REPORT

Dannemora Mining Project

Pre-Feasibility Study - Executive Summary

Submitted to:

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Disclaimer

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Golder has relied on the work of other consultants identified in this document without verifying the accuracy or completeness of that work including, without limitation, the mineral resource estimate and ore reserve estimate which were compiled under the supervision of Mr. Thomas Lindholm of GeoVista AB. The quality of information, conclusions, and estimates contained herein are consistent with the stated levels of accuracy as well as the circumstances and constraints under which the mandate was performed. This report is intended to be used solely by Dannemora, subject to the terms and conditions of its contract with Golder. Golder has consented to Dannemora publishing this document. Except for the purposes legislated under the law, any use of this report by any third party is at that party’s sole risk.

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1.1 Introduction and Background

In July 2021, Dannemora Iron AB (‘DIAB’) commissioned Golder Associates (“Golder”) to undertake and complete a Pre-Feasibility Study[1] (“PFS” or “Study”) for the recommencement of mining at the Dannemora Mine (“Dannemora” or “Project”), located in eastern Sweden. The Dannemora Mine is located near Österbybruk, in the municipality of Östhammar, in Uppland County, some 105 km northeast of Stockholm (Figure 1).

An important part of the “PFS” was to focus on the potential for the project to reduce its carbon footprint by operating a 100 % electrical mining fleet.

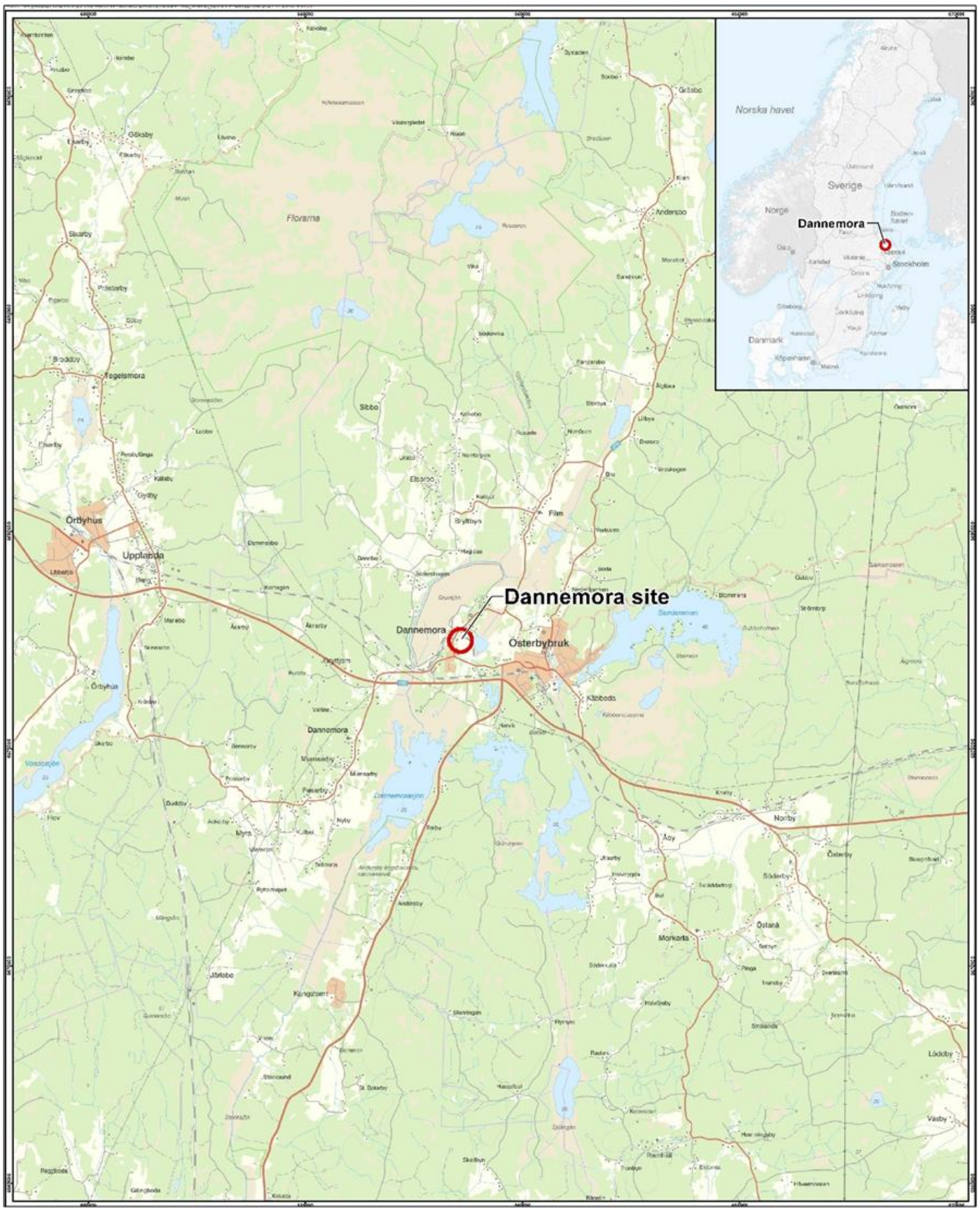

Figure 1: Location of the Dannemora Site

[1] PFS: A Preliminary Feasibility Study (Pre-Feasibility Study) is a comprehensive study of a range of options for the technical and economic viability of a mineral project that has advanced to a stage where a preferred mining method, in the case of underground mining, or the pit configuration, in the case of an open pit, is established and an effective method of mineral processing is determined. It includes a financial analysis based on reasonable assumptions on the Modifying Factors and the evaluation of any other relevant factors which are sufficient for a Competent Person, acting reasonably, to determine if all or part of the Mineral Resources may be converted to an Ore Reserve at the time of reporting. A Pre-Feasibility Study is at a lower confidence level than a Feasibility Study (JORC 2012).

Dannemora Iron AB ('DIAB') was acquired by Grängesberg Exploration AB in August 2020. Grängesberg Exploration AB was subsequently acquired by Metallvärlden I Sverige AB in November 2020, and later changed its name to Grängesberg Exploration Holding AB ("GRANGEX"). In December 2020/January 2021, the new Grängesberg Exploration Holding AB raised MSEK 47 to restructure the business of the company and to exercise a study with the objective to restart the Dannemora Mine, as well as completing a Feasibility Study ('FS') for the production of apatite from an old tailings facility in Grängesberg.

Mining in Dannemora has a long tradition and may have commenced as early as the 13th Century. Throughout its life, the mine was one of the most important employers in the area. The first concentrator at Dannemora was built in the beginning of the last century. During the last active period (2012 to 2015), when the mine was operated by Dannemora Magnetit AB (DMAB), the mine and plant provided employment for ca. 117 employees and ca. 110 contractors.

It is GRANGEX's intention to recommence mining at Dannemora using a sublevel open stoping mining method with backfill, and to utilise the backfill to provide stability to the underground workings. Pre-production works (including dewatering of the workings) are envisaged to take ca. 1.5 years, with a ramp up to full production of ca. 3 million tonnes ("Mt") Run of Mine ("ROM") per year, equating to ca. 1.1 million DMt/yr (dry metric tonnes) of saleable Magnetite iron ore concentrate (ca. 68 % Fe), over 9 year life-of-mine ("LOM"). The LOM is based on a current Ore Reserve of **ca. 26.41 Mt at a grade of 33.44% Fe, 1.82% Mn and 0.21% S** which follows the guidelines of the JORC Code[2], 2012 edition.

Subject to access agreements and the necessary approvals, Dannemora has access to a rail line, with direct connection to the Port of Hargshamn ca. 38 km away.

Re-establishing production will require a 1.5 year capital programme, including, the dewatering of the mine, refurbishment of the ore hoisting mechanism and the material handling system at the port, the implementation of a new dry and wet process to concentrate the ore to a quality and grade in great demand, and the social impact upon a historic mining region. The recommencement of mining at Dannemora looks to minimise environmental impacts by making use of the existing infrastructure available to the project.

The Dannemora Mine is covered by a valid exploitation concession/permit titled 'Dannemora' (Figure 2), which allows for the extraction of iron, lead, zinc, copper, gold, silver and manganese. The concession was granted in 2007 and remains valid for 25 years (valid until 1st January 2032), with the possibility for extension if required for the duration of production under the condition of approval by the mining inspectorate. If mining activities are still on-going at the time the permit expires, it can be extended in 10-year periods, without the need for a new application.

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[2] JORC: The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ('the JORC Code') is a professional code of practice that sets minimum standards for Public Reporting of minerals Exploration Results, Mineral Resources and Ore Reserves. The JORC Code provides a mandatory system for the classification of minerals Exploration Results, Mineral Resources and Ore Reserves according to the levels of confidence in geological knowledge and technical and economic considerations in Public Reports. Public Reports prepared in accordance with the JORC Code are reports prepared for the purpose of informing investors or potential investors and their advisors. They include, but are not limited to, annual and quarterly company reports, press releases, information memoranda, technical papers, website postings and public presentations of Exploration Results, Mineral Resources and Ore Reserves estimates.

The JORC Committee is a member of and works closely with CRIRSCO, the Committee for Mineral Reserves International Reporting Standards to ensure international consistency in the development of reporting standards and the promotion of best practice in implementation of the relevant standards and codes.

Any Public Reporting of Exploration Results, Mineral Resources or Ore Reserves must be based on and fairly reflect documentation prepared by a Competent Person in accordance with the JORC Code.

