



GRANGEX presents positive results for the Dannemora mine Feasibility Study

Grängesberg Exploration Holding AB - GRANGEX - presents the results of a Feasibility study (the Study or FS) for the recommencement of mining at their Dannemora Iron Mine, with a carbon free focus. The Study establishes, among more, that Dannemora can be a producer of high-grade iron ore concentrate with a very low carbon footprint, having strong pre-requirements to become a preferred supplier for green steel producers. The Study was prepared and signed by SLR Consulting Limited ("SLR") [\[1\]](#).

[\[1\]](#) Key members of the SLR team for the FS were part of the same team that executed the Scoping Study and the Preliminary Feasibility Study for the project.

Key data in the Study

Net present Value (NPV) @ 8% pre-tax	274	MUSD
Internal rate of return (IRR) pre-tax	31	%
Life of mine (LOM)	11	years
Mine production , fully electrical	3.0	Mt/year
Production 68% ore concentrate annual	1.01	Mt/year
OPEX 68% Fe FOB/tonne	54.7	USD/t
-Pre production CAPEX	178.3	MUSD
-Sustainable CAPEX	17.3	MUSD
Total LOM CAPEX	195.6	MUSD

"The positive results delivered in the feasibility study today, despite current inflationary times, shows that a world class product can be feasibly produced with a minimal carbon footprint at Dannemora for a longer period compared to what was presented in the pre-feasibility study. Thus, another important milestone for the reopening of the Dannemora mine has been reached. The preferred port for export has been changed to Oxelösund as this enables us to reach customers also in the MENA area efficiently. Now, we enter the pre-construction phase, with focus on initiating construction this time next year, subject to securing the necessary Environmental Permit and construction finance. A truly remarkable development in a noticeably brief time. This has only been made possible through the great and skilled project team we have at GRANGEX.

In operation Dannemora will be the producer of high-grade iron ore concentrate with one of the lowest carbon footprint in the industry. High grade iron ore is a product necessary for fossil free iron making and green steel production. The journey continues at high speed towards the start of production in mid-2025.

During the study period, systematic relogging of existing drill core at Dannemora has been successful and contributed to extending the life of mine to 11 years. This work continues and I expect that we will see further extensions prior to the start of production," says Christer Lindqvist, CEO of the GRANGEX group.

Highlights of the report:

- The financial evaluation of the project completed as part of the Study has estimated pre-production capital expenditure including contingency and first year production costs of MUSD 178.3, (MSEK 1,872.6), sustaining capital during the life of mine (year 2 and forward) of MUSD 17.3 (MSEK 181.2) giving a total CAPEX during the life of mine of MUSD 195.6 (MSEK 2,053.8). The unit operating cost, FOB port of Oxelösund, is USD 54.7/dmt concentrate for production of 68% low sulphur iron ore concentrate. Based on a product price FOB of USD 129/dmt and 10.50 SEK: USD this gives the following financial results, pre-tax^[1];
 - Net Present Value @ 8%; MUSD 274 (MSEK 2,877)
 - Internal Rate of Return (IRR); 31 %
- Payback time less than 4 years from production start.
The report is based on recent quotations and price lists and thereby captures the current effects of the inflationary economy, which results in higher capital and operating costs. The process plant flowsheet design criteria targets a mass yield of 36.61% Fe(tot) and a recovery of 76.88% to produce ca. 1.14 Mt/yr. at a grade of ca. 68.15% Fe when in full production. This is based on 400 t/hr run-of mine (ROM) (3,000,000 t/year) feed at a grade of 32.1% Fe.
- The annual ROM rate has been calculated at 2.83 Mt resulting in an average production of 1.01 Mt (dry weight), 68 % iron ore concentrate, meeting the requirements for direct reduction iron (DRI) and thus green steel production. A key conclusion of the FS is the possibility that the Dannemora mining project can be a producer of high-grade iron ore with an extremely low carbon footprint and achieve this by operating a fully electrified underground mining and beneficiation process while producing a high-grade magnetite concentrate with Green Steel credentials. Thus, having the possibilities to become a preferred supplier in the emerging transition of the steel industry towards the production of green steel.
- An updated JORC 2012 compliant Mineral Resource Estimate for the mine amounts to 32.20 Mt, at 34.91 % Fe, Measured and Indicated; and 5.94 Mt at 33.33% Fe, Inferred^[2].
- The Probable Ore Reserves for Dannemora Mine, as of 31st October 2022, is estimated to be 31.11 Mt, with 32.10% Fe, at a cut-off grade of 15%, giving a Life of Mine (LOM) of 11 years.
- Further relogging of existing drill core has resulted in an extension of the Life of Mine (LOM) compared to the Pre-Feasibility Study (PFS).
- The exploration potential for most of the interpreted mineralized bodies is open at depth due to the shallow nature of the majority of the drilling. The total Exploration Target tonnage is estimated to be between about 20 Mt and 35 Mt with an estimated grade between of between 34% and 39 % Fe, from a total of seven Exploration Target areas identified.

