



**Euro  
Manganese  
Inc.**

**EURO MANGANESE INC.**

**Annual Information Form**

**For the year ended September 30, 2019**

**December 16, 2019**

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## FORWARD LOOKING STATEMENTS

Certain statements in this annual information form ("AIF") constitute "forward-looking statements" or "forward-looking information" within the meaning of applicable securities laws. Such statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of Euro Manganese Inc. ("EMN" or the "Company"), or its mineral projects, or industry results, to be materially different from any future results, expectations, performance or achievements expressed or implied by such forward-looking statements or forward-looking information. Such statements can be identified by the use of words such as "may", "would", "could", "will", "intend", "expect", "believe", "plan", "anticipate", "estimate", "scheduled", "forecast", "predict" and other similar terminology, or state that certain actions, events or results "may", "could", "would", "might" or "will" be taken, occur or be achieved. These statements reflect the Company's current expectations regarding future events, performance and results and speak only as of the date of this AIF.

Specific statements in this AIF that constitute forward-looking statements or forward-looking information include, but are not limited to: (i) the planned amount, completion, size and timing, as well as the degree of success of, any future exploration program including drilling programs, the potential addition of Mineral Resources and the potential to upgrade exploration targets to Mineral Resources as a result of such exploration and drilling programs; (ii) the amount, completion and timing of a feasibility study, or other ongoing environmental, metallurgical, market and other studies, (iii) the timing, and the ability of the Company to build, commission and operate its proposed demonstration plant at the Chvaletice Manganese Project, and whether the production from the demonstration plant will meet the potential customers' specifications and other requirements following such product testing; (iv) the prospective receipt of permits, licenses or approvals at any mineral project, including those necessary to commence development or mining operations; (v) the amount and timing of capital expenditures; (vi) the expected levels of operating costs, general administrative costs, costs of services and other costs and expenses; (vii) the amount, timing and ability of the Company to negotiate and obtain surface rights to those parcels of original ground underlying and immediately surrounding, the three tailings deposit which comprise the Company's project, in addition to any lands or areas required for the Company's anticipated processing plants; and (ix) expected activities or results of exploration, development or mining operations at any mineral project.

With respect to forward-looking statements or forward-looking information contained in this AIF, in making such statements or providing such information, the Company has made assumptions regarding, among other things: (i) the accuracy of the estimation of Mineral Resources; (ii) that exploration activities and studies will provide results that support anticipated development and extraction activities; (iii) that studies of estimated mine life and production rates at the Chvaletice Manganese Project will provide results that support anticipated development and extraction activities; (iv) that the Company will be able to obtain additional financing on satisfactory terms, including financing necessary to advance the development of the Chvaletice Manganese Project; (v) that infrastructure anticipated to be developed or operated by third parties, including electrical generation and transmission capacity, will be developed and/or operated as currently anticipated; (vi) that laws, rules and regulations are fairly and impartially observed and enforced; (vii) that the market prices for relevant commodities remain at levels that justify development and/or operation of the Chvaletice Manganese Project; (viii) that the Company will operate efficiently and maintain stable operating costs; (ix) that foreign exchange rates affecting realized prices for the Company's products and affecting the input costs remain at levels that justify development and/or operation of the Chvaletice Manganese Project; (x) that the Company will be able to obtain, maintain, renew or extend required permits; (xi) ) that the Company will successfully negotiate and acquire the surface rights to those parcels of original ground underlying and immediately surrounding, in addition to

any lands or areas required for the construction of its anticipated processing plants and other facilities. All other assumptions used in this AIF constitute forward-looking information.

In making the forward-looking statements and forward-looking information, the Company has made such statements based on assumptions and analyses on certain factors which are inherently uncertain. Uncertainties include among others: (i) the adequacy of infrastructure and rehabilitation or upgrade of existing infrastructure; (ii) geological characteristics; (iii) metallurgical characteristics of the mineralization; (iv) the ability to develop adequate processing capacity; (v) the price of manganese or other minerals; (vi) the availability of equipment and facilities necessary to complete exploration and development, (vii) the cost of consumables and mining and processing equipment; (viii) unforeseen technological and engineering problems; (ix) accidents, natural disasters, or acts of sabotage or terrorism; (x) currency fluctuations; (xi) changes in laws or regulations; (xii) the availability and productivity of skilled labour; (xiii) the regulation of the mining industry by various governmental agencies; (xiv) globally economic uncertainties, including interest rates, equity and debt capital market volatility affecting the availability of future funding, and (xv) other liabilities inherent in the Company's operations.