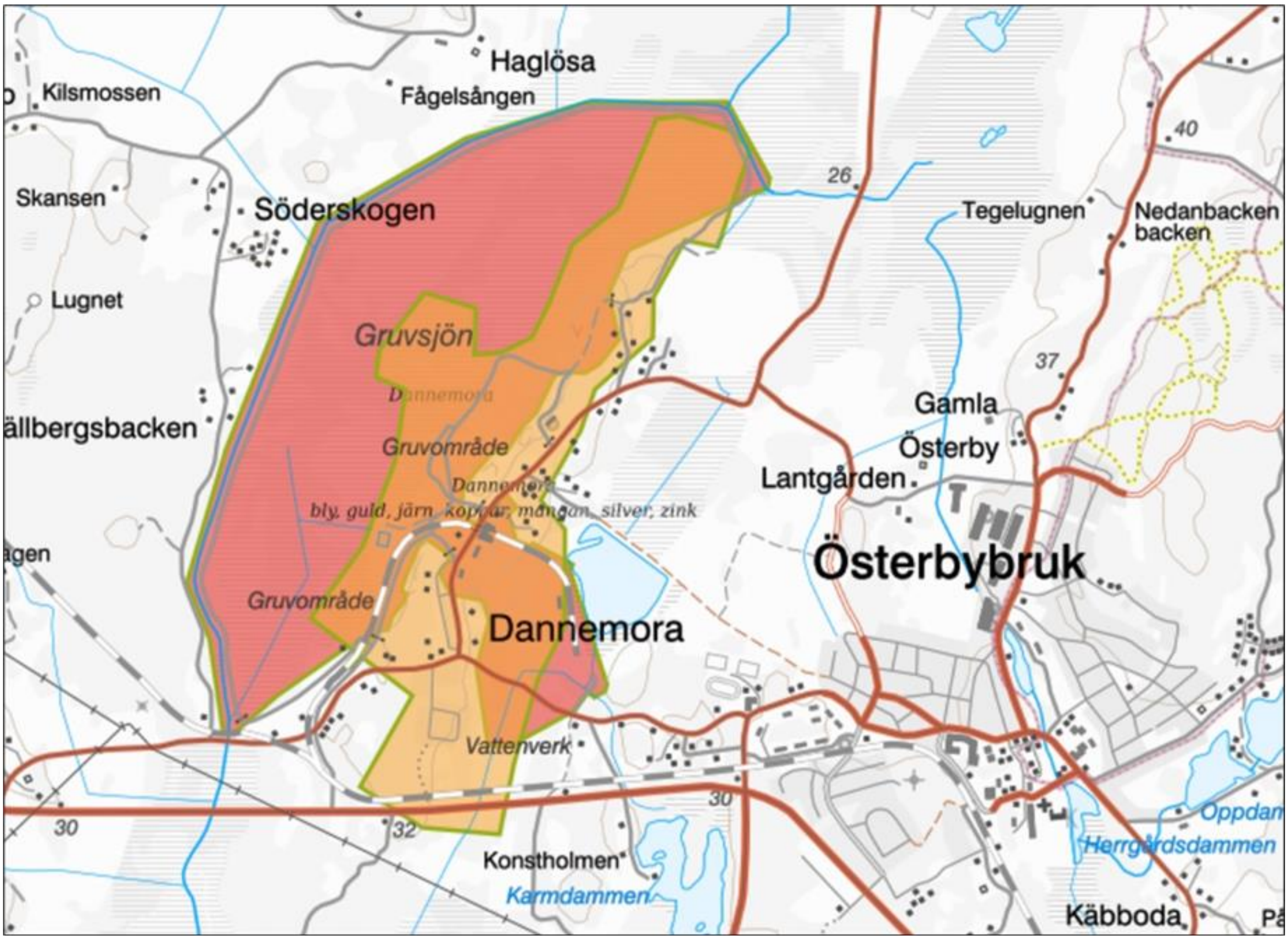

Figure 2: Mining concession area (orange) and mine infrastructure land allocation (red) at Dannemora (Source: SGU, August 2013)

1.2 PFS Team and Competent/Qualified Persons (CP/QP)

The PFS has been complied by Golder using client-supplied data and information. As such, the report draws upon information presented in previous reports, by external parties. Information has been utilised by the project team, comprising predominantly Dannemora technical staff, with some input from specialist sub-contractors.

The Estimated Mineral Resource and Ore Reserve in this Pre-Feasibility Study is compliant with the principles as set out in JORC-2012. According to JORC, a competent person ("CP") must have a minimum of five years relevant experience in the style of mineralisation or type of deposit under consideration and in the activity which that person is undertaking. The CP must also be a Member or Fellow of the Australasian Institute of Mining and Metallurgy, or of the Australian Institute of Geoscientists, or of a "Recognised Professional Organisation ("RPO")". Any Public Reporting of Exploration Results, Mineral Resources or Ore Reserves must be based on and fairly reflect documentation prepared by a Competent Person in accordance with the JORC Code.

Competent Person (CP) for Mineral Resources and Ore Reserves: Mr. Thomas Lindholm, GeoVista AB, who is a Fellow of the Australasian Institute of Mining and Metallurgy, is the CP responsible for the Mineral Resource and Ore Reserve estimates for Dannemora based on his training and experience in exploration, mining and mineral resource estimation of iron ore, base and precious metals. The Mineral Resources and Ore Reserve are reported following the guidelines of the JORC Code, 2012 edition. Thomas is regularly involved in Resource Estimation for Scoping Studies through to full Feasibility Study ("FS"), site supervision and exploration drill programme design.

Qualified Person (QP) for Processing: In terms of Processing, Bo Arvidson (PhD) of Bo Arvidson Consulting LLC, is the Qualified Person (QP) under NI 43-101 responsible for the process development and the conceptual process flowsheet design.

1.3 The Iron Ore Market

The global steel industry is the single largest driver of the global iron ore market. The crude steel production is based on partly virgin iron units (iron ore products), partly recycled iron and steel units (scrap).

The supply of iron ore products is dominated by the “big four” iron ore companies of the world. They are, in size order: (1) Vale (Brazil), (2) BHP Billiton, (3) Rio Tinto and (4) FMG (all the latter three from Australia), and account for about 75% of the global iron ore production.

1.4 The Green Shift

In the last few years politicians and business leaders around the world have begun to realize the need for, and value of, reducing the carbon footprint from people’s everyday life. Production processes are being developed where the use of fossil fuels is being reduced or entirely replaced. Recycling and reuse of products have gained more attention and the steel industry is no exception, quite the contrary.

The steel industry is a major contributor to CO_2 emissions in Europe, representing 25% of the total on an annual basis. The industry and its customers have during the last few years started focusing on reducing its carbon footprint throughout the entire value-chain, from mining through to manufacturing and use of its end products. Car manufacturers not only make cars that will run on fossil free fuel, but they also demand that the steel (and other products) they buy is also as carbon free as possible. This has resulted in a couple of very large projects in Sweden alone, i.e. Hybrit (a collaboration between LKAB, SSAB and Vattenfall) and H2 Green Steel, both projects with ambitions to become fossil free steel producers. Other steel companies in Europe, e.g. Tata Steel in Ijmuiden (Netherlands) and Voestalpine in Austria, and around the world, are in different phases of planning similar changes to their future steel production processes.

This change is expected to result in an increase in demand for high grade raw materials. The major iron ore producers in Australia all currently supply relatively low-grade products of around 62% Fe, while the new production processes will require Fe-grades of above 66%. This puts producers of high-grade ore in a favourable position when negotiating prices with their customers.

Dannemora has the opportunity to produce high grade concentrate of the right quality to meet the expectations and increased demand for high grade concentrate.

1.5 Iron Ore Price

During the last couple of years, the steel industry has somewhat slowed down in China and the overall demand has dropped to a large degree dependent on the pandemic. The prices for 62% and 65% Fe products have fallen from a level of USD 200 and USD 230, to a level of USD 120 and USD 145 respectively. The difference between 62% and 65% Fe products has remained at a level of about USD 7- 10 per Fe-unit above 62% Fe.

1.6 The Dannemora High Grade Concentrate and its Markets

There are primarily two different geographical market areas that are of interest to, and with an interest in, the Dannemora High Grade Concentrate:

- The European Steel Industry due to freight cost advantages and low carbon footprint; and
- Merchant pelletizing companies in the MENA region, due to the very high grade of the concentrate.

The European Steel Industry, with very large companies like Tata Steel, Thyssen Krupp and Arcelor Mittal, are increasingly focusing on finding ways to reduce their carbon footprint to face the growing demand for “green steel” from primarily the car industry. “Green steel” requires the introduction of more environmentally friendly steel making technology, e.g., EAF[3] instead of BoF[4], which requires, among other things, as high-grade iron ore as possible. It also requires as low carbon footprint as possible throughout the supply chain, which is a good reason for local or regional sourcing instead of sourcing from overseas.

In the MENA[5] region there are a number of merchant DR[6] pellet producers currently sourcing their feedstock to a very large degree from south America and Canada. European supply, which is within shorter shipping distances is currently quite limited and pellet producers like e.g., Bahrain Steel (Bahrain) and Tosyali (Algeria), are actively looking for additional supply from current and future producers of high-grade concentrate from more nearby locations than South- and North America, e.g., Scandinavian iron ore producers.

With a planned annual output of about 1.1 million DMt/yr of product based on the LOM schedule, the Dannemora concentrate is expected to be in greater demand than what the company will be able to deliver. Potential customers, all of which Dannemora representatives have been in contact with, are Tata Steel, Arcelor Mittal, Thyssen Krupp, Saltzgitter, Rogesa, Voestalpine, Bahrain Steel and Tosyali.

However, the changing market dynamics, with a higher appreciation of products contributing to lowering of CO_2 emissions, may result in additional premiums for such products. Taking into account that these high-grade products are, and will likely continue to be for quite some time, in short supply, an increase in premiums is likely to be substantial.

1.7 Green Mine

The recommencement of mining at the Dannemora Mine is being designed to ensure that the extraction of iron ore is maximised through the use of Green Technology. As such, this will benefit both the local community and State in an environmentally sustainable way, by reducing its carbon footprint by means of electrification of the mining fleet and transportation to port.

Sustainability is a term that has become widely used in recent decades and is often used to mean different things by different people. In 1987, the United Nations defined sustainability as *“meeting the needs of the present without compromising the ability of future generations to meet their own needs”.*

The International Council on Mining and Metals (ICMM) is an international organization dedicated to a safe, fair and sustainable mining and metals industry. The Council is made up of 26 leading mining and metals companies and 35 regional and commodities associations. The objective of the Council is to strengthen environmental and social performance within the industry and enhance mining’s contribution to society.

The ICMM has produced a Sustainable Development Framework with the most recent version being issued in 2015. This framework is made up of ten principles that represent best practice for sustainability in the mining industry. Dannemora is committed to align to the ten principles as set out by the ICMM.

Mining is an energy intensive industry and in particular mining underground where dewatering is required. As such, recommencement at Dannemora will employ CO_2-free production technologies. The primary way in which this will be achieved is through the use of 100 % electric powered mining equipment. This not only reduces reliance on fossil fuels, but also reduces emissions and the resulting energy costs associated with ventilation.

[3] EAF = Electric Arc Furnace.

[4] BoF = Basic Oxygen Furnace.

[5] MENA = Middle East and North Africa.

[6] DR = iron ore pellet that has a typical Fe content above 66%.

Dannemora proposes to incorporate the following additional items into the design of the overall Project to meet its commitment to reducing reliance on fossil fuels:

- Complete mining fleet as well as other vehicles and equipment to be 100% electrical;
- HVO[7] or Hydrogen driven train transport to the port; and
- Electrification of harbour loading procedures.

1.8 All Electrical Mine Operation

During the construction phase, the Dannemora Mine will utilise electrical equipment as much as technically and commercially possible. In the operational phase the underground operation will be 100% electrical, including all contractors. The transition to electrical equipment is a process that is now ongoing globally. At present, electrical equipment is more expensive than standard diesel equipment, especially when battery costs are considered. Going forward, costs are expected to change in favour of electrical equipment.

