

**FORM 51-102F3  
MATERIAL CHANGE REPORT**

**Item 1. Name and Address of Company**

GIGA METALS CORPORATION (the “Company”)  
#203 – 700 West Pender Street  
Vancouver, BC V6C 1G8

**Item 2. Date of Material Change**

September 22 2023

**Item 3. News Release**

The News Release dated September 22 2023 was disseminated by Globe Newswire September 22 2023.

**Item 4. Summary of Material Change**

The Company announced the results of a Pre-Feasibility Study (PFS) prepared in accordance with National Instrument 43-101 for the Turnagain Nickel-Cobalt Project located in British Columbia, Canada. Turnagain is owned by Hard Creek Nickel Corp, a joint venture owned by Giga Metals (85%) and Mitsubishi Corporation (15%). All currencies are in US\$.

**Item 5. Full Description of Material Change**

The Company today announced the results of a Pre-Feasibility Study (PFS) prepared in accordance with National Instrument 43-101 for the Turnagain Nickel-Cobalt Project located in British Columbia, Canada. Turnagain is owned by Hard Creek Nickel Corp, a joint venture owned by Giga Metals (85%) and Mitsubishi Corporation (15%). All currencies are in US\$.

- **Large Long-life Mine:** Annual production averaging 37,288 t/y Ni+Co in concentrate over the nominal full operating rate period (Y3 – 28) based on a 30-year project life with an extremely low strip ratio of 0.4 tonnes waste per tonne ore
- **Positive Economics:** Pre-tax IRR and NPV of 11.1% and \$717M (7% discount rate) and post-tax IRR and NPV of 11.4% and \$574M at a long-term nickel price of \$9.75/lb, with 78% payability for nickel in concentrate
- **High-grade Concentrate:** Nickel concentrate averaging 18% Ni and 1.1% Co with low impurities
- **Low-carbon Operation:** Scope 1+2 carbon intensity of <1.8 tonnes of CO<sub>2</sub> per tonne of Ni in concentrate
- **Site Operating Costs:** \$3.85/lb Ni in concentrate before byproduct credits at mine gate (Y3 – 28 operating period)

**For more details, please join CEO Mark Jarvis for a live corporate update on Sept 22 at 11 AM ET / 8 AM PT. [CLICK HERE TO REGISTER](#)**

“This PFS is a significant step forward for our project which will allow us to advance discussions with potential strategic investors,” said Mark Jarvis, CEO of Giga Metals Corp. “The success of the extensive geometallurgical studies conducted by Blue Coast Research gives confidence in the metallurgical response of the entire deposit. This engineering study shows that the Turnagain Project has a low-risk flow sheet that will consistently and predictably deliver a high-grade, high-quality concentrate similar to concentrates successfully treated by nickel processing companies for decades.”

“We are very pleased to see the positive Pre-Feasibility Study,” said Kota Ikenishi, General Manager of the Battery Minerals Office, Mitsubishi Corporation. “We see a nickel project like Turnagain with low carbon intensity in a stable jurisdiction has a key role to play in the future of the nickel industry, in particular for the battery industry. We look forward to Turnagain’s potential to be further verified in works ahead.”

The Pre-Feasibility Study builds on significant metallurgical and engineering studies and confirms the ability of Turnagain to produce high-quality nickel concentrate. Nickel concentrate is expected to be in greater demand for production of nickel products such as mixed hydroxide precipitate (“MHP”), mixed sulphide precipitate (“MSP”), high nickel content smelter matte or other forms of Class I products. MHP and Class I nickel demand is growing for the electric vehicle (EV) market, particularly materials sourced in a socially and environmentally responsible manner.

The PFS has been led and prepared by Tetra Tech Canada Inc. (Tetra Tech), a global consulting and engineering firm with substantial expertise in the mining sector, along with input from industry expert consultants (see Qualified Persons list at end). Giga Metals’ primary driver for this update was to deliver a reliable and comprehensive PFS incorporating all project-related components for discussion with potential strategic partners and communities, targeting improvement opportunities, and serving as a basis for future engineering and environmental studies. All currencies are in US\$ using an exchange rate of US\$1.00 = C\$1.30 and all production and cost data are typical full operating year (average of years 3 - 28) unless otherwise indicated.

Giga Metals expects to file the Technical Report for the PFS prepared in accordance with the requirements of National Instrument 43-101 on SEDAR+ within 45 days of this news release, including a description of the updated Mineral Resource Estimate and the Mineral Reserve Estimate. For readers to fully understand the information in this news release, they should read the Technical Report in its entirety, including all qualifications, assumptions and exclusions that relate to the PFS. The Technical Report is intended to be read as a whole, and sections should not be read or relied upon out of context.

### **Summary**

The PFS demonstrates a long-life, large-scale project that will deliver high-grade nickel sulphide concentrate with no significant deleterious impurities, into commercially proven processes such as pyrometallurgical smelters or hydrometallurgical refining using pressure oxidation facilities. The project has notable responsible mining characteristics beyond the low-carbon production including the following.

- Sequestration of CO<sub>2</sub> through naturally occurring mineral carbonation, transforming the Tailings Management Facility (TMF) into a permanent carbon mineralization facility
- Safe and efficient tailings storage using centreline and downstream tailings dams in sub-aerial valley impoundment
- Near-neutral water balance
- Located in a well-regulated and experienced mining jurisdiction that has adopted First Nations' rights to achieve informed consent during the permitting process

The key production and cost outcomes of the PFS are provided in the table below. Typical values are annual or weight-averaged by processing plant feed or nickel production, as appropriate. Site operating costs include all direct operating costs and G&A. Net operating costs are inclusive of transport to the destination port (assumed Asia) and net payment for contained cobalt and platinum-group elements byproducts after typical deductions and charges. Sustaining capital costs include ongoing TMF development, mining equipment, plant and infrastructure capital equipment replacement, and closure-related costs, net of salvage value.

	Typical Annual (Y3-28 Average)	Life-of-Mine (LOM)
Ore Processed (Mt)	32.85	931.2
Nickel Grade (%)	0.207	0.205
Nickel Recovery (%)	51.8	51.4
Nickel Production (t in concentrate)	35,224	982,471
Cobalt Production (t in concentrate)	2,064	57,954
Site Operating Cost (\$M)	\$298.7	\$8,415
(\$/t ore)	\$9.09	\$9.04
(\$/lb Ni in concentrate)	\$3.85	\$3.89
<b>Net Operating Cost (\$/lb Ni in concentrate)</b>	<b>\$3.63</b>	<b>\$3.66</b>
<b>C1 Operating Cost (\$/lb payable Ni)</b>	<b>\$4.65</b>	<b>\$4.70</b>
Capital Cost (construction, \$M)	---	\$1,893
Sustaining Capital (\$M) including closure	---	\$1,643

At projected long-term metals prices of \$21,500/t Ni (\$9.75/lb) and \$58,500/t Co (\$26.54/lb) and smelter terms of 78% and 50% payment, respectively, Turnagain is expected to have a pre-tax IRR and NPV of 11.1% and \$717M, and a post-tax IRR and NPV of 11.4% and \$574M, respectively. The three price cases below are 7%, 19%, and 32% below the 20-year inflation-adjusted average price of \$26,700/t Ni, respectively. No price consideration related to environmental, social and governance (ESG) metrics or ally-shoring aspects have been applied. Other sensitivity parameters have a smaller effect.

Sensitivity Analysis	High Price Case* +(15%)	Base Case	Low Price Case* -(15%)
Nickel Price (\$/t)	\$24,725/t	\$21,500/t	\$18,275/t
	\$11.22/lb	\$9.75/lb	\$8.29/lb
IRR (pre-tax)	15.2%	11.1%	6.2%
IRR (post-tax)	14.9%	11.4%	7.2%
NPV (\$M, pre-tax)**	\$1,552	\$717	-\$117
NPV (\$M, post-tax)**	\$1,112	\$574	\$21

\* nickel price variation only      \*\* at 7% discount rate

Note: The post-tax IRR is higher than the pre-tax value in some cases due to the impact of the Canadian refundable Clean Technology Manufacturing Investment Tax Credit.

## **PFS Major Components**

### **Geology and Mineralogy**

The Turnagain Project is hosted in the Turnagain ultramafic complex, with predominantly dunite-serpentinite-wehrlite mineralization. Showings of semi-massive and massive sulphides have been identified by work to date. These semi-massive and massive zones, plus broad zones of disseminated sulphides, are generally hosted by dunite and wehrlite near the southern and eastern margins of the ultramafic body. Primary sulphide minerals consist of pyrrhotite and pentlandite with minor chalcopyrite. Interstitial and blebby sulphides, with grain sizes ranging from 1 to 4 mm, are evident in widespread disseminated zones seen in drill cores.

### **Mineral Resource Estimate**

The mineral resource released in October 2022 has been updated through revised modeling. The PFS mineral resource is shown below. This resource estimate includes the potentially mineable Horsetrail-Northwest-Duffy and Hatzl zones (north and south of Turnagain River, respectively) and excludes the resources located under the Turnagain River and within an assumed ecological offset boundary. Approximately 95% of the Measured and Indicated Resources lie in the Horsetrail-Northwest-Duffy zones north of the Turnagain River that are the focus of the current mine plan.