This AIF also contains references to estimates of Mineral Resources. The estimation of Mineral Resources is inherently uncertain and involves subjective judgments about many relevant factors. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. Mineral Reserves that have demonstrated economic viability may cease to be economically viable as a result of many factors, including those set forth in the AIF. The accuracy of any such estimates of Mineral Resources is a function of the quantity and quality of available data, and of the assumptions made and judgments used in engineering and geological interpretation (including estimated future production from the Chvaletice Manganese Project, the anticipated tonnages and grades that will be mined and the estimated level of recovery that will be realized), which may prove to be unreliable and depend, to a certain extent, upon the analysis of drilling results and statistical inferences that may ultimately prove to be inaccurate. Mineral Resource estimates may have to be re-estimated based on, among other things: (i) fluctuations in manganese or other mineral prices; (ii) results of drilling; (iii) results of metallurgical testing and other studies; (iv) proposed mining operations, including dilution; (v) the evaluation of mine plans subsequent to the date of any estimates; and (vi) the possible failure to receive required permits, approvals and licenses. Mineral Reserves, if any, may have to be re-estimated based on, among other things: (i) fluctuations in manganese or other mineral prices; (ii) results of actual mining operations; (iii) changes to mine plans subsequent to the date of any estimates; or (iv) the possible failure to receive required permits, approvals and licenses, or the failure to have such required permits, approvals, or licenses honored or extended.

Forward-looking statements involve significant risks and uncertainties, should not be read as guarantees of future performance or results, and will not necessarily be accurate indicators of whether or not such results will be achieved. A number of factors could cause actual results to differ materially from the results discussed in the forward-looking statements, including, but not limited to, the factors discussed above and below and under "*Risk Factors*", as well as unexpected changes in laws, rules or regulations, or their enforcement by applicable authorities, including potentially arbitrary action; the failure of parties to contracts with the Company to perform as agreed; social or labour unrest; changes in commodity prices; unexpected changes in the cost of mining consumables; and the failure of exploration programs or current or future economic studies to deliver anticipated results or results that would justify and support continued exploration, studies, development or operations.

Although the forward-looking statements contained in this AIF are based upon what management of the Company believes are reasonable assumptions, the Company cannot assure readers that actual results

will be consistent with these forward-looking statements. The Company's actual results could differ materially from those anticipated in these forward-looking statements, as a result of, amongst others, those factors noted above and those listed under the heading "*Risk Factors*". These forward-looking statements are made as of the date of this AIF and are expressly qualified in their entirety by this cautionary statement. Subject to applicable securities laws, the Company assumes no obligation to update or revise the forward-looking statements contained herein to reflect events or circumstances occurring after the date of this AIF.

## DEFINITIONS AND OTHER INFORMATION

### Currency

All references to "\$", "CAD\$" or "dollars" in this AIF mean Canadian dollars. References to "A\$" are to Australian dollars, references to "USD\$" are to United States dollars, references to "CZK\$" are to Czech Koruna, and references to "€" are to Euros.

### Definitions

Attached as Schedule "A" to this AIF are tables setting out defined terms.

### Scientific and Technical Information

The scientific and technical information with respect to the Chvaletice Manganese Project contained in this AIF is derived from the independent NI 43-101 technical report with an effective date of January 29, 2019 (released March 15, 2019) entitled "*Technical Report and Preliminary Economic Assessment for the Chvaletice Manganese Project Chvaletice, Czech Republic*" prepared by Mr. James Barr, P. Geo, Mr. Jianhui (John) Huang, Ph.D., P. Eng., Mr. Mark Horan, P. Eng., Mr. Hassan Ghaffari, P. Eng., and Mr. Chris Johns, P. Eng. (the "**Technical Report**").

The technical information in this AIF has been updated with current information where applicable. The full text of the Technical Report has been filed with Canadian securities regulatory authorities pursuant to NI 43-101 and is available for review under the Company's SEDAR profile at [www.sedar.com](http://www.sedar.com).

Mr. Gary Nordin, EMN's Chief Geologist, has reviewed and approved the scientific and technical information in respect of the Chvaletice Manganese Project contained in this AIF. Mr. Nordin is considered, by virtue of his education, experience and professional association, to be a qualified person for the purposes of NI 43-101. Mr. Nordin is not independent within the meaning of NI 43-101.

## CORPORATE STRUCTURE OF THE COMPANY

### Name, Address and Incorporation

Euro Manganese Inc. was incorporated under the BCBCA on November 24, 2014.