Table 1 presents a comparison of the estimated total investment cost for underground diesel and battery electric vehicles (BEV), including the leasing of machines (both BEV and diesel), as well as the rental cost for batteries for the BEV over the LOM (but excluding the cost of energy/electricity and diesel) based on cost estimates supplied by manufacturers/suppliers. Despite the negative cost differential of ca. US$ 80M over the LOM between the cost of operating BEV compared to diesel machines underground, Dannemora is committed to developing and operating a Green Mine to produce a high grade Iron ore concentrate suitable for the production of Green Steel, with a low carbon footprint. The main carbon emission from the underground operations will come from the blasting of ore and waste rock.

Table 1: Comparison of Estimated Costs between BEV and Diesel Vehicles over LOM

Category	BEV (US$)	Diesel (US$)
Initial CAPEX (inc. leasing & battery rental)	5,626,965	1,908,449
Sustaining CAPEX (inc. leasing & battery rental)	7,838,611	6,280,000
OPEX (inc. leasing & battery rental)	121,908,000	47,107,500
Total	**135,373,576**	**55,295,949**
Difference		**-80,077,627**

In addition, Table 2 provides a cost comparison between the estimated amount of electricity and diesel required to operate an underground electric and diesel fleet based on cost estimates supplied by suppliers. Also provided is a cost comparison of the amount of energy/electricity required to operate the ventilation system, dependent on whether the underground mining fleet is powered by electricity or diesel. As compensation for the estimated total investment cost (LOM) presented in Table 1, a saving of almost US$50 M can be achieved by using BEV over diesel powered vehicles in terms of 'fuel/energy' consumed over the LOM.

Despite the negative cost differential of ca. US$ 30M (US$ 80,077,627- US$ 49,672,656) over the LOM when comparing the cost of running an underground mining fleet to a diesel fleet, the estimated reduction in CO_2 emissions on a yearly basis has been estimated to be ca. 5,873 t/yr, or ca. 52,855 t over the LOM. By reducing the LOM carbon footprint in this way, Dannemora is demonstrating its commitment to operating a Green Mine.

[7] HVO = Hydrotreated vegetable oil fuel.

Table 2: Comparison of Estimated BEV Power Costs versus Diesel Consumption over LOM

Category	(US$)
Cost of BEV Power	4,054,926
Cost of Diesel	48,202,000
Difference	**-44,147,074**
Cost of Ventilation with BEV	2,616,251
Cost of Ventilation with Diesel	8,141,833
Difference	**-5,525,582**
Overall Total Difference	**-49,672,656**

1.9 Project Status

Based on the successful outcome of the Scoping Study completed in May 2021, DIAB commissioned Golder to undertake a PFS in July 2021; the next step in the process of undertaking a thorough review of the possibility of reopening the Dannemora Mine. The PFS has involved completing the following key tasks:

- Updating the Mineral Resource Estimate for the Project (in accordance with JORC).
- Planning for a fully integrated electrical underground fleet of mobile mining equipment, including drill rigs, rock bolters, trucks and LHDs to reduce the CO_2 footprint of the mining operation.
- Using the mine plan from the Scoping Study as a basis of a new Life of Mine (LOM), with areas previously planned and/or development being utilised to reduce initial start-up Capex.
- Building on the metallurgical testwork completed for the Scoping Study to confirm that the Fe-concentrate product produced would be of a quality that meets the needs of the steel producers now focusing on and investing in “Green Steel”. The PFS built on the metallurgical testwork completed during the Scoping Study which indicated that there was a good opportunity to increase the Fe-concentrate grade to around 68% Fe, which would further enhance the viability and sustainability of the Project.
- Completing key studies and activities to finalize the necessary documents for submission of an Environmental Impact Assessment (“EIA”) to the Environmental Court, including work on developing a site Water Balance and Water Management Plan.
- Developing a Cashflow Model with an accuracy of +/- 25% on Opex and Capex inputs.

1.10 Regulatory & Approvals

The Swedish Environmental Code (SFS 1998:808) provides the legal environmental framework for environmental matters. The first step in the Swedish permitting process, consultation with the County Administration Board (“CAB”), the Local Environmental Department (“LED”) and other stakeholders, was formally initiated in October 2021 and the process is still on-going.

Once the EIA report and the technical description of the activities and facilities are finalised, it is planned to submit a formal permit application (legal) to the permitting authority (Environmental Court) by Q1 2022, but this is also dependant on the consultation process.

1.11 Geology

The Dannemora deposit is contained within the regional host rocks of the Leptite Formation, an assemblage of Svecofennian (of Lower Proterozoic age ca. 1.8 to 1.9 Ga) metavolcanics and subsidiary metasediments.

The principal units of the Leptite Formation are steeply dipping along the limbs of northeast-trending (ca. 030° NE) isoclinal fold structures and occur between large granitoid intrusive bodies. The lithologies have undergone varying degrees of metamorphism related to both regional and local thermal alteration activity.

In the Dannemora Mine area, the metavolcanic and metasedimentary rocks are shaped into two parallel synclines separated by an isoclinal anticline which together plunge gently to the northeast. The principal mineralisation is confined to the easternmost syncline, though exploration to date has only identified smaller bodies associated with the westernmost structure.

1.12 Mineralisation

The magnetite mineralisation is mostly restricted to the upper unit of the upper formation at Dannemora and is normally strata bound within dolomitic units.

Previous exploration work has identified about 25 individual mineralised bodies situated along a 3 km strike length of the syncline and surrounding structures at varying depths from surface. The bodies occur within a 400 - 800 m wide stratigraphic thickness and display a thinning and thickening, which is commensurate with their positions relative to the primary structures, i.e., thinning and fragmenting within the limbs of the syncline and thickening towards the keel of the Dannemora Syncline. The limbs dip at ca. 85° near surface and shallow to ca. 60° at the 350 m level of the mine. The location of the mineralised bodies in long-section in relation to the main mine infrastructure is shown in Figure 3.

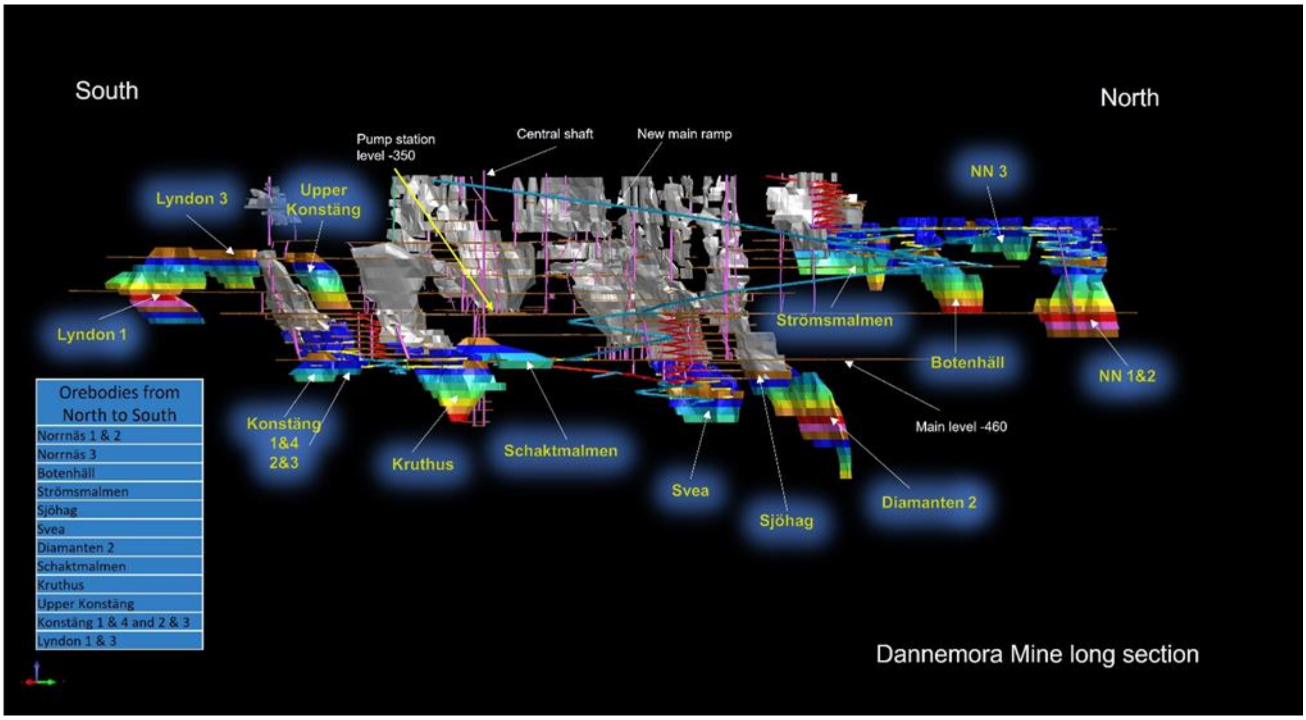

Figure 3: Location of existing mineralised bodies in relation to mine infrastructure (long-section)

Based on previous mineralogy and average compositional analysis, the mineralisation has been commonly categorised as a manganese-rich skarn iron ore (with an iron content of 30 to 50%, and a manganese content of 1 to 6%), and a manganese-poor skarn iron ore (with an iron content of 30 to 50% and a manganese content of 0.2 to 1%).

1.13 Mineral Resource Estimate[8]

The Mineral Resource Estimate produced for inclusion in the PFS is compliant with the principles as set out in JORC-2012. It has been compiled under the supervision of Mr. Thomas Lindholm, GeoVista AB, who is a Fellow of the Australasian Institute of Mining and Metallurgy, and a Competent Person qualified to report on mineral resources, based on his training and experience in exploration, mining and mineral resource estimation of iron ore, base and precious metals. The statement on Mineral Resources is supported by a completed Table 1 as required by JORC-2012.

Table 3 presents a summary of the Iron Ore Resources for Dannemora Mine as of 31st December 2021 compared to those of 2014.

Table 3: Mineral Resource Estimate for Dannemora Mine for 31st December 2021 compared to 2014

Category	2021		2014	
	Tonnes	Fe%	Tonnes	Fe%
Measured	16,733,000	37.87	15,257,000	39.62
Indicated	11,454,000	34.58	9,934,000	38.62
Total Measured + Indicated	**28,186,000**	**36.54**	**25,191,000**	**39.23**
Inferred	5,823,000	33.61	4,560,000	37.3
Inferred (Tailings)*	1,700,000	ca. 21 - 22	1,700,000	ca. 21 - 22
Total Inferred	7,523,000		6,260,000	

(*) The historical Inferred (Tailings) Mineral Resources are not considered to be current by the company since they do not comply with current disclosure standard, the reader is therefore advised to exercise caution. A competent person has not done sufficient work to verify and classify the estimates as mineral resources in accordance with the current disclosure standard; and the company does not treat any of the historical estimates of Tailings Inferred Mineral Resources as mineral resources or reserves in accordance with the current disclosure standard; and the historical estimates of Tailings Inferred Mineral Resources are not reliable as a base for decisions on investment.