**Turnagain Nickel-Cobalt Project Mineral Resource Summary<sup>1,2,3,4,5</sup>**

<b>Classification</b>	<b>Tonnage (Mt)</b>	<b>Ni Grade (%)</b>	<b>Co Grade (%)</b>	<b>Pd Grade (gpt)</b>	<b>Pt Grade (gpt)</b>	<b>Contained Ni (kt)</b>
Measured	454.6	0.215	0.014	0.023	0.022	1,020
Indicated	1,119.4	0.207	0.013	0.019	0.021	2,360
<b>Measured &amp; Indicated</b>	<b>1,573.9</b>	<b>0.210</b>	<b>0.013</b>	<b>0.020</b>	<b>0.022</b>	<b>3,381</b>
<b>Inferred</b>	<b>1,163.8</b>	<b>0.206</b>	<b>0.012</b>	<b>0.016</b>	<b>0.018</b>	<b>2,405</b>

1. All mineral resources have been estimated in accordance with Canadian Institute of Mining and Metallurgy and Petroleum definitions, as required under National Instrument 43-101.
2. Mineral resources are reported in relation to a conceptual pit shell in order to demonstrate reasonable expectation of eventual economic extraction, as required under NI 43-101; mineralisation lying outside of these pit shells is not reported as a mineral resource. Mineral resources are not mineral reserves & do not have demonstrated economic viability.
3. Open pit mineral resources are reported at a cut-off grade of 0.1% Ni. Cut-off grades are based on a nickel price of \$9.00 per pound, nickel recoveries of 60%, mineralized material and waste mining costs of \$2.80, along with milling, processing and G&A costs of \$7.20.
4. Inferred mineral resources are considered too speculative geologically to have economic considerations applied to them that would enable them to be categorised as mineral reserves. However, it is reasonably expected that the majority of inferred mineral resources could be upgraded to indicated.
5. Due to rounding, numbers presented may not add up precisely to the totals provided and percentages may not precisely reflect absolute figures.

The mineral resources are contained in a large, contiguous, near-surface deposit amenable to large-scale open-pit mining techniques. This mineral resource is based on 254 Turnagain area drill holes completed from 2002 through 2021 including both resource and geotechnical drill holes in the ultramafic intrusive.

## Mineral Reserves

Mineral reserves have been determined by Tetra Tech based on development of optimized pits following geotechnical guidance from BGC Engineering. Pit optimization was done using the Lerchs-Grossman optimizer in Datamine™, with PFS metallurgical recovery algorithms and mining, process, G&A, and concentrate shipping and marketing costs. A sustaining capital allowance was added to ensure that the optimized pit respected the cash flow considerations of regular mining equipment replacement and tailings management construction. An offset was applied to the Turnagain River boundary considering modelled flood scenarios for both environmental preservation and infrastructure integrity.

The ultimate pit was developed from optimization of the net present value for nested cone shells respecting the physical and economic constraints including consideration of pit road widths and angles for the recommended mining equipment.

Internal dilution to the large, disseminated ore body is modeled into the block model. Additional dilution and losses have been considered as a 2-metre loss of ore and 2-metre inclusion of waste at the ore-waste interfaces. An additional 1% mining loss was included to account for ore unmined, spilled, and improperly delivered to waste.

The Proven and Probable Mineral Reserves are given below. The mineral resources in the Hatzl zone have not been included in the mine plan and Reserves.

**Turnagain Nickel-Cobalt Project Mineral Reserve Summary<sup>1,2,3,4,5,6</sup>**

Classification	Tonnage (Mt)	Ni Grade (%)	Co Grade (%)	Pd Grade (gpt)	Pt Grade (gpt)	Contained Ni (kt)
Proven	408.1	0.219	0.013	0.024	0.022	894
Probable	542.4	0.194	0.012	0.020	0.022	1,055
<b>Total</b>	<b>950.5</b>	<b>0.205</b>	<b>0.013</b>	<b>0.022</b>	<b>0.022</b>	<b>1,949</b>

### Notes:

- The Mineral Reserve estimates were prepared with reference to the 2014 Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards (2014 CIM Definition Standards) and the 2019 CIM Best Practice Guidelines.*
- Reserves estimated assuming open pit mining methods.*
- Reserves are reported on a dry in-situ basis.*
- Reserves are based on a nickel price of US \$21,500/t, cobalt price of US \$58,500/t, ore mining cost of \$2.24/t mined, waste mining cost \$2.41/t mined, mining sustaining capital of \$0.57/t mined, milling costs of \$5.35/t ore feed to process plant, TMF sustaining capital of \$0.70/t ore feed, and G&A cost of \$0.76/t ore feed.*
- Mineral Reserves are mined tonnes and grade including consideration for a 2-m dilution width between ore-waste contact and 1% mining losses.*
- Ore-waste cut-off was based on \$6.63/t of NSR.*

## Metallurgy

Numerous phases of testing have been conducted on Turnagain samples over the past two decades. Since 2011, work has focused on the production of high-grade nickel sulphide concentrates. More recent work has been conducted on samples from throughout the Horsetrail and Northwest zones which are the focus of the current mine plan. A significant geometallurgical testwork campaign was concluded in 2023, featuring 70 samples of different

lithologies, grades, and locations comprising materials representing waste through a range of ore qualities.

### Comminution

Samples from the Turnagain deposit have undergone extensive small-scale comminution testing including crushing, semi-autogenous grinding (SAG), high-pressure grinding roll (HPGR) piston press testing, milling (Bond ball and rod), and abrasion index testing. Turnagain samples have also been processed successfully through a pilot-scale HPGR unit at the NBK Institute of Mining Engineering, University of British Columbia, Vancouver, BC. Turnagain ore is hard and resistant to SAG milling but is amenable to HPGR crushing making this an attractive comminution technology for the project. The HPGR pilot plant testing showed good results at low operating pressure and power consumption with negligible dust generation.

### Mineralogy

The host rock is comprised primarily of serpentine, olivine, and clinopyroxene. The full geometallurgical sampling campaign showed average values of 53% serpentine, 30% olivine, and 2.2% pyroxenes. Ratios of serpentine to olivine vary across the deposit, with the total of the two dominant minerals typically 80-90%. Talc was essentially absent from about 95% of the samples analyzed, with the median content <0.1%.

Nickel occurs in both sulphide and non-sulphide form, with an average 67% of the nickel in the sulphide form. The fraction of nickel in the sulphide form as well as the grain size and degree of liberation is related to the sulphur content of the host rocks at lower sulphur levels, above which the relationships are weak. More than 99% of the sulphide nickel is hosted in nickel sulphide minerals (pentlandite, finely disseminated nickel sulphides, millerite, and heazlewoodite), with pyrrhotite hosting less than 1% of the nickel. The variability in nickel department between sulphide and non-sulphide forms is the primary driver behind nickel recovery to concentrate.

### Mineral Recovery

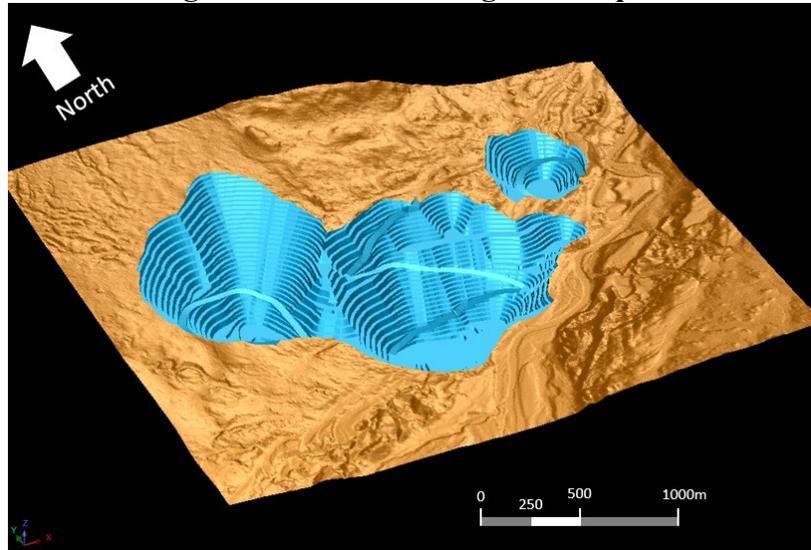
The Turnagain ore is amenable to simple froth flotation, generally yielding high recoveries of the liberated sulphide minerals to high-grade concentrates. The flotation flowsheet adopted for this study includes grinding to 80% passing 80 µm followed by rougher, cleaner, and cleaner-scavenger flotation. Reagents are simple and conventional for nickel flotation, including a collector, dispersant, and frother. Flotation is conducted at natural pH, avoiding the use of pH-control chemicals in the flotation circuit. High selectivity has been achieved between pentlandite and pyrrhotite, and combined with high gangue rejection, high-grade nickel concentrates are consistently achieved.

The geometallurgical program completed for the PFS has provided significant de-risking by developing more precise recovery algorithms for the Turnagain minerals. Flotation recovery from all samples has been well correlated with the ratio of measured sulphide nickel to total nickel. The ability of a single algorithm to predict recovery with high accuracy is a significant achievement for the project.

## Mining

The Turnagain open-pit deposit will be developed using large haul trucks (227 t capacity), loaders, and electric shovels to minimize unit costs. Proven trolley-assist technology and autonomous haulage technology have been selected for reduced total costs and environmental footprint. The mining operations are scheduled for a 28-year mine production period to support a 30-year processing plant operating period, and include the Horsetrail, Northwest, and Duffy mineralized areas (collectively, the Horsetrail zone). The orebody is mined as a single main pit with five pushback phases through the life of mine and a small satellite pit for the Duffy zone. Overall main pit dimensions are approximately 2 km x 1.5 km.