The Shares were listed for trading on the TSXV on October 2, 2018, under the symbol "EMN." The Shares, in the form of CHESSE Depository Interests (each, a "CDI" with each CDI representing one fully paid Share) were admitted to the Official List of the ASX effective September 28, 2018 and trade under the symbol "EMN." On October 11, 2018, the Shares also became eligible to trade on the Frankfurt Stock Exchange under the trading symbol "E06." The Company is a reporting issuer in British Columbia, Alberta and Ontario.

The registered office of the Company is located at Suite 1700 – 666 Burrard Street, Vancouver, British Columbia V6C 2X8 and its head office is located at Suite 1500 – 1040 West Georgia Street, Vancouver, BC V6E 4H8.

### Intercorporate Relationships

References in this AIF to the business of the Company include the business conducted by its sole subsidiary, Mangan Chvaletice s.r.o. ("**Mangan**"). The Company holds 100% of the shares of Mangan, a company formed under the laws of the Czech Republic. Mangan owns a 100% interest in the Chvaletice Manganese Project.

## GENERAL DEVELOPMENT OF THE BUSINESS

### Overview

EMN is a publicly-traded mineral exploration company whose principal business is the evaluation and potential development of the Chvaletice Manganese Project, in the Czech Republic, which involves the re-processing of a manganese deposit hosted in historic mine tailings. The Company's activities in the Czech Republic are conducted through its wholly-owned subsidiary, Mangan, which owns the Chvaletice Manganese Project.

The Company acquired its 100% interest in Mangan, from Mangan's founding shareholders on May 13, 2016 pursuant to an acquisition agreement (the "**Mangan Acquisition Agreement**"). In connection with the acquisition, the Company agreed to issue:

- (1) Shares in five equal tranches, each tranche valued at \$300,000, for a total value of \$1,500,000. In connection with the first four tranches, the Company issued 8,655,845 Shares having a total value of \$1,200,000. The final tranche will be issued May 13, 2020 and the number of Shares to be issued will be based on the estimated value of the Shares at the time of issue, defined as the 20-trading day volume weighted average price of the Shares on the TSXV. The total number of Shares to be issued under the Mangan Acquisition Agreement is restricted to an amount that, when combined with other Shares held by Mangan's founding shareholders, does not exceed 20% of the outstanding Shares following the applicable share issuance. Refer to "*Three Year History – 2018*" for an amendment to the terms of this commitment.

- (2) The grant of an aggregate 1.2% net smelter royalty ("**NSR**") interest in the Chvaletice Manganese Project, pursuant to three separate arm's length royalty agreements (each, a "**Royalty Agreement**") with each of Mr. Jiří Šourek as to a 0.396% NSR, Mr. Pavel Reichl, as to a 0.408% NSR, and Mr. Tomáš Pechar, as to a 0.396% NSR. Pursuant to each Royalty Agreement, Mangan has a right of first refusal on the sale of all or a part of the royalties held by Mangan's founding shareholders and has a 90 day right to match any offer accepted by any of the royalty holders to sell their NSR interests.

### **Three Year History**

#### **2017**

During the fiscal year 2017, the Company issued 60,374,885 Shares having an aggregate value of \$5,682,120 comprised of: 53,517,725 Shares from private placements totaling \$5,286,028; 4,129,885 Shares issued for \$431,160 in services rendered; and 2,727,695 Shares having a value of \$300,000 issued in connection with the Mangan Acquisition Agreement. Total evaluation expenses incurred during the year ended September 30, 2017 were \$2.4 million and total administrative expenditures amounted to \$1 million.

The majority of the project evaluation expenditures in fiscal 2017 were incurred in the fourth quarter following the completion of the private placements referred to above and involved the summer of 2017 drilling campaign completed by the Company to upgrade the Chvaletice Manganese Project's mineral resource to NI 43-101 standards and the subsequent metallurgical, environmental, plant site location and design studies which followed.

#### **2018**

During the year ended September 30, 2018, the Company issued 70,097,990 Shares having an aggregate value of \$12,788,874 comprised of: 37,750,000 Shares from a February 2018 private placement at \$0.20 per Share and 25,000,000 Shares issued in connection with the Australian Offering (defined below) having a combined value of \$11,460,590; 646,003 Shares issued as brokers fees in connection with the February 2018 private placement and the Australian Offering; 370,877 Shares issued for \$2,833,940 in services rendered; 50,000 Shares pursuant to an exercise of options at \$0.55 per Share; and 1,500,000 Shares having a value of \$300,000 issued in connection with the Mangan Acquisition Agreement.

On June 15, 2018, the Company and Mangan's three founding shareholders amended the terms of the Mangan Acquisition Agreement to: (i) limit the minimum deemed value of the Shares to be issued under the last two tranches so as not to be less than \$0.05 per Share; (ii) provide the Company with an option to settle the remaining two tranches in cash rather than Shares; and (iii) agree to settle the last two tranches in cash in the event that the remaining two Share issuances result in the deemed value of the Shares being below \$0.05 per share.