The principal differences between the 2014 and 2021 Mineral Resource Estimates are:

- A 15 % Fe cut-off was used in 2021, instead of a 20 % Fe cut-off used in 2024;
- Block sizes and search parameters determined by Quantitative Kriging Neighbourhood Analysis (QKNA) were used in 2021;
- Dynamic anisotropy was applied to orient search and variogram ellipsoids in the ordinary kriging calculations in 2021; and
- Historical holes with very long assay sections were eliminated when data density from more recent holes was sufficient.

In summary, the **Total Measured + Indicated Mineral Resource Estimate** for the Dannemora Project as of **31st December 2021** is estimated to be **28,186,000 t @ 36.54% Fe, 2.01% Mn and 0.26% S** (using a cut-off of 15% Fe).

[8] As defined under JORC, a 'Mineral Resource' is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade (or quality), and quantity that there are reasonable prospects for eventual 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. Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories.

1.14 Ore Reserve Estimate[9]

As demonstrated in Section 1.16 on Mining below, the Estimated Mineral Resource presented in Table 3 has been subject to detailed mine planning, including the consideration of expected or actual modifying factors such as, for instance, waste inclusions (dilution), and planned and operational ore losses. The resulting tonnage are therefore considered to be Probable Ore Reserves. The Estimated **Probable Ore Reserves** for the Dannemora Mine, on **31st December 2021**, is estimated to be **26.41 Mt @ 33.44% Fe, 1.82% Mn and 0.21% S**, as shown in Table 4. The Estimated Probable Ore Reserves are considered to be JORC compliant.

Table 4: Probable Ore Reserves reported for Dannemora Mine (31st December 2021)

All Orebodies	Diluted tonnes (kt)	Diluted Fe-grade (wt%)	Mn-grade (wt%)	S-grade (wt%)
Total	26,415,000	33.44	1.82	0.21

The Estimated Probable Ore Reserves produced for inclusion in the PFS is compliant with the principles as set out in JORC-2012. The estimate has been compiled under the supervision of Mr. Thomas Lindholm, GeoVista AB.

1.15 Exploration Potential

The mine field holds the potential for further increasing resources through exploration. At present, most of the interpreted mineralised bodies are open at depth due to the shallow nature of the majority of drilling.

An Exploration Target (as defined in Clause 17 of the JORC Code) report was produced by DMAB in October 2013. Tonnages and grade of potential mineralisation down-dip from existing mineralised bodies were estimated based on geological knowledge, existing drillhole assays, down-hole magnetic surveys, and geophysical surveys.

The total Exploration Target tonnage is estimated to be between 20 Mt to 35 Mt with a grade ranging from 34% to 39% Fe, from a total of seven Exploration Target areas identified. Historical and recent drilling results have been used for this estimate. Magnetic ground surveys and magnetic down-hole surveys have also been used. The magnetic surveys are both historic and recent but all interpretations from the magnetic surveys are based on recent interpretations by geophysicist Lars Edberg.

The Competent Person for DMAB, at the time of reporting, Mr. Peter Svensson, accepted responsibility for the estimate. The potential quantity and grade of the Exploration Targets is conceptual in nature and there has been insufficient exploration to define a Mineral Resource. It is uncertain if further exploration will result in the estimation of a Mineral Resource.

1.16 Mining

As part of the proposed recommencement of mining activities at the Dannemora Mine, a comprehensive development and mining plan has been developed as part of the PFS.

Before the commencement of any mining, the mine will need to be dewatered. The average inflow of water into the mine during operation is estimated to be ca. 898 m^3/ day. Dewatering will be followed by the excavation of

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[9] As defined under JORC, an 'Ore Reserve' is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified. The reference point at which Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.

caverns for the underground crusher and associated facilities, the raise-boring of ore passes from the main level (460 m), and the re-commissioning of the existing central shaft hoisting system.

The current mining plan has been developed based on work carried out for the Scoping Study. The plan covers the development of ramps and drifting in ore, in addition to the need for investment in the form of shafts and drifts in waste to provide for necessary ventilation.

To reach a production rate of ca. 3 Mt/yr in a cost efficient and environmentally acceptable manner, revisions to the ore/waste transport system underground and on surface have been undertaken. These include the service ramps to the underground crusher and hoisting area as well as to open stopes for dumping waste. On surface Four previously worked out stopes near the surface will be used for backfilling via pipes and conveyer from the plant.

During the first year of mining, development of waste drifts and shafts will be prioritised. As a result, the production of iron ore during Year 1 will be limited to ca. 2.4 Mt.

Additional underground capital development will comprise 20,269 m of access development, and 22,415 m of sublevel caving (SLC) production drives in preparation for the recommencement of mine production, with development waste being dumped into old stopes mostly in the northern part of the mine.

The means of transport underground will differ completely from previous when production recommences. Electric mine trucks and electric loaders will be used to transport ore to underground ore passes. This will feed an underground crusher on the 460 m level, from which ore will be hoisted to the surface via the central shaft hoisting system by skip.

There are ore zones in both the Northern and Southern areas of the mine which are partially developed, and can be readily accessed for the recommencement of mining to achieve a target production rate of ca. 3 Mt/yr. Some stopes are already opened, the production in these areas can begin immediately after the dewatering of the mine.

To minimise environmental impact, all future tailings produced will be stabilized and backfilled in previously worked out stopes underground.

In general, the strength of the rock mass is good, with UCS[10] values in many areas around 200 mPa, and RQDs[11] of typically between 70 to 90. This will enable the use of a combination of 50 mm fibre-reinforced shotcrete and wire mesh in the back, and systematic bolting at 1.5 m centres; with 2.7 m long steel bolts. In areas with very good rock conditions systematic bolting will not be necessary; in these areas support will be by a combination of wire mesh and selective spot bolting. Using wire mesh instead of shotcrete will make it possible to proceed with drifting immediately after installing the mesh. This process is more time efficient, and will save up to 3 hours per round.

In areas close to larger faults / fracture zones, it will be sufficient to install a combination of rock bolt-shotcrete arcs.

Since production last ceased in 2015, no deformation or rock falls have been observed in the access ramps, ore drives or in the hanging wall.

The historic ventilation system comprised four ventilation shafts, and two declines with a capacity of 260 m^3/s. This is considered sufficient for future planned operations. During future production, only BEV vehicles will be used in the mine. This will reduce demand on the ventilation equipment i.e. number of ventilation fans and the

[10] UCS = Uniaxial Compressive Strength

[11] RQD = Rock Quality Designation

running time for the fans. A control system will help to decrease the costs for mine ventilation by only sending air to the areas where it is needed, rather than using the ventilation fans all day long. Table 2 above presents the potential cost saving when using BEVs compared to diesel powered vehicles underground.

Ore production, including development drifts in ore, will be undertaken by the company's own staff, whilst development in waste will be undertaken by contractors.

Northern Area - Development

Existing development will allow access to ca. 360,000 t of inventory ore available for start-up production in the Northern Area of the mine (Figure 4).

Norrnäs 1 & 2 will require ramp development from sublevel 249 m to sublevels -253 m and -272 m, in 280 m of waste. Each ramp will be driven past each sublevel drift by at least 18 m, so as not to disturb the development of the production drift on the sublevel when the ramp is continued downwards to the next sublevel. This will also benefit the stability of the entrance to the stopes from the production drift.

A main access ramp will be driven whilst production drilling at Norrnäs 3, Botenhäll and Strömsmalmen is ongoing. Ramp development in waste (280 m) to the production sublevels will result in development and production of ore of ca. 184,900 t becoming available.

Norrnäs 3 sublevels at 143 m and 158 m are ready for longhole drilling, with an estimated inventory of ca. 250,000 t of ore available.

Botenhäll sublevels at 215 m and 235 m are developed and require an opening slot raise and longhole drilling. In Strömsmalmen, sublevel 196 m is developed, except for the opening of a slot raise and longhole drilling as well as a drive southwards. Expected inventory tonnage is ca. 265,000 t of ore.

Southern Area and Svea - Development

The mining at Svea can be started as soon as the drifts have been inspected and any remediation work completed. The ramp down to the next sublevel will be prioritised in order to develop and maintain a reasonable rate of production. Since the orebodies of Svea, Konstäng and Kruthus (Figure 4) are narrowing with depth, it will be important to start the development of the H-ramp towards Diamanten 2 (D2) as soon as the dewatering programme permits. This will be done in connection with the development of the cross-ramp (directly opposite the portal to the H-ramp towards D2), as well as the development of the ramp down towards KH sublevel 499 m, and the development drifts to KH sublevel 499 m and KÄ sublevel 495 m. This will provide the required production on at least four fronts. In order to ventilate D2 correctly, ventilation raises will be developed at an early stage.

The exploration drifts from the H-ramp D2 need to be developed in connection with the development of the H-ramp. If the exploration drifts are postponed, there will be disruption to the production of ore from D2 and to the installation of infrastructure in the H-ramp (electricity, water etc.). It will be advantageous to start development of the drift to D2 as soon as the dewatering permits (i.e., pumping of water from Svea). This will eliminate disturbance to the intersection of D2/Crossort when production starts in Svea. Waste rock produced can be transported to and dumped in nearby stopes, close to the 460 m main level.