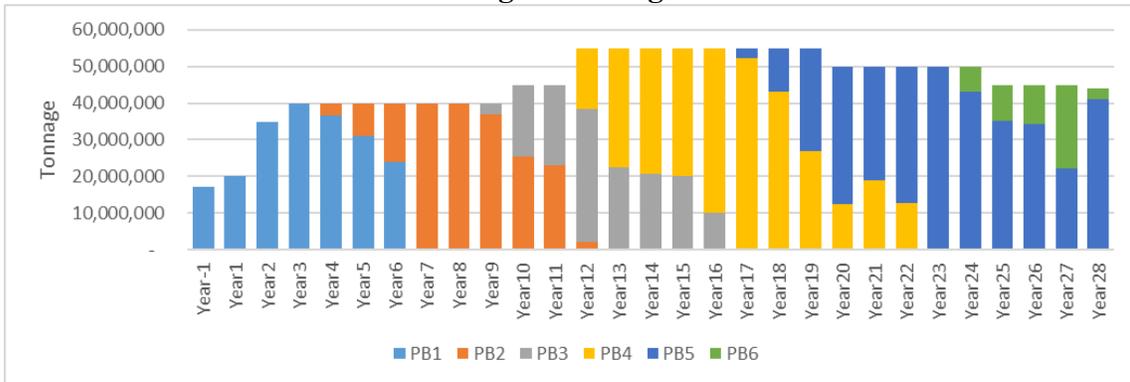
**Turnagain Ultimate Pit Design – Oblique View**



Source: Tetra Tech

The mine plan will deliver an annual processing plant feed rate of 32.85 Mt/y (90 kt/d) after the installation of the second processing train in Year 1. The resource will be selectively mined with low-grade materials placed on a low-grade ore stockpile (LGS) for later recovery. The maximum low-grade ore stockpile size has been reduced by 82% from the 2020 Preliminary Economic Assessment to 34 Mt, which represents an approach that accounts for regulatory expectations to minimize stockpiling as well as practical mining operations. The rate of mining (total material) by pushback is shown in the figure below.

## Turnagain Mining Plan



Source: Tetra Tech

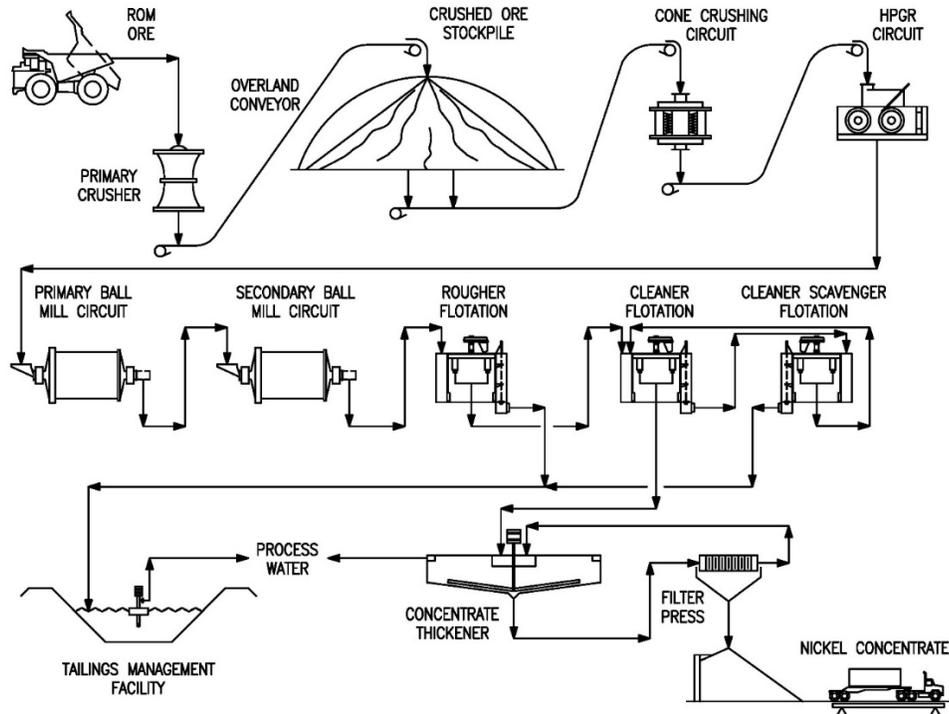
The Turnagain deposit has a very low strip ratio, averaging 0.23 over the first 10 years of mine life and 0.41 life-of-mine. This includes 53 Mt of Inferred Resources which are classified as waste. This low strip ratio reduces mine size, operating and capital costs, and associated environmental impacts. Waste rock and low-grade stockpile ore will be placed in dedicated facilities located near the mine.

### Processing

Processing of Turnagain ore is conventional. The processing plant (see simplified process flow diagram below) will consist of the following.

- A primary crusher followed by two trains of closed-circuit secondary crushing and HPGRs.
- Two grinding trains, each comprising two closed-circuit ball mills in series.
- Two rougher flotation trains, each comprising two banks of rougher cells.
- Two trains of three-stage cleaning circuits plus cleaner-scavenger flotation.
- Concentrate thickening and 2 trains of pressure filtration.
- Associated utility and reagent systems.

## Simplified Processing Flowsheet



Source: Tetra Tech

The processing plant will be installed in slightly offset stages to maximize the efficiency of construction and commissioning. The second processing train will be installed and commissioned parallel to the first train in the first full year of operations. The primary crusher is located adjacent to the mine to reduce haul distances and the crushed ore is conveyed to the processing facility located across the Turnagain River and above the TMF. This allows for energy-efficient conveying of crushed ore and eliminates high-pressure pumping of slurries. All equipment selected is commercial-scale industry-standard, including mechanical flotation cells.

Turnagain concentrate is expected to be high grade, averaging 18% nickel and 1.1% cobalt, with low levels of deleterious impurities. Iron, sulphur, and magnesium are expected to be within typical ranges for smelter operation, with nominally 30-35% iron, 20-25% sulphur, and 4-6% magnesium.

### Infrastructure

#### On-site

The site will include all necessary infrastructure for operation of the facility, including a camp for workers (rotational basis); administration, lab, fuel distribution, and maintenance facilities; and waste management facilities. Worker transport is planned as charter flights with bus transport from the Dease Lake airport.

### Off-site

Primary off-site infrastructure requirements are an access road upgrade and a hydroelectric transmission line to connect the mine to the existing BC Hydro grid.

The PFS has allowed for substantial upgrades to the existing Boulder access trail providing an approximate 78 km approach from Highway 37 near Dease Lake to the project site, including three clear-span bridges. This access route is shared with other potential projects, minimizing impacts if multiple projects in the area proceed.

The PFS has also allowed for a project-funded 160 km extension of the existing 287 kV Northwest Transmission Line to the project site. This will deliver clean low-carbon electricity to the project, allowing the production of nickel in concentrate with a very low carbon footprint. The extended power line could provide further community and economic development opportunities in the mineral-rich northwest region of British Columbia.

No allowance has been taken in the capital estimate for external funding of the off-site infrastructure.

### **Tailings Management**

Tailings management options were reviewed by Tetra Tech in a prior study using multiple accounts methods. Slurry deposition in an engineered TMF in the Flat Creek Valley was recommended as the design case due to the good balance of ecosystem disturbance, life-of-mine water balance, and storage efficiency to safely store tailings for the proposed life of mine (and additional resources, if required).

The main tailings dam construction is planned with a downstream construction starter dam and centreline raises. The smaller saddle dam at the south end of the valley is planned utilizing the downstream construction method. Construction is costed using purposely-quarried material to ensure that dam construction is not negatively impacted by the sequencing of construction and mining operations.

Tailings will gravity-flow to the TMF in slurry pipelines, reducing overall power consumption. The tailings material will be deposited in a planned manner to maximize dam stability and maintain a process water pond farther away from the dam structure, from which return water will be pumped to the processing plant. This will reduce the water table and improve the TMF physical stability. The TMF will largely operate as a sub-aerial facility, maintaining a suitable process water pond for uninterrupted operations.

### **Social and Environment**

The Turnagain project is located in the traditional territories of the Tahltan and Kaska Dena, just east of the western boundary of Treaty 8. Giga Metals has established positive engagements with the Tahltan and Kaska Dena Nations and will continue respectful and ongoing engagements. British Columbia and Canada have enacted legislation to implement the United Nations Declaration on the Rights of Indigenous People (UNDRIP).

Canada has robust environmental permitting processes, including assessment of environmental and social impacts. The project is expected to be subject to both provincial and federal reviews of an environmental impact assessment (EIA), which should be conducted in one review process through a substitution agreement between the provincial and federal agencies. This process will involve consultations with the public and First Nations, as well as detailed studies of baseline environmental settings and an assessment of potential project impacts. Baseline environmental studies to support the EIA process were initiated in 2004 and are ongoing.

Geochemistry studies show low to moderate acid generating potential in the waste, low-grade stockpile ore, and tailings. Short-term leaching tests have been conducted on a variety of ore and waste rock types. Only pyroxenite rock types – expected to be a minor component of the waste and low-grade stockpiles - have been provisionally classified as PAG (potentially acid generating), with most mineralized material provisionally classified as non-PAG. Short-term leaching tests of “run-of-mine” and “high-sulphur” tailings samples resulted in pH within guidelines and few exceedances of surface water quality guidelines. Further testing of a variety of materials will be required in the next stage of work.

Water runoff from the stockpile, seepage from the TMF, and pit water will be collected for re-use or treated for release, as appropriate. Water intercepts will be used above the TMF, stockpile, and pit to collect precipitation and either divert it into the facility for plant water balance purposes or divert it around the operational area for return to the environment. Sewage and domestic waste will be treated in on-site facilities.