The FS has involved completing the following key tasks:

- Updating the Mineral Resource Estimate for the Project (in accordance with JORC) based on sampling of core not previously sampled following a reduction in the proposed cut-off grade from 20% to 15% Fe. Including the recovery of about 3 million tonnes of tailings (@ 22% Fe) from underground stopes in the Mineral Resource Estimate.
- Planning for a fully integrated electrical underground fleet of mobile mining equipment, including drill rigs, rock bolters, trucks and load-haul-dump machines (LHDs) to minimise the CO₂ footprint of the mining operation.
- Using the mine plan from the Pre-Feasibility Study (PFS), as a basis for an updated Life of Mine (LOM) plan, with areas previously planned and/or developed being used to reduce initial start-up capital costs and enabling early cashflow.
- Building on the metallurgical test work completed for the Scoping Study and the PFS reported in May 2021 and January 2022, respectively, as well as conducting a complementary test program for the FS to confirm that the Fe-concentrate produced would be of a quality that meets the needs of the steel producers now focusing on and investing in “Green Steel” operations.
- The FS is built on the metallurgical test work completed during the Scoping Study and PFS, both of which indicated that there is an opportunity to further increase the Fe-concentrate grade to above 68% Fe, which would further enhance the viability and sustainability of the Project.

- Completion of key studies and activities enabled the submission of an Environmental Permit Application including an Environmental Impact Assessment (“EIA”) to the Environmental Court in June 2022 This included the development of a site Water Balance and Water Management Plan for the Project.
- Developing a Cashflow Model with an accuracy of +/- 10 - 15% for the operating and capital cost inputs for the Project.

Mineral Resource Estimate

The Mineral Resource Estimate produced for inclusion in the FS is compliant with the principles as set out in JORC-2012. The statement on Mineral Resources is supported by a completed Table 1 as required by JORC-2012.

The Mineral Resource table presents a summary of the Iron Ore Resources for Dannemora Mine as of 8th August 2022 compared to those of 31st December 2021.

Mineral Resource Estimate for Dannemora Mine for 8th August 2022 compared to 31st December 2021

Category	August 8, 2022,				December 31, 2021,			
	Tonnes	Fe%	Mn%	S%	Tonnes	Fe%	Mn%	S%
Measured	17,319,000	37.49	1.90	0.25	16,733,000	37.87	1.90	0.30
Indicated (In Situ)	11,882,000	34.66	2.20	0.27	11,454,000	34.58	2.20	0.30
Indicated - Tailings	3,000,000	22.50	2.50	0.19				
Total Measured + Indicated	32,201,000	34.91	2.06	0.25	28,187,000	36.53	2.00	0.30
Inferred (In Situ)	5,948,000	33.33	2.27	0.15	5,823,000	31.90	2.50	0.19
Inferred (Tailings)					1,700,000	21.00	2.50	0.19
Total Inferred	5,948,000	33.33	2.27	0.15	7,523,000	29.44	2.50	0.19

Ore Reserve Estimate

The Mineral Resource Estimate presented above has been subject to detailed mine planning, including the consideration of expected or actual Modifying Factors such as, waste inclusions (dilution), and planned and operational ore losses. The resulting tonnage is therefore considered to be a Probable Ore Reserve. The Estimated **Probable Ore Reserve** for the Dannemora Mine, effective date **31st October 2022**, is estimated to be **31.11 Mt @ 32.10% Fe, 2.02% Mn and 0.24% S**, as shown in the table below. Also included in the ore reserve estimate is ca. 3.0 Mt of tailings @ 22.5% Fe, 2.50% Mn and 0.19% S. The tailings included in the ore reserve estimate are based on tailings historically placed as backfill in several of the stopes in the Konstäng and Kruthus orebodies, in the south of the Dannemora Mine.

Probable Ore Reserves reported for Dannemora Mine (31st October 2022)

All Orebodies	Diluted tonnes (kt)	Diluted Fe-grade (wt%)	Mn-grade (wt %)	S-grade (wt %)
Total	31,110,000	32.10	2.02	0.24

Qualified Persons (CP JORC)

Competent Person, CP, for Mineral Resources: Mr. Thomas Lindholm, GeoVista AB, who is a Fellow of the Australasian Institute of Mining and Metallurgy (FAusIMM), is the Competent Person responsible for the Mineral Resource estimate 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 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, site supervision and exploration drill programme design.

Competent Person, CP, for Ore Reserves: Mr. Bryan Pullman (P.Eng.), Principal Mining Engineer with SLR Consulting Ltd, is the Competent Person as defined by JORC (2012) based on being a Qualified Person (QP) under NI 43-101, responsible for the estimation of the Ore Reserves following the guidelines of the JORC Code, 2012 edition.

Competent Person (CP) for Mineral Processing: Mr. Bo Arvidson (PhD) of Bo Arvidson Consulting LLC, is the Competent Person defined under JORC (2012) based on being a Qualified Person (QP) under NI 43-101, responsible for metallurgical test work and process flowsheet design.

Competent Person for Process Plant Engineering, (CP): Mr. Chris Stinton (C.Eng.), Zenito, is the Competent Person for the process plant engineering.

The above listed Competent Persons have reviewed and approved this press release for public distribution.

[1] Pre-tax calculation chosen due to pending project finance structure

[2] For full details per category, see company website

CONTACT PERSON

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This information is such information that Grängesberg Exploration Holding AB is obliged to publish following the EU Market Abuse Regulation. The information was submitted, through the agency of the above contact person, for publication on December 16, 2022, at 10.45 (CET).

ABOUT GRANGEX, GRÄNGESBERG EXPLORATION HOLDING AB (publ)

Grängesberg Exploration Holding AB (publ) is a group that investigates the conditions for sustainable extraction of identified mineral projects. The company's business concept is to, primarily, prospect and develop sustainable and high-quality apatite and iron ore deposits and become a sustainable raw material supplier to European industry in the ongoing climate change. GRANGEX intends that the Dannemora mine at the start of operations will be the first carbon dioxide-free iron ore mine, and that the GRANGEX Apatite project in Grängesberg will be the first fossil-free producer of apatite.

The Company's share (GRANGX) is traded on NGM Nordic SME.

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More information www.grangex.se