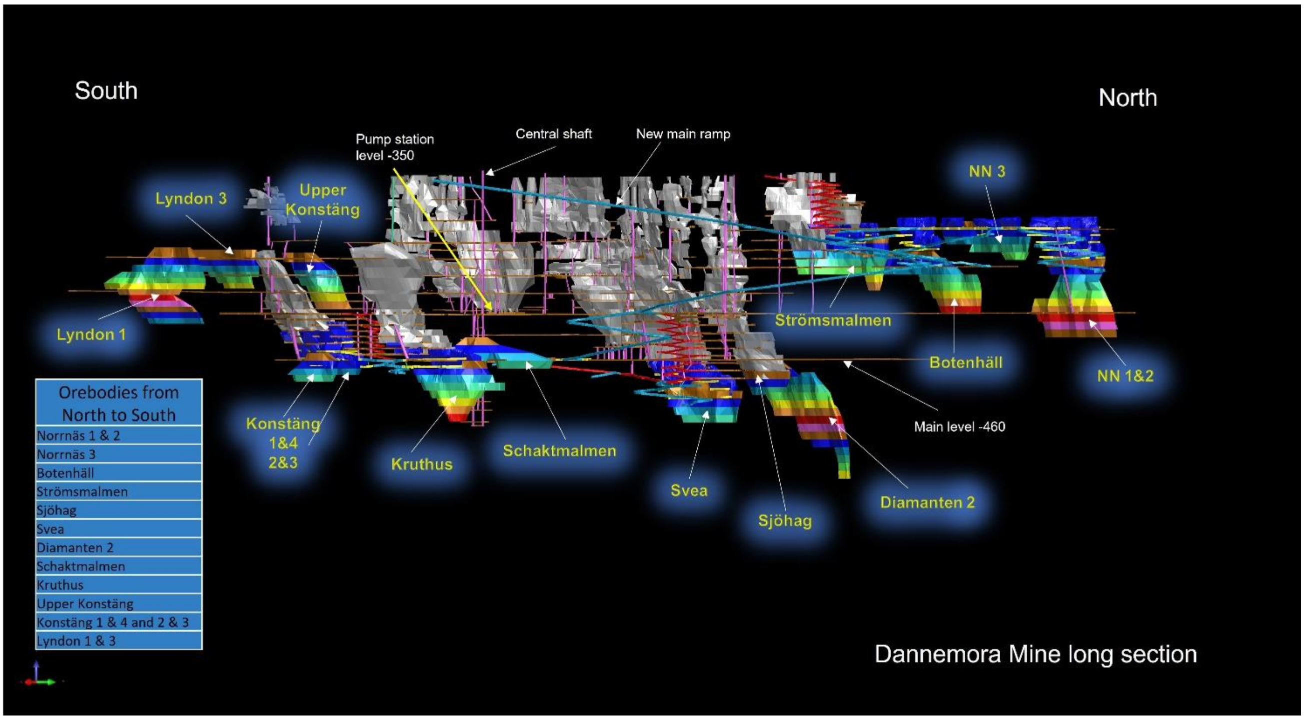

Figure 4: Mineralised bodies Northern & Southern Areas

It is projected that the annual production of ROM[12] ore will be 3.0 Mt, based on a shift pattern of 7 days x 2 shifts, giving 14 shifts per week. The length of each shift will be 10 hours. Due to vacations, other holidays, and maintenance periods etc. the effective days per year will be reduced to 350. The availability of machinery is estimated to be 85%, including planned maintenance. Personnel availability is assumed to be 75% (for manually operated machines based on transport, breaks and meetings). Therefore, the effective time per shift will be 10 hrs x 0.85 x 0.75 = 6.375 hours/shift or 12.75 hours/day. If this is reduced by 1 hour/shift for moving equipment and 1 hour/shift for changing drill bits the effective time will be 8.75 hours/day (based on previous experience at Dannemora and other Swedish mines).

It is projected that the following electrified mining equipment will be required for the recommencement of mining activities at Dannemora: 2 drilling rigs for drifting, 2 longhole rigs, 4 loaders, 5 trucks (depending on size), 2 bolters, 1 raisebore and 2 scaler, plus ancillary support vehicles.

The Dannemora mine will only use BEVs (battery electric vehicles). This will be important in reaching Dannemora’s climate goals and reducing the mine´s energy costs; in particular the costs for ventilation.

1.17 Iron Ore Processing

As part of the PFS a new iron ore process is being developed for the ores to be extracted from the Dannemora mine. After conventional crushing in two stages, the < 45 mm product shall be fed to High-Pressure Grinding Roll (“HPGR”) comminution equipment. The mine is classified as “dry”, meaning that there is very little water entering the ore body. This unique condition (for a Swedish mine) makes the mined ores particularly amenable for both HPGR comminution to a < 6.3 mm size fraction, and subsequent dry separation by a powerful magnetic drum separator of the medium-intensity class (“MIMS”).

By separation of the < 6.3 mm crushed product to remove approximately one quarter of the mined material with minimal magnetite loss, only about three quarters of the ore needs further grinding for liberation of the minerals to enable separation to a high-grade concentrate. The remaining coarse product shall be returned to mined out

[12] ROM = run of mine ore.

areas underground or may be used for industrial purposes if testing confirms its usefulness. By preconcentrating the beneficiation plant feed, there will be a substantial saving related to grinding energy and a significant saving of water demand for downstream processing.

A typical ball mill circuit will be used to grind the wet plant feed to a suitable size for an effective intermediate magnetite upgrade using common wet rougher low-intensity magnetic separators (“WLIMS”). The rougher concentrate will then be ground in highly efficient fine grinding equipment to produce a final targeted mineral liberation size. Finisher WLIMS shall produce a final magnetic concentrate, which will still need the removal of sulphur minerals to suit strict high-quality requirements. This will be accomplished by a flotation process that has been developed for many similar situations. Alternatively, a non-chemical method will also be evaluated. This alternative method, introduced in the last few years, can be used to replace the previously used flotation process to upgrade iron ore concentrates. In one known industrial plant, this novel method removed primarily silicate minerals, as well as sulphide minerals and apatite.

The ores identified at Dannemora have a wide range of characteristics. Therefore, the process is designed to control the variability in the deposit and hence enable a consistently high-grade final concentrate, with a target of 68% Fe and a maximum of 0.05% S.

Higher Fe grade concentrate has been achieved with one of the samples during the testwork. It is proposed that further testing will be part of the further feasibility study.

The current conceptual flowsheet is shown below in Figure 5.

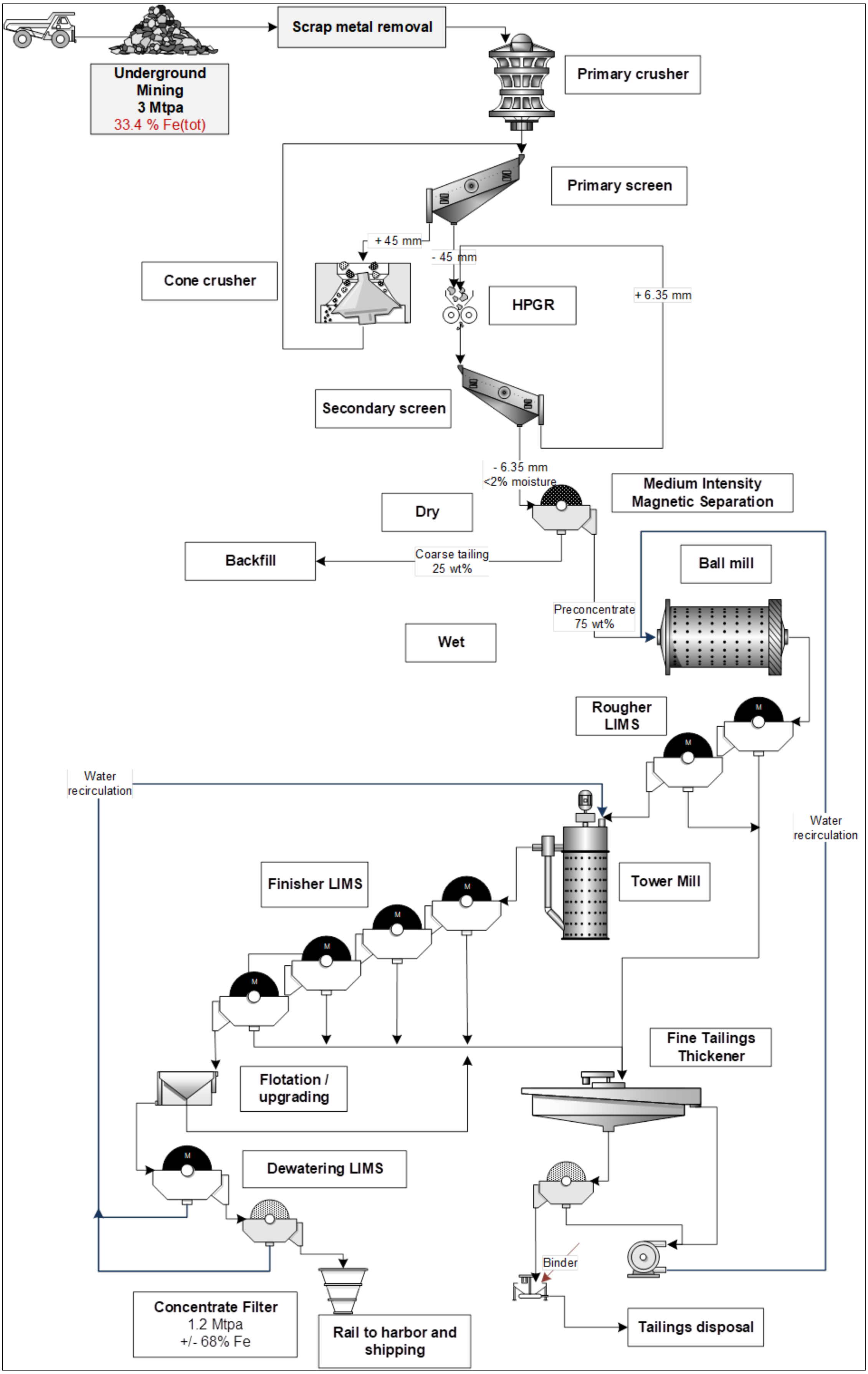

Figure 5: Conceptual Flowsheet

1.18 Infrastructure

The current mine site has been operational for more than 100 years. There are two main ramps accessing the underground workings, plus a central shaft to a depth of 610 m. Figure 6 presents an aerial photograph of the mine site, with the proposed new infrastructure.

Two powerlines, each with a capacity of 20 MW (total 40 MW) are available to the site from the main national power supply system. The power supply will have to be connected to the mine, with an estimated power requirement of a maximum of 20 MW.

Ore will be transported from the mine site to the port of Hargshamn (ca. 38 km away) by rail, where it will be stockpiled under cover before being loaded onto ships for transport to ports of discharge which may include; Szczecin and Swinoujcie in Poland, Rostock, and Hamburg in Germany, the ARAG area (Amsterdam-Rotterdam-Antwerp-Ghent (Netherlands and Belgium), Port Talbot (Wales), Hidd (Bahrain) an Oran in Algeria. The projected annual tonnage of ca. 1.2 WMt/yr (wet million tonnes) from the mine will require ca. 3 to 5 ships per month.