### **Greenhouse Gas (GHG) Emissions**

The Turnagain project will have very low carbon emissions while producing nickel in concentrate for conversion to electric vehicle (EV) batteries or Class 1 nickel through existing or new processing techniques. EV manufacturers have expressed keen interest in clean, responsibly sourced battery metals. Tetra Tech has designed the project to minimize GHG emissions, using trolley-assist haul trucks and autonomous operation to reduce GHG emissions. The project is estimated to produce nickel in concentrate with a GHG footprint (Scope 1 and Scope 2) of <1.8 t/t Ni. Future mining equipment developments, such as battery-electric or fuel-cell powered vehicles which are already in testing phases, offer the potential to further reduce Scope 1 and 2 GHG emissions. The measures already taken are consistent with future deep decarbonization efforts.

The sub-aerial TMF will expose the ground tailings material to the air. Ultramafic tailings are known to be reactive with carbon dioxide in the atmosphere, transforming magnesium hydroxide and silicate minerals into carbon-bearing minerals, permanently sequestering carbon dioxide. This process also has the potential to strengthen the deposited tailings as it occurs by inter-particle bridging. Giga Metals has sponsored research into the carbonation behaviour of Turnagain ores with Dr Greg Dipple at the University of British Columbia to demonstrate the carbonation and develop methods of improving and quantifying sequestration. No credit for carbon sequestration has been assumed.

Optimization of mine-site emissions coupled with enhancements to mineral carbonation could allow Turnagain to be a carbon-neutral mine.

## **Marketing and Revenues**

Product pricing information is based on a combination of public data and a market study completed for Giga Metals by Benchmark Minerals Intelligence Ltd (“Benchmark”). Benchmark forecasts a significant increase in nickel demand over the coming decades, with 1 Mt/y of increased nickel demand for stainless steel and 3.3 Mt/y of increased demand for battery applications by 2040. The compound annual growth rate for batteries of 13% is expected to have battery applications consuming 49% of total nickel demand by 2040 within a total market growth of 4.6 Mt/y to a 7.6 Mt/y total nickel market. This growth requires approximately 120 new nickel projects of 38 kt/y capacity by 2040, before accounting for declines in existing operations. The expected long-term price for nickel is \$21,500/t (LME Class I basis), well below the 20-yr inflation-adjusted average price of \$26,700/t Ni.

Cobalt demand is expected to rise similarly to nickel, for use in batteries and other energy transition applications as well as in more traditional uses such as super alloys. Benchmark forecasts a long-term cobalt metal price of \$58,577/t, slightly below the 20-yr inflation-adjusted price of \$60,000/t.

Benchmark conducted a review of smelter terms and recommended nickel payables at 78%, with cobalt payables in the range of 40-60%. No benefit has been assumed for the high grade of Turnagain nickel concentrate; at 18% nickel, the concentrate is higher-grade than other commercial nickel concentrates<sup>1</sup>. Turnagain concentrate at 1.1% cobalt may achieve payability in the upper part of the identified range, but the financial analysis uses the midpoint.

The Turnagain concentrate has relatively low payability for platinum and palladium. The concentrate also has low copper levels for which no credit has been assumed. A smelter MgO penalty framework has been applied to the financial model to account for the expected MgO level of Turnagain concentrates.

Although North American-based nickel and cobalt with high ESG characteristics (particularly low GHG footprint) is expected to be in high demand for the domestic North American battery industry, no premium has been assumed for the location and ESG profile of the project.

## **Operating Cost**

The operating cost estimate for the project has been developed by Tetra Tech based on the engineering design and metallurgical testing. The site operating cost estimate is shown below, in \$/t ore feed to the processing plant with the final values converted to \$/lb nickel production. Concentrate shipping (\$189/wmt concentrate CIF Asia) and concentrate marketing costs are added and byproduct credits are subtracted to develop the net operating cost. Delivery to treatment facilities in North America is also viable with a rail terminal <100 km further than the assumed port.

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<sup>1</sup> Crundwell et al; Extractive Metallurgy of Nickel, Cobalt, and Platinum-Group Metals, Chapter 15; Elsevier; 2011

<b>Operating Cost Summary</b>	<b>Units</b>	<b>Typical Annual (Y3-28 Average)</b>
Mining	\$/t plant feed	3.02
Processing	\$/t plant feed	5.29
Site G&A and Infrastructure	\$/t plant feed	0.78
<b>Site operating cost</b>	\$/t plant feed	<b>9.09</b>
<b>Site operating cost</b>	<b>\$/lb Ni in concentrate</b>	<b>3.85</b>
Concentrate shipping and marketing costs	\$/lb Ni in concentrate	0.61
Byproduct credits/penalties	\$/lb Ni in concentrate	-0.83
<b>Net operating cost</b>	\$/lb Ni in concentrate	<b>3.63</b>
<b>Net operating cost (C1)</b>	\$/lb payable Ni	<b>4.65</b>

### **Capital Cost**

The capital cost estimate for the project has been developed by Tetra Tech based on the engineering design completed internally and with specialized input from Kerr Wood Leidal (power transmission line design). The cost estimate is shown below. The cost estimate is Class 4, with an expected accuracy of +25%/-25%.

Sustaining capital for the project, including ongoing TMF construction (dam lifts), mining equipment, processing plant and infrastructure, and closure costs are shown following the construction capital. Spread over the 30 operational years, the annual sustaining capital costs are expected to average less than \$60M per year.

<b>Construction Capital</b>	<b>Cost, \$M</b>
Site Preparation and Site Roads	30
Mining	132
Processing Plant	623
Tailings and Water Management	177
On-site Infrastructure	123
Off-site Infrastructure	179
<b>Total Direct Costs</b>	<b>1,265</b>
Indirects	374
Contingency	177
Owner's Cost	39
<b>Total Construction Capital</b>	<b>1,855</b>
Capitalized Pre-production Stripping	38
<b>Total Initial Capital</b>	<b>1,893</b>

<b>Sustaining Capital</b>	<b>LOM Cost, \$M</b>
Mining	666
Tailings Management Facility	617
On-site Infrastructure	55
<b>Total Sustaining Capital Direct Costs</b>	<b>1,338</b>
Indirects	61
Contingency	165
Closure and Reclamation Bonding	78
<b>Total Sustaining Capital</b>	<b>1,643</b>

### **Qualified Persons**

The PFS contributors below prepared or supervised the preparation of information that forms the basis of the PFS disclosure in this news release.

Lyle Trytten, P.Eng., Manager of Development for Giga Metals Corp, is a qualified person as defined by NI 43-101. Mr. Trytten has reviewed and approved the technical content of this news release.

The following persons are responsible for specific inputs into the PFS:

- **Garth Kirkham, P.Geo., Kirkham Geosystems Ltd.:** geological modelling, mineral resource estimates
- **Maurie Marks, P.Eng., Tetra Tech Canada Inc.:** mining methods, mineral reserve estimates, mining capital and operating cost estimates
- **Ian Stillwell, P.Eng., BGC Engineering:** mine and stockpile geotechnical design
- **Matthew Cleary, P.Geo., BGC Engineering:** hydrogeology
- **Chris Martin, C.Eng., Sacanus Holdings Ltd:** metallurgical testing, process design
- **Jianhui (John) Huang, P.Eng., Tetra Tech Canada Inc.:** recovery methods, process-site services-G&A operating costs, and economic analysis
- **David Moschini, P.Eng., Tetra Tech Canada Inc.:** site water management

- **Bereket Fisseha, P.Eng., Tetra Tech Canada Inc.:** tailings management
- **Ron Monk, M.Eng., P.Eng., Kerr Wood Leidal Associates Ltd:** power supply design
- **Hassan Ghaffari, P.Eng., Tetra Tech Canada Inc:** other project infrastructure, overall capital cost estimates, marketing study, and environment

### **5.1 Full Description of Material Change**

The material change is fully described in Item 5 above and in the attached News Release which has been filed on Sedarplus.ca.

**5.2 Disclosure for Restructuring Transactions** Not Applicable.

**Item 6. Reliance on subsection 7.1(2) or (3) of National Instrument 51-102**

Not Applicable.

**Item 7. Omitted Information**

Not Applicable.

**Item 8. Executive Officer**

Leslie Young (Tel – 604 681 2300)



September 22, 2023

TSX.V – GIGA / OTCQX – GIGGF / FSE – BRR2

## Giga Metals Announces Positive Pre-Feasibility Study for the Turnagain Nickel-Cobalt Deposit

Vancouver, B.C. – Giga Metals Corp. (TSX.V: GIGA) ("Giga Metals" or the "Company") today announced the results of a Pre-Feasibility Study (PFS) prepared in accordance with National Instrument 43-101 for the Turnagain Nickel-Cobalt Project located in British Columbia, Canada. Turnagain is owned by Hard Creek Nickel Corp, a joint venture owned by Giga Metals (85%) and Mitsubishi Corporation (15%). All currencies are in US\$.

