainty in these estimates should be considered, and classification developed accordingly.*	•

Statement

I,

Timothy Horner

(Insert full name(s))

confirm that I am the Competent Person for the Technical Report and:

- I have read and understood the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).
- I am a Competent Person as defined by the JORC Code, 2012 Edition, having five years experience that is relevant to the style of mineralisation and type of deposit described in the Report, and to the activity for which I am accepting responsibility.
- I am a Member or Fellow of The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists or a 'Recognised Professional Organisation' (RPO) included in a list promulgated by ASX from time to time.
- I am responsible for Chapter 1, 2, 3, 4, 7 and 8 of the Technical Report, which I have reviewed and to which this Consent Statement applies.

I am a full time employee of

DMT Consulting Ltd.

(Insert company name)

and have been engaged by

NIO

(Insert company name)

to prepare the documentation for

NIO

(Insert deposit name)

on which the Report is based, for the period ended

May 2017

(Insert date of Resource/Reserve statement)

I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest.

I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Mineral Resources.

Statement

I,

Florian Lowicki

(Insert full name(s))

confirm that I am the Competent Person for the Technical Report and:

- I have read and understood the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).
- I am a Competent Person as defined by the JORC Code, 2012 Edition, having five years experience that is relevant to the style of mineralisation and type of deposit described in the Report, and to the activity for which I am accepting responsibility.
- I am a Member or Fellow of The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists or a 'Recognised Professional Organisation' (RPO) included in a list promulgated by ASX from time to time.
- I am responsible for Chapter 12 and 13 of the Technical Report, which I have reviewed and to which this Consent Statement applies.

I am a full time employee of

DMT GmbH & Co. KG

(Insert company name)

and have been engaged by

NIO

(Insert company name)

to prepare the documentation for

NIO

(Insert deposit name)

on which the Report is based, for the period ended

May 2017

(Insert date of Resource/Reserve statement)

I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest.

I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Mineral Resources.

Consent

We consent to the release of the Report and this Consent Statement by the directors of:

DMT Consulting Ltd., Nottingham ,UK

(Insert reporting company name)

	19/06/2017
Signature of Competent Persons:	Date:
Association of Professional Geoscientists of Ontario (APGO)	*1934* (
Professional Membership:	Membership Number:
	19/06/2017
Signature of Competent Persons:	Date:
South African Council of Natural Scientific Professionals (SACNASP)	*400425/13*
Professional Membership:	Membership Number:
(insert organisation name)	

DMT Consulting Ltd., Nottingham ,UK

	Simon Pepper, Colwyn Bay, North Wales, UK
Signature of Witness:	Print Witness Name and Residence:
	(eg town/suburb)

15 APPENDIX 3 COMPLIANCE STATEMENTS

Appropriate forms of compliance statements should be as follows (delete bullet points which do not apply).

For Public Reports of Exploration Targets, initial or materially changed reports of Exploration Results, Mineral Resources or Ore Reserves or company annual reports:

- The information in this report that relates to Mineral Resources is based on information compiled by T Horner and F Lowicki, Competent Persons who are Members or Fellows of The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists or a 'Recognised Professional Organisation' (RPO) included in a list that is posted on the ASX website from time to time (APGO, CANADA; SACNASP, RSA).
- T Horner and F Lowicki are full-time employees of the company DMT.
- We have not had any involvement with the property that is the subject of the Mineral Resource Report prior to our engagement as geological consultants on technical matters, the results of which form part of the Mineral Resource Report. We hold no direct investment interest in NIO.
- T Horner and F Lowicki have sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertakening to qualify as Competent Persons as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. T Horner and F Lowicki consent to the inclusion in the report of the matters based on their information in the form and context in which it appears.