1. Administration building
2. Staff building incl. dressing room
3. Production office
4. Mapping and drill core storage A
5. Storage
6. Connection to main railline
7. Mechanical workshop
8. Main ramp to mine
9. Ventilation intake shaft
10. Railway terminal
11. New process building
12. Railcar loading silo
13. Hoist and skip shaft
14. Existing sorting plant
15. Entrance industrial area 1
16. Entrance industrial area 2
17. Main switchgear, HSP
18. Old sorting plant
19. Control room building
20. Drill core storage B
21. Thickener
22. Water tank
23. Conveyor belt backfill
24. Conveyor belt finished product

Figure 6: Dannemora Mine Site

1.19 Environmental & Social

The terrain and associated habitats in the vicinity of Dannemora comprise of a rather flat lying topography, with small height differences between lakes, wetlands and wooded areas. Some of these wetlands have been created by humans through lowering of water levels in lakes or through bilge pumping.

The mineral deposits at Dannemora have been designated as a site of national interest in terms of mineral resources. The whole area, including nearby Österbybruk, is also an area of national interest in terms of cultural conservation. There are no strictly protected areas close to Dannemora except for a water protection area (Kyrkholmen) ca. 1 km to the south of the mine.

When the mine was in operation excess water was discharged into the local watercourse, Sundbroån, to the west of the mine. This watercourse flows to the south and enters Lake Dannemorasjön further south. Sundbroån has been classified in accordance with the Water Framework Directive (WFD). The current ecological status is moderate and the EQS (Environmental Quality Standards) has been designated to be good by 2027. Future discharge from the mine will be required to meet discharge limits in accordance with the WFD.

As there is currently no valid Environmental Permit in place for the mining operation at Dannemora, a new permit will have to be applied for before dewatering of the mine can take place. In order to prepare a complete EIA report as part of any future permit application, studies and investigations have been or are about to be updated and/or revised, such as water and aquatic studies, noise and vibration.

Based on the information reviewed, several environmental issues have been identified that are considered to be of importance to the recommencement of mining at Dannemora: (i) Impact on groundwater levels in the surrounding area and especially private wells; (ii) Potential release of metals to the Sundbroån watercourse; and (iii) Potential leakage of arsenic from waste material backfilled in the underground mine workings. The leakage of arsenic will be dealt with by including a water cleaning system for any release water from the dewatering stage of the mine, as well as during operation.

1.20 Operational Considerations

It is DIAB’s intention to have an owner operated mine, with all key staff employed by DIAB and the key parts of the operations run by its own staff. There will be a need to work with contractors for special tasks such as blasting, servicing and specialists regarding mining as well as process equipment. The plan is to have the majority of all maintenance carried out at the mine, as well as for the process plant to be operated by DIAB’s own staff.

Based on experience from the 2012-2015 operation, the total number of directly employed staff and contractors has been estimated to be around 220.

It is proposed that the mining operation will run 7 days a week, with 2 shifts per day, giving a total of 4 shift teams. It is envisaged that the process plant will run 24/7, with 5 shift teams.

The plan is to have a “flat” management structure within the organisation, with the DIAB Managing Director reporting to the CEO of Grängesberg Exploration Holding AB.

A Mine Manager will be responsible for the mining operation, with a Mill Manager being responsible for processing and loading of product to the rail cars, prior to transport to the port. The Management team will consist of the following: Managing Director, Mine Manger, Mill Manager, Marketing and Logistic Manager, HR Manager, Financial Manager, HSE Manager, Service and Maintenance Manager, and Exploration Manager. Including support staff for the management team, the total number will be between 12 and 14 people. The Managing Director will delegate tasks and responsibilities for the different parts of the operations to the relevant managers, in accordance with industry best practices and Health and Safety legislation.

1.21 Cost Estimation[13]

CAPEX

As part of the FEL2 study for the Dannemora project, total capital expenditure has been estimated to amount to USD$ 187M (MSEK 1,683) over an 11 year mine life (including 2 years construction) (Table 5). Expenditure is comprised of Initial (growth) and Sustaining capital throughout the project life as detailed in the table below. Estimates have been based on quotations and inhouse estimates prepared by Dannemora Iron AB to within a within a ±25% order of accuracy, reviewed and compiled by Golder.

Table 5: Project Capital Costs

Capital Cost	Cost (MUSD)
Initial	134.8
Sustaining	52.1
Total	**186.9**

A breakdown of Initial (Growth) capital expenditure to key cost areas is provided below in Table 6 and Figure 7.

Table 6: Initial Project Capital Costs

Initial Capital Cost	Cost (MUSD)	% Cost
Initial Mine	26.3	20%
Material Handling & Processing	86.3	64%
Dewatering/Water Treatment	13.8	10%
Logistics	3.3	2%
Infrastructure	1.3	1%
Closure	3.9	3%
Total	**134.8**	**100%**

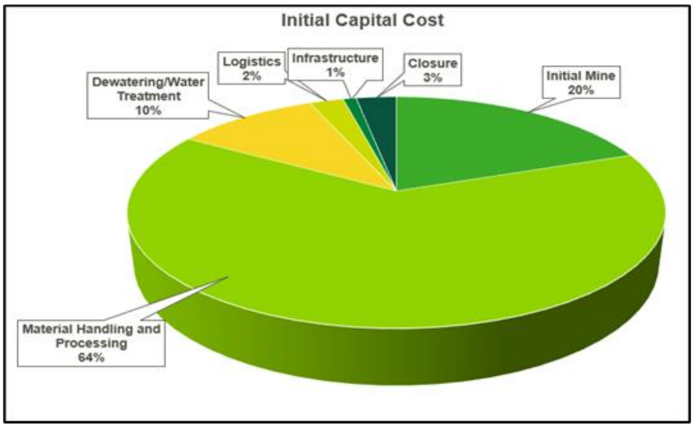

Figure 7: Initial Project Capital Costs

A breakdown of Sustaining capital expenditure to key cost areas is provided below in Table 7.

[13] Cost Estimations and Financial Evaluation are based on complying with the Principles of the JORC Code as presented in Table 1 of the Code for those preparing Public Reports on Exploration Results, Mineral Resources and Ore Reserves.

Table 7: Sustaining Capital Costs

Sustaining Capital Cost	Cost (MUSD)
Waste Development	38.4
Underground Equipment	8.9
Sub-Total	**47.4**
10% Contingency	4.7
Total	**52.1**

OPEX

As part of the FEL2 study for the Dannemora project, total operating expenditure has been estimated to amount to MUSD 444 (MSEK 3,996) or USD 44.7/t over an 11 year mine life (Table 8 and Figure 8). Expenditure is comprised of key areas throughout the project life as detailed in the table below. Unit operating costs per tonne of ore processed are also provided. Estimates have been based on quotations and inhouse estimates prepared by Dannemora Iron AB to within a within a ±25% order of accuracy, reviewed and compiled by Golder.

Table 8: Project Operating Costs

Operating Cost	Cost (MUSD)
Contractor Work	37.1
Ground Support	5.2
Equipment Rental	62.4
Battery Rental	51.5
Equipment Power	7.2
Spare Parts and Tyres	4.4
Personnel	98.8
Material Handling & Processing	102.6
General & Administration	13.1
Water Treatment	9.4
Logistics	52.2
Total	**444.0**

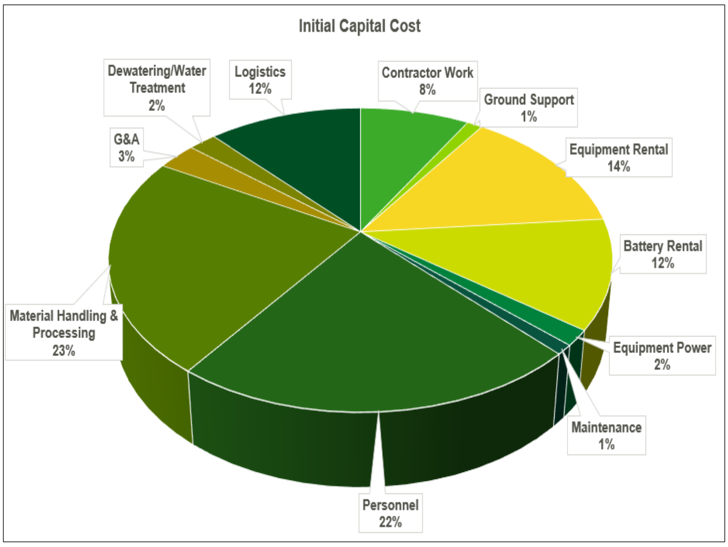

Figure 8: Breakdown of Project Operating Costs

1.22 Financial Evaluation

As part of the FEL2 study for the Dannemora project, a cashflow model evaluation has been completed, analysing capital costs, operating costs and revenue on an annual basis over the 11 year project life. The project plan comprises a 2 year pre-development period followed by 9 years of mine production and processing to a saleable magnetite concentrate.

Basis

A financial model for the project has been prepared based on a run-of-mine (ROM) estimate of **ca. 25.36 Mt at a grade of 33.44% Fe, 1.81% Mn and 0.22% S**, and on life-of-mine (LOM) physical schedules, capital and operating costs, discount rate and revenue assumptions provided by DIAB and compiled by Golder. A conventional cashflow model has been prepared to derive project Net Present Value (NPV), Internal Rate of Return (IRR), payback period and cashflows on a before and after-tax basis. A discount rate of 8% has been applied that takes into account market interest rates and geographical risk.

Three broad sensitivity input criteria for the evaluation have been prepared:

1) **Product Price:** Five product price comprise a conservative input (USD 95/t product), initial input (USD 125/t product), lower range (USD 130/t product), middle range (USD 137.50/t product) and upper range (USD 145/t product).

2) **Mining Recovery:** Two options have assessed inclusion and exclusion of a mining recovery factor of 96% provided by DIAB.

3) **Product Grade:** Two options examined assuming a fixed or variable product grade.

The Base Case evaluation assumes an initial input price of USD 125/t product, application of a 96% mining recovery factor and a fixed product grade of 68%. Project Capital Costs are estimated at MUSD 187 (Chapter 17.0) while Operating Costs (Chapter 18.0) are estimated at MUSD 444 or USD 44.7/t for the Base Case scenario.

Over the 11-year project life the modelling has demonstrated positive pre and post-tax returns for the Base Case mine plan and sensitivity scenarios testing a ±30% variance in key inputs. Key results for the different pricing scenarios compared to the base case are presented in Tables 9, Pre-Tax and Table 10, Post-Tax.

Outcomes

For the Base Case scenario, the project generates a Pre-Tax Net Present Value (NPV) MUSD 319 at a discount rate of 8%, with an Internal Rate of Return of 51% and a payback period of four years (Table 9). This results in a Post-Tax NPV of MUSD 238, an IRR of 39% and payback period of 4.5 years (Table 10).