- **Large Long-life Mine:** Annual production averaging 37,288 t/y Ni+Co in concentrate over the nominal full operating rate period (Y3 – 28) based on a 30-year project life with an extremely low strip ratio of 0.4 tonnes waste per tonne ore
- **Positive Economics:** Pre-tax IRR and NPV of 11.1% and \$717M (7% discount rate) and post-tax IRR and NPV of 11.4% and \$574M at a long-term nickel price of \$9.75/lb, with 78% payability for nickel in concentrate
- **High-grade Concentrate:** Nickel concentrate averaging 18% Ni and 1.1% Co with low impurities
- **Low-carbon Operation:** Scope 1+2 carbon intensity of <1.8 tonnes of CO<sub>2</sub> per tonne of Ni in concentrate
- **Site Operating Costs:** \$3.85/lb Ni in concentrate before byproduct credits at mine gate (Y3 – 28 operating period)

For more details, please join CEO Mark Jarvis for a live corporate update on Sept 22 at 11 AM ET / 8 AM PT. [CLICK HERE TO REGISTER](#)

“This PFS is a significant step forward for our project which will allow us to advance discussions with potential strategic investors,” said Mark Jarvis, CEO of Giga Metals Corp. “The success of the extensive geometallurgical studies conducted by Blue Coast Research gives confidence in the metallurgical response of the entire deposit. This engineering study shows that the Turnagain Project has a low-risk flow sheet that will consistently and predictably deliver a high-grade, high-quality concentrate similar to concentrates successfully treated by nickel processing companies for decades.”

“We are very pleased to see the positive Pre-Feasibility Study,” said Kota Ikenishi, General Manager of the Battery Minerals Office, Mitsubishi Corporation. “We see a nickel project like Turnagain with low carbon intensity in a stable jurisdiction has a key role to play in the future

of the nickel industry, in particular for the battery industry. We look forward to Turnagain's potential to be further verified in works ahead.”

The Pre-Feasibility Study builds on significant metallurgical and engineering studies and confirms the ability of Turnagain to produce high-quality nickel concentrate. Nickel concentrate is expected to be in greater demand for production of nickel products such as mixed hydroxide precipitate (“MHP”), mixed sulphide precipitate (“MSP”), high nickel content smelter matte or other forms of Class I products. MHP and Class I nickel demand is growing for the electric vehicle (EV) market, particularly materials sourced in a socially and environmentally responsible manner.

The PFS has been led and prepared by Tetra Tech Canada Inc. (Tetra Tech), a global consulting and engineering firm with substantial expertise in the mining sector, along with input from industry expert consultants (see Qualified Persons list at end). Giga Metals' primary driver for this update was to deliver a reliable and comprehensive PFS incorporating all project-related components for discussion with potential strategic partners and communities, targeting improvement opportunities, and serving as a basis for future engineering and environmental studies. All currencies are in US\$ using an exchange rate of US\$1.00 = C\$1.30 and all production and cost data are typical full operating year (average of years 3 - 28) unless otherwise indicated.

Giga Metals expects to file the Technical Report for the PFS prepared in accordance with the requirements of National Instrument 43-101 on SEDAR+ within 45 days of this news release, including a description of the updated Mineral Resource Estimate and the Mineral Reserve Estimate. For readers to fully understand the information in this news release, they should read the Technical Report in its entirety, including all qualifications, assumptions and exclusions that relate to the PFS. The Technical Report is intended to be read as a whole, and sections should not be read or relied upon out of context.

### **Summary**

The PFS demonstrates a long-life, large-scale project that will deliver high-grade nickel sulphide concentrate with no significant deleterious impurities, into commercially proven processes such as pyrometallurgical smelters or hydrometallurgical refining using pressure oxidation facilities. The project has notable responsible mining characteristics beyond the low-carbon production including the following.

- Sequestration of CO<sub>2</sub> through naturally occurring mineral carbonation, transforming the Tailings Management Facility (TMF) into a permanent carbon mineralization facility
- Safe and efficient tailings storage using centreline and downstream tailings dams in sub-aerial valley impoundment
- Near-neutral water balance
- Located in a well-regulated and experienced mining jurisdiction that has adopted First Nations' rights to achieve informed consent during the permitting process

The key production and cost outcomes of the PFS are provided in the table below. Typical values are annual or weight-averaged by processing plant feed or nickel production, as appropriate. Site operating costs include all direct operating costs and G&A. Net operating costs

are inclusive of transport to the destination port (assumed Asia) and net payment for contained cobalt and platinum-group elements byproducts after typical deductions and charges. Sustaining capital costs include ongoing TMF development, mining equipment, plant and infrastructure capital equipment replacement, and closure-related costs, net of salvage value.

	<b>Typical Annual (Y3-28 Average)</b>	<b>Life-of-Mine (LOM)</b>
Ore Processed (Mt)	32.85	931.2
Nickel Grade (%)	0.207	0.205
Nickel Recovery (%)	51.8	51.4
Nickel Production (t in concentrate)	35,224	982,471
Cobalt Production (t in concentrate)	2,064	57,954
Site Operating Cost (\$M)	\$298.7	\$8,415
(\$/t ore)	\$9.09	\$9.04
(\$/lb Ni in concentrate)	\$3.85	\$3.89
<b>Net Operating Cost (\$/lb Ni in concentrate)</b>	<b>\$3.63</b>	<b>\$3.66</b>
<b>C1 Operating Cost (\$/lb payable Ni)</b>	<b>\$4.65</b>	<b>\$4.70</b>
Capital Cost (construction, \$M)	---	\$1,893
Sustaining Capital (\$M) including closure	---	\$1,643

At projected long-term metals prices of \$21,500/t Ni (\$9.75/lb) and \$58,500/t Co (\$26.54/lb) and smelter terms of 78% and 50% payment, respectively, Turnagain is expected to have a pre-tax IRR and NPV of 11.1% and \$717M, and a post-tax IRR and NPV of 11.4% and \$574M, respectively. The three price cases below are 7%, 19%, and 32% below the 20-year inflation-adjusted average price of \$26,700/t Ni, respectively. No price consideration related to environmental, social and governance (ESG) metrics or ally-shoring aspects have been applied. Other sensitivity parameters have a smaller effect.

Sensitivity Analysis	High Price Case* +(15%)	Base Case	Low Price Case* -(15%)
Nickel Price (\$/t)	\$24,725/t	\$21,500/t	\$18,275/t
	\$11.22/lb	\$9.75/lb	\$8.29/lb
IRR (pre-tax)	15.2%	11.1%	6.2%
IRR (post-tax)	14.9%	11.4%	7.2%
NPV (\$M, pre-tax)**	\$1,552	\$717	-\$117
NPV (\$M, post-tax)**	\$1,112	\$574	\$21

\* nickel price variation only    \*\* at 7% discount rate

Note: The post-tax IRR is higher than the pre-tax value in some cases due to the impact of the Canadian refundable Clean Technology Manufacturing Investment Tax Credit.

## **PFS Major Components**

### **Geology and Mineralogy**

The Turnagain Project is hosted in the Turnagain ultramafic complex, with predominantly dunite-serpentinite-wehrlite mineralization. Showings of semi-massive and massive sulphides have been identified by work to date. These semi-massive and massive zones, plus broad zones of disseminated sulphides, are generally hosted by dunite and wehrlite near the southern and eastern margins of the ultramafic body. Primary sulphide minerals consist of pyrrhotite and

pentlandite with minor chalcopyrite. Interstitial and blebby sulphides, with grain sizes ranging from 1 to 4 mm, are evident in widespread disseminated zones seen in drill cores.

### Mineral Resource Estimate

The mineral resource released in October 2022 has been updated through revised modeling. The PFS mineral resource is shown below. This resource estimate includes the potentially mineable Horsetrail-Northwest-Duffy and Hatzl zones (north and south of Turnagain River, respectively) and excludes the resources located under the Turnagain River and within an assumed ecological offset boundary. Approximately 95% of the Measured and Indicated Resources lie in the Horsetrail-Northwest-Duffy zones north of the Turnagain River that are the focus of the current mine plan.

**Turnagain Nickel-Cobalt Project Mineral Resource Summary<sup>1,2,3,4,5</sup>**

<b>Classification</b>	<b>Tonnage (Mt)</b>	<b>Ni Grade (%)</b>	<b>Co Grade (%)</b>	<b>Pd Grade (gpt)</b>	<b>Pt Grade (gpt)</b>	<b>Contained Ni (kt)</b>
Measured	454.6	0.215	0.014	0.023	0.022	1,020
Indicated	1,119.4	0.207	0.013	0.019	0.021	2,360
<b>Measured &amp; Indicated</b>	<b>1,573.9</b>	<b>0.210</b>	<b>0.013</b>	<b>0.020</b>	<b>0.022</b>	<b>3,381</b>
<b>Inferred</b>	<b>1,163.8</b>	<b>0.206</b>	<b>0.012</b>	<b>0.016</b>	<b>0.018</b>	<b>2,405</b>

6. *All mineral resources have been estimated in accordance with Canadian Institute of Mining and Metallurgy and Petroleum definitions, as required under National Instrument 43-101.*
7. *Mineral resources are reported in relation to a conceptual pit shell in order to demonstrate reasonable expectation of eventual economic extraction, as required under NI 43-101; mineralisation lying outside of these pit shells is not reported as a mineral resource. Mineral resources are not mineral reserves & do not have demonstrated economic viability.*
8. *Open pit mineral resources are reported at a cut-off grade of 0.1% Ni. Cut-off grades are based on a nickel price of \$9.00 per pound, nickel recoveries of 60%, mineralized material and waste mining costs of \$2.80, along with milling, processing and G&A costs of \$7.20.*
9. *Inferred mineral resources are considered too speculative geologically to have economic considerations applied to them that would enable them to be categorised as mineral reserves. However, it is reasonably expected that the majority of inferred mineral resources could be upgraded to indicated.*
10. *Due to rounding, numbers presented may not add up precisely to the totals provided and percentages may not precisely reflect absolute figures.*

The mineral resources are contained in a large, contiguous, near-surface deposit amenable to large-scale open-pit mining techniques. This mineral resource is based on 254 Turnagain area drill holes completed from 2002 through 2021 including both resource and geotechnical drill holes in the ultramafic intrusive.