Table 9: Pre-tax financials at different pricing scenarios

Pre-Tax Financial Results	Unit	Scenario 1 (USD90/t)	Base Case Scenario 2 (USD125/t)	Scenario 3 (USD130/t)	Scenario 4 (USD137.5/t)	Scenario 5 (USD145/t)
Pre-Tax Cash Flow	MUSD	312	**610**	660	734	809
DCF @ 8%	MUSD	143	**319**	348	392	436
IRR	%	30	**51**	54	59	64
Payback	Years	5.0	**4.0**	3.9	3.7	3.6
NPV @ 8%	MUSD	143	**319**	348	392	436

Table 10: Post-tax financials at different pricing scenarios

Post-Tax Financial Results	Unit	Scenario 1 (USD90/t)	Scenario 2 (USD125/t)	Scenario 3 (USD130/t)	Scenario 4 (USD137.5/t)	Scenario 5 (USD145/t)
Post-Tax Cash Flow	MUSD	248	**485**	524	583	642
DCF @ 8%	MUSD	100	**238**	261	296	331
IRR	%	22	**39**	41	45	48
Payback	Years	6.0	**4.5**	4.4	4.3	4.1
NPV @ 8%	MUSD	100	**238**	261	296	331

Project cashflows are presented in Figure 9 over the LOM, incorporating a two year pre-development period and nine year production period.

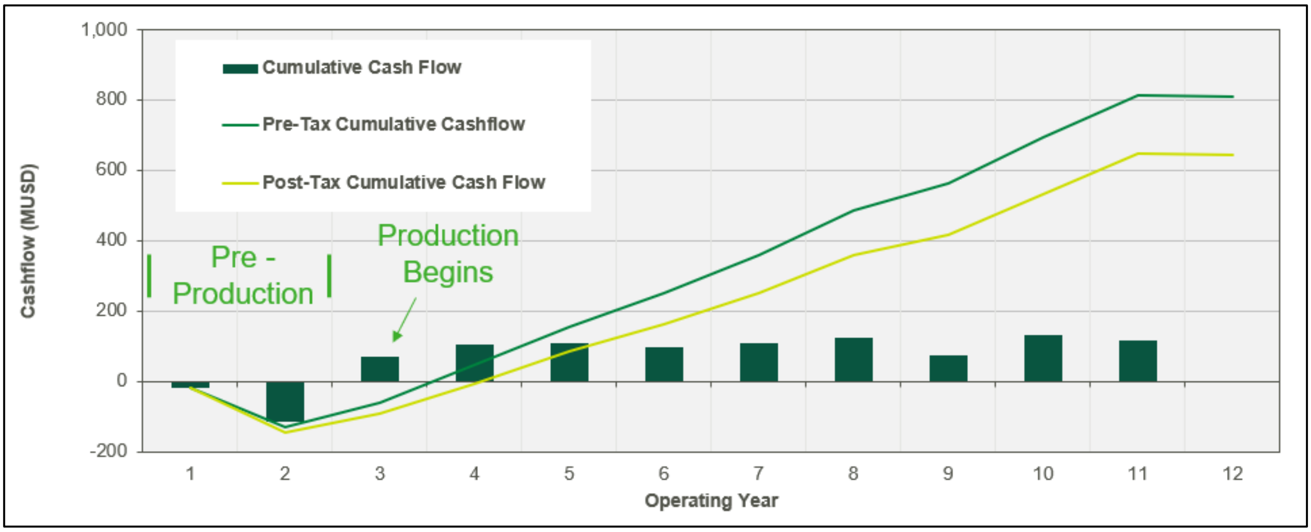

Figure 9: Pre-tax and post-tax cashflows over the LOM

Sensitivity Analysis

Summary sensitivity analyses are presented in Figures 10 and 11. The results indicate that a +30% variance in price drives a +70% or +220 MUSD variance in NPV. While outcomes are less sensitive to variance in capital and operating costs, the pre-tax and post-tax NPV still shows sensitivity to changes in operating and capital costs. A +30% variance in operating cost drives a +25% or +79 MUSD variance in NPV, while a +30% variance in capital cost drives a +14% or +44 MUSD variance in NPV.

Sensitivity analysis has also tested best and worst case outcomes for the key sensitivity parameters as detailed under Table 11. This indicates that post-tax NPV becomes slightly negative at MUSD -39 where all three key inputs vary negatively by 30%. In contrast, post-tax NPV more than doubles to MUSD 513 where positive 30% outcomes are achieved for all three key input parameters. This evaluation indicates that the project cashflow outcome is reasonably robust, assuming the mine plan is achievable and appropriate estimates for capital and operating costs.

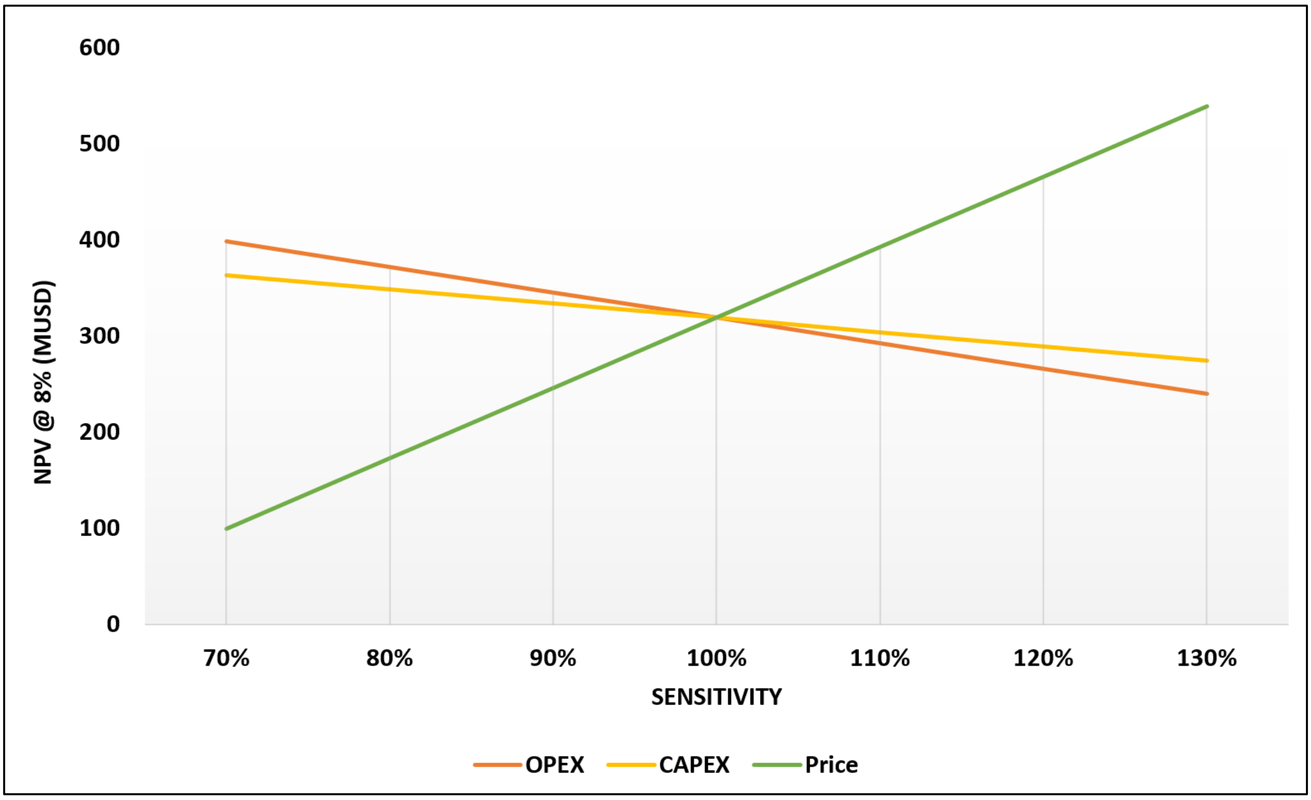

Figure 10: Pre-tax NPV sensitivity @ 8% discount rate

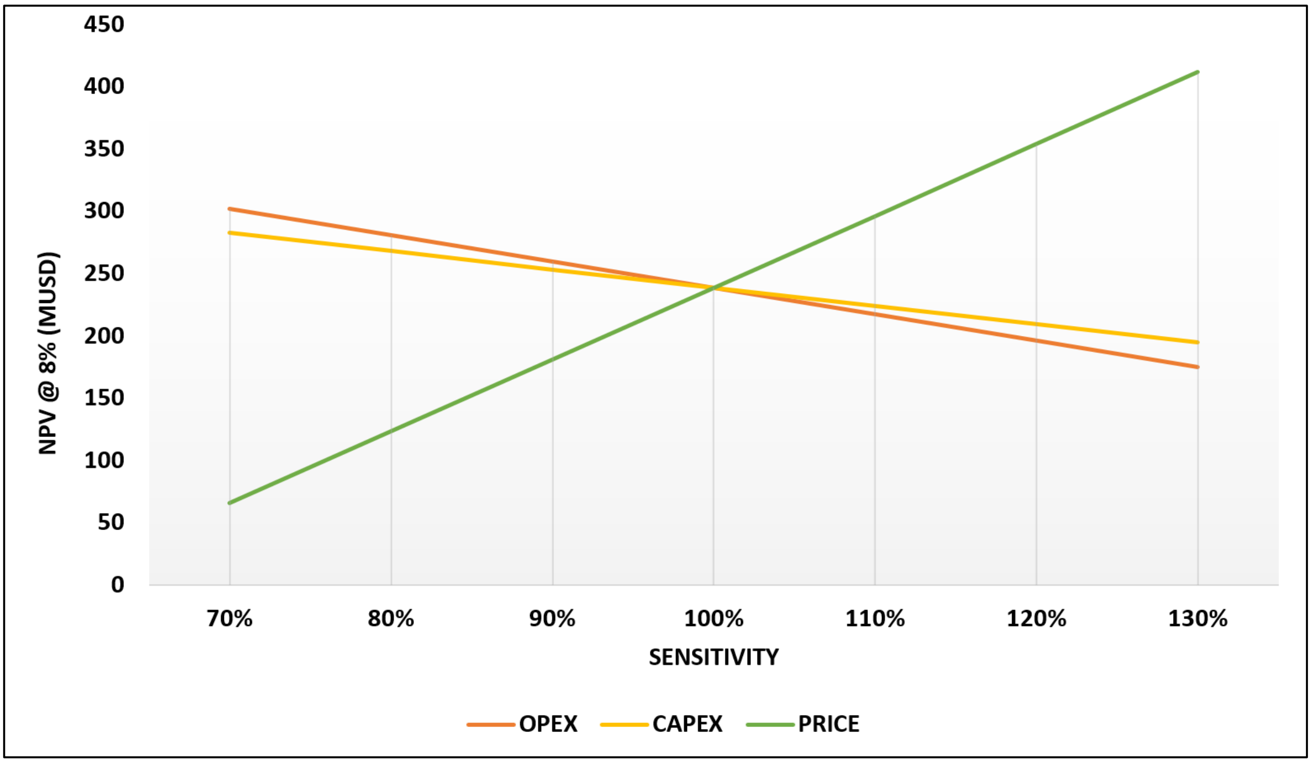

Figure 11: Post-tax NPV sensitivity @ 8% discount rate

Table 11: Best and worst case scenarios

	Worst Case	Base Case	Best Case
CAPEX (% of)	130%	100%	70%
OPEX (% of)	130%	100%	70%
PRICE (% of)	70%	100%	130%
Pre-Tax NPV (MUSD)	-24	319	662
Post-Tax NPV (MUSD)	-39	238	513

Risks

Risks to project viability have been reviewed and highlighted for the next phase of evaluation:

- Metallurgical testwork involving completion of variability and pilot scale testwork to confirm process recoveries, product grades (particularly iron and sulphur grades), process route and mass balance.
- Plant design work and cost estimation to confirm the design configuration, capital and operating costs following completion of metallurgical testwork.
- Drainage and water treatment work to confirm underground water inflow rates, dewatering requirements and proposed water treatment to reduce arsenic and zinc levels in discharge water.
- Power cost confirmation based on negotiated agreements.
- Spare parts and tyres cost for the proposed underground electric fleet

- Marketing and pricing studies and negotiation of offtake agreements to confirm pricing, product specification ranges, penalties and credits.

1.23 Conclusions & Recommendations

Conclusions

The Dannemora Mine restarted production in 2012, however operations ceased in 2015 because of bankruptcy. The main reasons for the bankruptcy was that the quality of the finished products was below market expectations, having too high a production cost due to unfinished installations in ROM equipment and the beneficiation stage. Additionally the prices achieved could not pay for the cost of production in a depressed market.

However, during the production period 2012-2015, it was proven that sustainable mining could be undertaken, in an efficient and cost-effective way with the production of ca. 3 Mt/yr of ore.

Based on the experience from 2012 to 2015, and with the clear objective to focus on the necessity to improve the quality (grade) of the finished product, it will be potentially possible to produce a high grade Fe-concentrate, by using known and proven processing techniques, with specifications that can meet the expectations and needs of customers globally. By improving the Fe-concentrate grade it will be possible to achieve substantially higher prices compared to the 2012-2015 period.

Based on the results of the PFS, and future market expectations, the recommendation is that the project should be taken to a Feasibility (FS) stage. The metallurgical testwork completed indicates that there is an opportunity to further increase the Fe-concentrate grade, which would further enhance the viability and sustainability of the project.

The financial evaluation of the project carried out as part of the PFS has estimated an overall LOM capital expenditure of ca. **US$ 186.9 M**, with an operating cost of ca. **US$ 44.7/t** of product based on an Iron Price of US$ 125/t.

From the metallurgical testwork completed to date it will be possible to produce a Fe-concentrate of ca. 68% Fe, that would be of DRI (Direct Reduced Iron) quality and meet the requirements for “green steel”. This quality of Fe-concentrate is in limited supply, and it can be expected that this situation will be even further underlined over the coming years. Further testwork during the FS stage of the project will be targeted to identify the potential to further increase the Fe-content in the concentrate. Efforts will also be made to maximise the mining grade during the LOM schedule.

Furthermore, once in operation, the immediate area surrounding the mine has the potential for further discovery of additional mineral resources, as a number of the mineralised bodies are open at depth.

A key conclusion of the PFS work is that the Dannemora mining project will play an important part in reducing CO_2 emissions by operating a fully electrical underground mining fleet, while still producing a high magnetite Fe-concentrate with Green Steel credentials.

It is planned to utilise and upgrade the previous improvements made to the mine during the 2012-2015 period as part of the future proposed development. The existing mine plan developed during this period will form the basis of the new Life of Mine (LOM), with areas previously planned and/or development being utilised to reduce initial start-up CAPEX.

Based on the results of the Pre-Feasibility Study, and future market expectations, the conclusion is that the project should be taken to a Feasibility (FS) stage. The metallurgical testwork completed during the PFS clearly indicates that there is a good opportunity to increase the Fe-concentrate grade, which would further enhance the viability and sustainability of the project, with the sale of a premium product in high demand.

Much of the work carried out as part of this Pre-Feasibility Study is based on information/data and knowledge gained by key individuals (part of Scoping Study team) who previously worked at Dannemora during the 2012-2015 period. These individuals will continue to part of the study team and provide inputs to the FS.

The results of the PFS provide a strong foundation to take this project - the re-commencement of mining at Dannemora - to the next stage.

Recommendations

Following the conclusion of the PFS a number of key technical and project recommendations can be made under the following headings:

Marketing

- Emphasise the product strength as being produced with minimal CO_2 footprint and ideal for “Green Steel” production.
- Identify customers that focus on developing a steel production with smallest possible CO_2 footprint.
- Present and represent on iron ore conferences in Europe and the Middle East.
- Active marketing towards all potential customers in above regions.
- Investigate potential interest and shipping solution for sales to distant destinations (MENA and Japan).

Community

- Start early and be proactive in information meetings with all who will be impacted, positively or negatively, by the restart of the mine.
- Continue the dialogue with all stakeholders during permitting, construction and operation.

Geology

- In direct connection to standard drill-core logging, in-house produce small (2-3 cm) semi-polished ore samples and skarn, in order to exert mineralogical and geochemical control on ore and gangue material by using standard ore microscopy and (near in-house) SEM-EDS.
- Acquisition of hand-held XRF analyser for in-situ ore control, underground as well as during drill core logging.
- Underground laser scanning to facilitate mine planning and ore control.
- Secure and get access to the samples needed for testing as well as EIA, as soon as possible.
- Expansion of Indicated and Measured Mineral Resource: Exploration drilling on existing inferred resources and exploration target to add to current mineral resource.

Geotechnical

- Carryout Geotechnical logging (RQD etc.) when drill-core logging.

Mining

- The drilling of exploration targets should be initiated as soon as possible with the objective to increase the LOM.
- The sub-level height in Dannemora is normally set to 19 m in order to avoid ore losses or too much waste inclusions. The reason for ore losses and/or waste inclusions are often that the orebodies are undulating in nature. A cheaper way than dense diamond drilling to get a better knowledge of the ore outlines would be to dense drill a set of percussion holes from nearby drifts or ramps, and log them with a magnetometer

and deviation survey them. This will at least increase the ability to make better production planning decisions and quite possibly to increase the height of the sub-level a few metres.

- The use of portable XRF equipment at the mining front would enable better selection of the mined material to crusher or waste deposit.
- Review of cut-off grade to consider the possibility of flexible cut-off based on the different characteristics of the ore in different parts of the mine. In addition to this the need to secure a ROM blend enabling production of specified grade.
- When starting the mine and to secure a smooth start the use of contractors to also do the drifting in ore should be considered. This will increase the chances to keep the mine’s own staff for production mining and will also reduce the need of some equipment in the first year.
- Study and analyse the possibility to access the tailings which was disposed of in the mine with an Fe content above 21% . The grade will most probably even increase when the coarse material is separated by screening. The mining of the tailings might need to be by remote control for safety reasons.
- Consider the possibility to start mining Lyndon 1 and 3 earlier. The issues with houses on surface needs to be solved.

Processing

- Additional drill core samples representing deeper mining levels and all ore bodies should be collected for complementary testing.
- Existing sample to ship for advanced MIMS cobber testing.
- Optimization MIMS test program to be ordered.
- By batch testing on additional drill core samples and advanced mining schedules to investigate enhancement of final LIMS concentrate quality.
- Determine additional comminution data on a selection of drill cores.
- Study drill cores for relevant future mining areas.
- Investigate possibility to avoid flotation through selection of electromagnetic methods.
- Liaise with mining engineers to develop a mine plan.
- The aim is to provide a DR quality concentrate and to optimize the grade vs recovery.
- TML determination of concentrate to be done by external laboratory. Moisture content to be determined during production as scheduled.
- Evaluate the pelletizing possibility of the concentrate.
- In preparation for the FS and during the FS thoroughly consider and plan for possible blending of ore from areas with high S content with ore from areas with low S content.
- Investigate options for processing high pyrrhotite content ore to achieve sufficiently low S content by finer grinding and enhanced extraction methods as well as selectively mine and blend accordingly.
- Test, bench test and QEMSCAN, drill cores from orebodies not included in previous sampling.
- Consider the possibility to grind high S ore even finer to separate S and blend in, as the planned infrastructure doesn’t allow that.

Infrastructure

- Intensify dialogue with the Swedish Transport Administration (Trafikverket) in order to secure capacity on rail line.
- Secure an optimal railcar solution for the transportation to port.
- Engage additional rail operators and request fossil free operations.
- Utilization of fuel cell driven locomotives.
- Engage with the port of Hargshamn and Gävle to achieve best possible solution regarding necessary investment, Capex and also shipping cost.

Opportunities

A number of opportunities to improve and maximise the project's life and financial return have been identified:

- Due to the ongoing shift (the Green Industrial Revolution) towards fossil free iron making, there is an important opportunity to be had in moving the Dannemora concentrate firstly to being fossil free, and then to a CO_2 free status FOB. This can be achieved with the following actions:
  - For construction phase request contractors/suppliers to use equipment with reduced carbon footprint;
  - Complete electrification of the mine and all related operations;
  - HVO driven train transport initially. HVO with the objective to operate CO_2 free, hydrogen train transport;
  - Electrification of harbour loading procedures; and
  - Negotiate with customers to exercise shipments with a minimized CO_2 footprint.
- All CAPEX costings are based on budget quotations, price lists and/or calculated price increases from the previous operation, hence there is an opportunity to negotiate improved terms and prices with suppliers as the project progresses to the next level of design.
- Plan and exercise exploration drilling of the inferred resource and identified explorations targets with the objective to increase the LOM up to 10 years or more.
- Better accuracy will be possible at the next level of study (FS) as engineering design progresses.
- During the interpretative phase for the updated mineral resource, it was noted that many drillholes had no assays below the previously used cut-offs of 20% and 30% Fe. A quick check on stored drill core revealed that intermediate sections or sections before or after an intercept, held substantial amounts of magnetite, often in brecciated or disseminated form. Since the previous operator of Dannemora aimed at producing lump ore it was understood that this would not have been possible to use. However, with the new process proposed as part of this project, it will be possible to produce a marketable concentrate. It is therefore recommended to go through all such core that was observed to potentially hold additional mineralised material and sample where appropriate.
- In addition, the FS will investigate and evaluate the possibility to further reduce the project's carbon footprint by identifying the source of input goods, such as chemicals, steel and concrete with a minimal or no carbon footprint.

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