### Mineral Reserves

Mineral reserves have been determined by Tetra Tech based on development of optimized pits following geotechnical guidance from BGC Engineering. Pit optimization was done using the Lerchs-Grossman optimizer in Datamine™, with PFS metallurgical recovery algorithms and mining, process, G&A, and concentrate shipping and marketing costs. A sustaining capital allowance was added to ensure that the optimized pit respected the cash flow considerations of regular mining equipment replacement and tailings management construction. An offset was applied to the Turnagain River boundary considering modelled flood scenarios for both environmental preservation and infrastructure integrity.

The ultimate pit was developed from optimization of the net present value for nested cone shells respecting the physical and economic constraints including consideration of pit road widths and angles for the recommended mining equipment.

Internal dilution to the large, disseminated ore body is modeled into the block model. Additional dilution and losses have been considered as a 2-metre loss of ore and 2-metre inclusion of waste at the ore-waste interfaces. An additional 1% mining loss was included to account for ore unmined, spilled, and improperly delivered to waste.

The Proven and Probable Mineral Reserves are given below. The mineral resources in the Hatzl zone have not been included in the mine plan and Reserves.

#### **Turnagain Nickel-Cobalt Project Mineral Reserve Summary<sup>1,2,3,4,5,6</sup>**

<b>Classification</b>	<b>Tonnage (Mt)</b>	<b>Ni Grade (%)</b>	<b>Co Grade (%)</b>	<b>Pd Grade (gpt)</b>	<b>Pt Grade (gpt)</b>	<b>Contained Ni (kt)</b>
Proven	408.1	0.219	0.013	0.024	0.022	894
Probable	542.4	0.194	0.012	0.020	0.022	1,055
<b>Total</b>	<b>950.5</b>	<b>0.205</b>	<b>0.013</b>	<b>0.022</b>	<b>0.022</b>	<b>1,949</b>

*Notes:*

7. *The Mineral Reserve estimates were prepared with reference to the 2014 Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards (2014 CIM Definition Standards) and the 2019 CIM Best Practice Guidelines.*
8. *Reserves estimated assuming open pit mining methods.*
9. *Reserves are reported on a dry in-situ basis.*
10. *Reserves are based on a nickel price of US \$21,500/t, cobalt price of US \$58,500/t, ore mining cost of \$2.24/t mined, waste mining cost \$2.41/t mined, mining sustaining capital of \$0.57/t mined, milling costs of \$5.35/t ore feed to process plant, TMF sustaining capital of \$0.70/t ore feed, and G&A cost of \$0.76/t ore feed.*
11. *Mineral Reserves are mined tonnes and grade including consideration for a 2-m dilution width between ore-waste contact and 1% mining losses.*
12. *Ore-waste cut-off was based on \$6.63/t of NSR.*

### **Metallurgy**

Numerous phases of testing have been conducted on Turnagain samples over the past two decades. Since 2011, work has focused on the production of high-grade nickel sulphide concentrates. More recent work has been conducted on samples from throughout the Horsetrail and Northwest zones which are the focus of the current mine plan. A significant geometallurgical testwork campaign was concluded in 2023, featuring 70 samples of different lithologies, grades, and locations comprising materials representing waste through a range of ore qualities.

### Comminution

Samples from the Turnagain deposit have undergone extensive small-scale comminution testing including crushing, semi-autogenous grinding (SAG), high-pressure grinding roll (HPGR) piston press testing, milling (Bond ball and rod), and abrasion index testing. Turnagain samples have also been processed successfully through a pilot-scale HPGR unit at the NBK Institute of Mining Engineering, University of British Columbia, Vancouver, BC. Turnagain ore is hard and resistant to SAG milling but is amenable to HPGR crushing making this an attractive

comminution technology for the project. The HPGR pilot plant testing showed good results at low operating pressure and power consumption with negligible dust generation.

### Mineralogy

The host rock is comprised primarily of serpentine, olivine, and clinopyroxene. The full geometallurgical sampling campaign showed average values of 53% serpentine, 30% olivine, and 2.2% pyroxenes. Ratios of serpentine to olivine vary across the deposit, with the total of the two dominant minerals typically 80-90%. Talc was essentially absent from about 95% of the samples analyzed, with the median content <0.1%.

Nickel occurs in both sulphide and non-sulphide form, with an average 67% of the nickel in the sulphide form. The fraction of nickel in the sulphide form as well as the grain size and degree of liberation is related to the sulphur content of the host rocks at lower sulphur levels, above which the relationships are weak. More than 99% of the sulphide nickel is hosted in nickel sulphide minerals (pentlandite, finely disseminated nickel sulphides, millerite, and heazlewoodite), with pyrrhotite hosting less than 1% of the nickel. The variability in nickel department between sulphide and non-sulphide forms is the primary driver behind nickel recovery to concentrate.

### Mineral Recovery

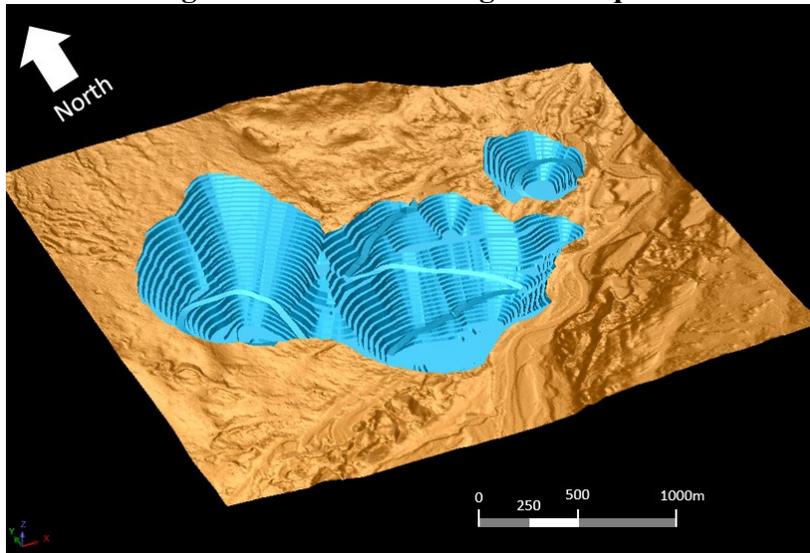
The Turnagain ore is amenable to simple froth flotation, generally yielding high recoveries of the liberated sulphide minerals to high-grade concentrates. The flotation flowsheet adopted for this study includes grinding to 80% passing 80 µm followed by rougher, cleaner, and cleaner-scavenger flotation. Reagents are simple and conventional for nickel flotation, including a collector, dispersant, and frother. Flotation is conducted at natural pH, avoiding the use of pH-control chemicals in the flotation circuit. High selectivity has been achieved between pentlandite and pyrrhotite, and combined with high gangue rejection, high-grade nickel concentrates are consistently achieved.

The geometallurgical program completed for the PFS has provided significant de-risking by developing more precise recovery algorithms for the Turnagain minerals. Flotation recovery from all samples has been well correlated with the ratio of measured sulphide nickel to total nickel. The ability of a single algorithm to predict recovery with high accuracy is a significant achievement for the project.

### **Mining**

The Turnagain open-pit deposit will be developed using large haul trucks (227 t capacity), loaders, and electric shovels to minimize unit costs. Proven trolley-assist technology and autonomous haulage technology have been selected for reduced total costs and environmental footprint. The mining operations are scheduled for a 28-year mine production period to support a 30-year processing plant operating period, and include the Horsetrail, Northwest, and Duffy mineralized areas (collectively, the Horsetrail zone). The orebody is mined as a single main pit with five pushback phases through the life of mine and a small satellite pit for the Duffy zone. Overall main pit dimensions are approximately 2 km x 1.5 km.

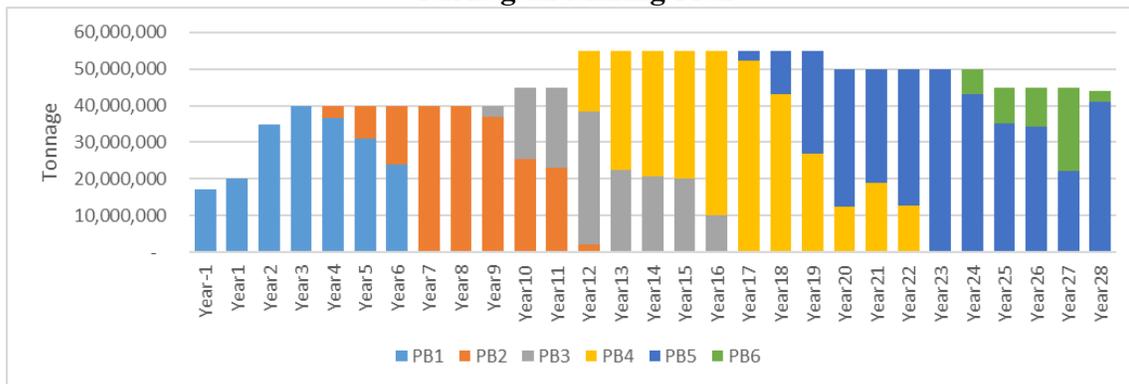
### Turnagain Ultimate Pit Design – Oblique View



Source: Tetra Tech

The mine plan will deliver an annual processing plant feed rate of 32.85 Mt/y (90 kt/d) after the installation of the second processing train in Year 1. The resource will be selectively mined with low-grade materials placed on a low-grade ore stockpile (LGS) for later recovery. The maximum low-grade ore stockpile size has been reduced by 82% from the 2020 Preliminary Economic Assessment to 34 Mt, which represents an approach that accounts for regulatory expectations to minimize stockpiling as well as practical mining operations. The rate of mining (total material) by pushback is shown in the figure below.

### Turnagain Mining Plan



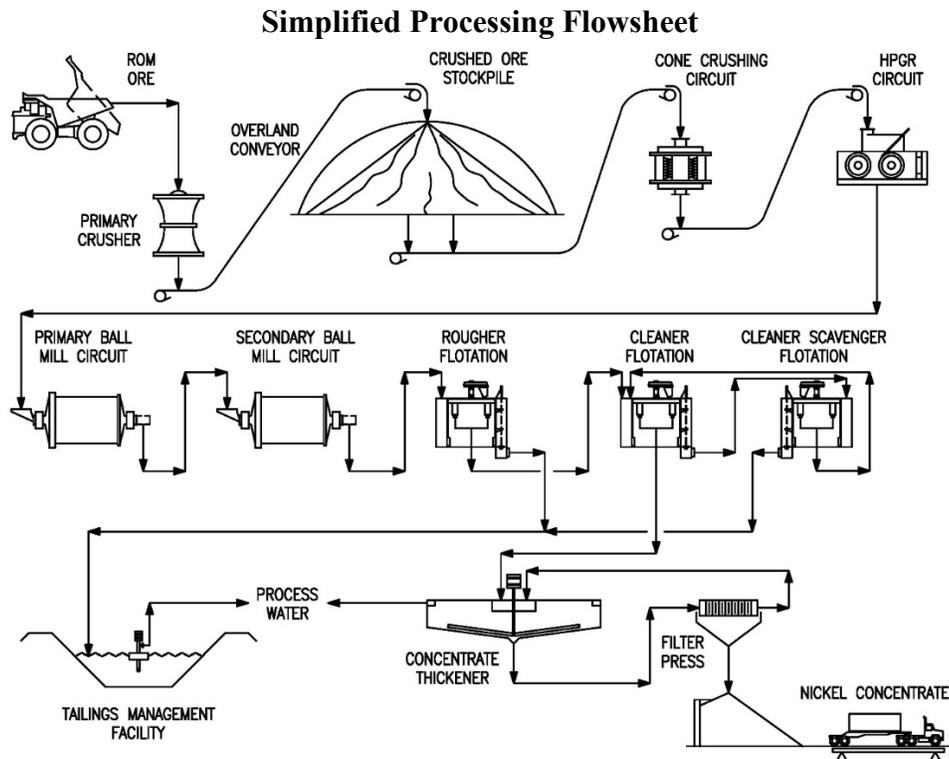
Source: Tetra Tech

The Turnagain deposit has a very low strip ratio, averaging 0.23 over the first 10 years of mine life and 0.41 life-of-mine. This includes 53 Mt of Inferred Resources which are classified as waste. This low strip ratio reduces mine size, operating and capital costs, and associated environmental impacts. Waste rock and low-grade stockpile ore will be placed in dedicated facilities located near the mine.

## Processing

Processing of Turnagain ore is conventional. The processing plant (see simplified process flow diagram below) will consist of the following.

- A primary crusher followed by two trains of closed-circuit secondary crushing and HPGRs.
- Two grinding trains, each comprising two closed-circuit ball mills in series.
- Two rougher flotation trains, each comprising two banks of rougher cells.
- Two trains of three-stage cleaning circuits plus cleaner-scavenger flotation.
- Concentrate thickening and 2 trains of pressure filtration.
- Associated utility and reagent systems.



Source: Tetra Tech

The processing plant will be installed in slightly offset stages to maximize the efficiency of construction and commissioning. The second processing train will be installed and commissioned parallel to the first train in the first full year of operations. The primary crusher is located adjacent to the mine to reduce haul distances and the crushed ore is conveyed to the processing facility located across the Turnagain River and above the TMF. This allows for energy-efficient conveying of crushed ore and eliminates high-pressure pumping of slurries. All equipment selected is commercial-scale industry-standard, including mechanical flotation cells.

Turnagain concentrate is expected to be high grade, averaging 18% nickel and 1.1% cobalt, with low levels of deleterious impurities. Iron, sulphur, and magnesium are expected to be within typical ranges for smelter operation, with nominally 30-35% iron, 20-25% sulphur, and 4-6% magnesium.

## **Infrastructure**

### On-site

The site will include all necessary infrastructure for operation of the facility, including a camp for workers (rotational basis); administration, lab, fuel distribution, and maintenance facilities; and waste management facilities. Worker transport is planned as charter flights with bus transport from the Dease Lake airport.

### Off-site

Primary off-site infrastructure requirements are an access road upgrade and a hydroelectric transmission line to connect the mine to the existing BC Hydro grid.

The PFS has allowed for substantial upgrades to the existing Boulder access trail providing an approximate 78 km approach from Highway 37 near Dease Lake to the project site, including three clear-span bridges. This access route is shared with other potential projects, minimizing impacts if multiple projects in the area proceed.

The PFS has also allowed for a project-funded 160 km extension of the existing 287 kV Northwest Transmission Line to the project site. This will deliver clean low-carbon electricity to the project, allowing the production of nickel in concentrate with a very low carbon footprint. The extended power line could provide further community and economic development opportunities in the mineral-rich northwest region of British Columbia.

No allowance has been taken in the capital estimate for external funding of the off-site infrastructure.

## **Tailings Management**

Tailings management options were reviewed by Tetra Tech in a prior study using multiple accounts methods. Slurry deposition in an engineered TMF in the Flat Creek Valley was recommended as the design case due to the good balance of ecosystem disturbance, life-of-mine water balance, and storage efficiency to safely store tailings for the proposed life of mine (and additional resources, if required).

The main tailings dam construction is planned with a downstream construction starter dam and centreline raises. The smaller saddle dam at the south end of the valley is planned utilizing the downstream construction method. Construction is costed using purposely-quarried material to ensure that dam construction is not negatively impacted by the sequencing of construction and mining operations.

Tailings will gravity-flow to the TMF in slurry pipelines, reducing overall power consumption. The tailings material will be deposited in a planned manner to maximize dam stability and maintain a process water pond farther away from the dam structure, from which return water will be pumped to the processing plant. This will reduce the water table and improve the TMF physical stability. The TMF will largely operate as a sub-aerial facility, maintaining a suitable process water pond for uninterrupted operations.

## **Social and Environment**

The Turnagain project is located in the traditional territories of the Tahltan and Kaska Dena, just east of the western boundary of Treaty 8. Giga Metals has established positive engagements with the Tahltan and Kaska Dena Nations and will continue respectful and ongoing engagements. British Columbia and Canada have enacted legislation to implement the United Nations Declaration on the Rights of Indigenous People (UNDRIP).

Canada has robust environmental permitting processes, including assessment of environmental and social impacts. The project is expected to be subject to both provincial and federal reviews of an environmental impact assessment (EIA), which should be conducted in one review process through a substitution agreement between the provincial and federal agencies. This process will involve consultations with the public and First Nations, as well as detailed studies of baseline environmental settings and an assessment of potential project impacts. Baseline environmental studies to support the EIA process were initiated in 2004 and are ongoing.

Geochemistry studies show low to moderate acid generating potential in the waste, low-grade stockpile ore, and tailings. Short-term leaching tests have been conducted on a variety of ore and waste rock types. Only pyroxenite rock types – expected to be a minor component of the waste and low-grade stockpiles - have been provisionally classified as PAG (potentially acid generating), with most mineralized material provisionally classified as non-PAG. Short-term leaching tests of “run-of-mine” and “high-sulphur” tailings samples resulted in pH within guidelines and few exceedances of surface water quality guidelines. Further testing of a variety of materials will be required in the next stage of work.

Water runoff from the stockpile, seepage from the TMF, and pit water will be collected for re-use or treated for release, as appropriate. Water intercepts will be used above the TMF, stockpile, and pit to collect precipitation and either divert it into the facility for plant water balance purposes or divert it around the operational area for return to the environment. Sewage and domestic waste will be treated in on-site facilities.

## **Greenhouse Gas (GHG) Emissions**

The Turnagain project will have very low carbon emissions while producing nickel in concentrate for conversion to electric vehicle (EV) batteries or Class 1 nickel through existing or new processing techniques. EV manufacturers have expressed keen interest in clean, responsibly sourced battery metals. Tetra Tech has designed the project to minimize GHG emissions, using trolley-assist haul trucks and autonomous operation to reduce GHG emissions. The project is estimated to produce nickel in concentrate with a GHG footprint (Scope 1 and Scope 2) of <1.8 t/t Ni. Future mining equipment developments, such as battery-electric or fuel-cell powered vehicles which are already in testing phases, offer the potential to further reduce Scope 1 and 2 GHG emissions. The measures already taken are consistent with future deep decarbonization efforts.

The sub-aerial TMF will expose the ground tailings material to the air. Ultramafic tailings are known to be reactive with carbon dioxide in the atmosphere, transforming magnesium hydroxide and silicate minerals into carbon-bearing minerals, permanently sequestering carbon dioxide. This process also has the potential to strengthen the deposited tailings as it occurs by

inter-particle bridging. Giga Metals has sponsored research into the carbonation behaviour of Turnagain ores with Dr Greg Dipple at the University of British Columbia to demonstrate the carbonation and develop methods of improving and quantifying sequestration. No credit for carbon sequestration has been assumed.

Optimization of mine-site emissions coupled with enhancements to mineral carbonation could allow Turnagain to be a carbon-neutral mine.

### **Marketing and Revenues**

Product pricing information is based on a combination of public data and a market study completed for Giga Metals by Benchmark Minerals Intelligence Ltd (“Benchmark”). Benchmark forecasts a significant increase in nickel demand over the coming decades, with 1 Mt/y of increased nickel demand for stainless steel and 3.3 Mt/y of increased demand for battery applications by 2040. The compound annual growth rate for batteries of 13% is expected to have battery applications consuming 49% of total nickel demand by 2040 within a total market growth of 4.6 Mt/y to a 7.6 Mt/y total nickel market. This growth requires approximately 120 new nickel projects of 38 kt/y capacity by 2040, before accounting for declines in existing operations. The expected long-term price for nickel is \$21,500/t (LME Class I basis), well below the 20-yr inflation-adjusted average price of \$26,700/t Ni.

Cobalt demand is expected to rise similarly to nickel, for use in batteries and other energy transition applications as well as in more traditional uses such as super alloys. Benchmark forecasts a long-term cobalt metal price of \$58,577/t, slightly below the 20-yr inflation-adjusted price of \$60,000/t.

Benchmark conducted a review of smelter terms and recommended nickel payables at 78%, with cobalt payables in the range of 40-60%. No benefit has been assumed for the high grade of Turnagain nickel concentrate; at 18% nickel, the concentrate is higher-grade than other commercial nickel concentrates<sup>2</sup>. Turnagain concentrate at 1.1% cobalt may achieve payability in the upper part of the identified range, but the financial analysis uses the midpoint.

The Turnagain concentrate has relatively low payability for platinum and palladium. The concentrate also has low copper levels for which no credit has been assumed. A smelter MgO penalty framework has been applied to the financial model to account for the expected MgO level of Turnagain concentrates.

Although North American-based nickel and cobalt with high ESG characteristics (particularly low GHG footprint) is expected to be in high demand for the domestic North American battery industry, no premium has been assumed for the location and ESG profile of the project.

### **Operating Cost**

The operating cost estimate for the project has been developed by Tetra Tech based on the engineering design and metallurgical testing. The site operating cost estimate is shown below,

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<sup>2</sup> Crundwell et al; Extractive Metallurgy of Nickel, Cobalt, and Platinum-Group Metals, Chapter 15; Elsevier; 2011

in \$/t ore feed to the processing plant with the final values converted to \$/lb nickel production. Concentrate shipping (\$189/wmt concentrate CIF Asia) and concentrate marketing costs are added and byproduct credits are subtracted to develop the net operating cost. Delivery to treatment facilities in North America is also viable with a rail terminal <100 km further than the assumed port.

<b>Operating Cost Summary</b>	<b>Units</b>	<b>Typical Annual (Y3-28 Average)</b>
Mining	\$/t plant feed	3.02
Processing	\$/t plant feed	5.29
Site G&A and Infrastructure	\$/t plant feed	0.78
<b>Site operating cost</b>	\$/t plant feed	<b>9.09</b>
<b>Site operating cost</b>	<b>\$/lb Ni in concentrate</b>	<b>3.85</b>
Concentrate shipping and marketing costs	\$/lb Ni in concentrate	0.61
Byproduct credits/penalties	\$/lb Ni in concentrate	-0.83
<b>Net operating cost</b>	\$/lb Ni in concentrate	<b>3.63</b>
<b>Net operating cost (C1)</b>	\$/lb payable Ni	<b>4.65</b>

### **Capital Cost**

The capital cost estimate for the project has been developed by Tetra Tech based on the engineering design completed internally and with specialized input from Kerr Wood Leidal (power transmission line design). The cost estimate is shown below. The cost estimate is Class 4, with an expected accuracy of +25%/-25%.

Sustaining capital for the project, including ongoing TMF construction (dam lifts), mining equipment, processing plant and infrastructure, and closure costs are shown following the construction capital. Spread over the 30 operational years, the annual sustaining capital costs are expected to average less than \$60M per year.

<b>Construction Capital</b>	<b>Cost, \$M</b>
Site Preparation and Site Roads	30
Mining	132
Processing Plant	623
Tailings and Water Management	177
On-site Infrastructure	123
Off-site Infrastructure	179
<b>Total Direct Costs</b>	<b>1,265</b>
Indirects	374
Contingency	177
Owner's Cost	39
<b>Total Construction Capital</b>	<b>1,855</b>
Capitalized Pre-production Stripping	38
<b>Total Initial Capital</b>	<b>1,893</b>

<b>Sustaining Capital</b>	<b>LOM Cost, \$M</b>
Mining	666
Tailings Management Facility	617
On-site Infrastructure	55
<b>Total Sustaining Capital Direct Costs</b>	<b>1,338</b>
Indirects	61
Contingency	165
Closure and Reclamation Bonding	78
<b>Total Sustaining Capital</b>	<b>1,643</b>

### **Qualified Persons**

The PFS contributors below prepared or supervised the preparation of information that forms the basis of the PFS disclosure in this news release.

Lyle Trytten, P.Eng., Manager of Development for Giga Metals Corp, is a qualified person as defined by NI 43-101. Mr. Trytten has reviewed and approved the technical content of this news release.

The following persons are responsible for specific inputs into the PFS:

- **Garth Kirkham, P.Geo., Kirkham Geosystems Ltd.:** geological modelling, mineral resource estimates
- **Maurie Marks, P.Eng., Tetra Tech Canada Inc.:** mining methods, mineral reserve estimates, mining capital and operating cost estimates
- **Ian Stillwell, P.Eng., BGC Engineering:** mine and stockpile geotechnical design
- **Matthew Cleary, P.Geo., BGC Engineering:** hydrogeology
- **Chris Martin, C.Eng., Sacanus Holdings Ltd:** metallurgical testing, process design
- **Jianhui (John) Huang, P.Eng., Tetra Tech Canada Inc.:** recovery methods, process-site services-G&A operating costs, and economic analysis

- **David Moschini, P.Eng., Tetra Tech Canada Inc.:** site water management
- **Bereket Fisseha, P.Eng., Tetra Tech Canada Inc.:** tailings management
- **Ron Monk, M.Eng., P.Eng., Kerr Wood Leidal Associates Ltd:** power supply design
- **Hassan Ghaffari, P.Eng., Tetra Tech Canada Inc:** other project infrastructure, overall capital cost estimates, marketing study, and environment

### **About Giga Metals Corporation**

Giga Metals Corporation's core asset is the Turnagain Project, located in northern British Columbia, which contains one of the few significant undeveloped sulphide nickel and cobalt resources in the world. Turnagain is held in Hard Creek Nickel, a subsidiary owned 85% by Giga Metals Corporation and 15% by Mitsubishi Corporation.

### **Forward looking statements**

*Certain statements in this news release are forward-looking statements, which reflect the expectations of management regarding the Turnagain Project. Forward-looking statements consist of statements that are not purely historical, including any statements regarding beliefs, plans, expectations or intentions regarding the future. Any statements that express or involve discussions with respect to predictions, expectations, beliefs, plans, projections, objectives or future events or performance (often, but not always, using words or phrases such as "seek", "anticipate", "plan", "continue", "estimate", "expect", "may", "will", "project", "predict", "forecast", "potential", "target", "intend", "could", "might", "should", "believe" and similar expressions) are not statements of historical fact and may be "forward-looking statements". Such statements in this news release include, but are not limited to, statements with respect to the future potential economic viability of the Project, the estimation of mineral resources, mineral reserves and mineral prices, steps to be taken towards commercialization of the Project, the timing and amount of estimated future production and capital, operating and exploration expenditures and include, for greater certainty, all estimates in the PFS such as the cash, flow, IRR, NPV's, initial capital and life of mine production. Such statements are subject to risks and uncertainties that may cause actual results, performance or developments to differ materially from those contained in the statements. No assurance can be given that any of the events anticipated by the forward-looking statements will occur or, if they do occur, what benefits the Company will obtain from them. These forward-looking statements reflect management's current views made in light of management's expertise and are based on certain expectations, estimates and assumptions which may prove to be incorrect. A number of risks and uncertainties could cause our actual results to differ materially from those expressed or implied by the forward-looking statements, including: (1) the mineral resource and mineral reserve estimates relating to the Project could prove to be inaccurate for any reason whatsoever, (2) the Company may be unable to obtain financing for the Project on acceptable terms or at all, (3) prices and demand for nickel, cobalt or battery products could decline, (4) Project costs could differ substantially from those anticipated in the PFS and make any commercialization uneconomic, (5) inferred and indicated resources may not materialize, (6) permits, environmental opposition, government regulation, cost overruns or any of many other factors may prevent the Company from commercializing the Project, (7) additional but currently unforeseen work may be required to advance to the feasibility stage, and (8) even if the Project goes into production, there is no assurance that operations will be profitable. These forward-looking statements are made as of the date of this news release and, except as required*

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*by applicable securities laws, the Company assumes no obligation to update these forward-looking statements, or to update the reasons why actual results differed from those projected in the forward-looking statements. Additional information about these and other assumptions, risks and uncertainties are set out in the "Risks and Uncertainties" section in the Company's most recent MD&A filed with Canadian security regulators.*

On behalf of the Board of Directors,

MARK JARVIS  
CEO  
Tel - 604 681 2300

*Neither TSX Venture Exchange nor its Regulation Services Provider (as that term is defined in policies of the TSX Venture Exchange) accepts responsibility for the adequacy or accuracy of this release.*

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