On September 4, 2018, the Company lodged a prospectus with the Australia Securities and Investments Commission to qualify a minimum of 20,000,000 CDIs, with a right to accept oversubscriptions of 14,000,000 CDIs to a maximum offering of 34,000,000 CDIs, at A\$0.26 per CDI (the "**Australian Offering**") pursuant to an offer management agreement entered into between the Company and the Australian agent (the "**Offer Management Agreement**"). The Company and the Australian agent subsequently fixed the number of CDIs to be issued under the Australian Offering to 25,000,000 which resulted in gross proceeds to the Company of A\$6,500,000 (approximately \$6.1 million). On September 28, 2018, the Company was admitted to the Official List of ASX and the official quotation of the Company's securities commenced on October 2, 2018 under the symbol "EMN."

On September 21, 2018, the Company filed a final prospectus with the British Columbia, Alberta and Ontario Securities Commissions to qualify the distribution of 10,000,000 Shares (the "**Canadian Offering**") of the Company at a price of \$0.25 per Share for total gross proceeds of \$2,500,000 pursuant to an agency agreement between the Company and the Canadian agent (the "**Agency Agreement**"). The Company obtained a receipt for its final prospectus on September 24, 2018 and completed Canadian Offering on October 2, 2018, at which time its Shares commenced trading on the TSXV under the symbol "EMN." Gross proceeds to the Company from the Canadian Offering and Australian Offering were approximately \$8,600,000.

Total project evaluation expenses incurred during the year ended September 30, 2018 were \$4.6 million and total administrative expenditures amounted to \$3.4 million. During the fiscal year 2018, the Company successfully obtained a Preliminary Mining Permit, one of the key steps toward final permitting for the Chvaletice Manganese Project. The Company also obtained an additional exploration license from the Czech Ministry of Environment allowing it to drill the slopes on the perimeter of the tailings piles which, along with the Preliminary Mining Permit, secures the Company's rights to the entire tailings deposit. On August 13, 2018, the Company signed an option agreement granting it the right to acquire 100% of the equity of EP Chvaletice s.r.o. ("**EPCS**"), a company that owns a significant parcel of land suitable for the development of the Chvaletice Manganese Project tailings extraction facility and plant (the "**EPCS Option Agreement**"), by making payments totaling CZK 140 million (approximately \$7.86 million) payable in three cash instalments. (See "*Description of the Business – The Chvaletice Manganese Project Resource*").

## **2019**

During the year ended September 30, 2019, the Company issued 4,355,835 Shares having an aggregate value of \$621,999 comprised of: 1,428,570 Shares having a value of \$300,000 issued in connection with the Mangan Acquisition Agreement; and 2,927,265 Shares having a value of \$321,999 issued in connection with the exercise of broker warrants at \$0.11 per Share.

Total project evaluation expenses incurred during the year ended September 30, 2019 were \$5.0 million and total administrative expenditures amounted to \$3.4 million. During the fiscal year 2019, the Company made the first option payment of CZK 14 million (\$815,000), through the Czech subsidiary Mangan, on the EPCS Option Agreement and acquired five small parcels of land from the operator of the electrical power station adjacent to the Chvaletice Manganese Project, which fill small gaps in and around the proposed plant site lands owned by EPCS. The Company also signed a purchase contract with the Municipality of Trnavka for a 2.96-hectare parcel of land adjacent to the Chvaletice Manganese Project tailings, on which the Company plans to construct a visual and acoustic barrier between Trnavka and the Chvaletice Manganese Project tailings.

On January 30, 2019, the Company reported the results of the PEA for the Chvaletice Manganese Project, supporting a 25 year project life with strong economics of an after-tax net present value ("NPV") of US\$593 million at a 10% discount rate and a 22.6% IRR, and a pre-tax NPV of US\$782 million at a 10% real discount rate and a 25.2% IRR. See "*Description of the Business – The Chvaletice Manganese Project Preliminary Economic Assessment*." Based on the results of the PEA, the Company advanced the Chvaletice Manganese Project to the feasibility stage and appointed Tetra Tech Canada Inc. ("**Tetra Tech**") as the owner's engineering representative for a feasibility study, responsible for overseeing the consultants and service providers in connection with the preparation of a feasibility study, and for the preparation of the NI 43-101/JORC feasibility study report. In connection with the feasibility study, the Company also appointed several other key consultants, including BGRIMM Technology Group ("**BGRIMM**") as the lead process plant engineer.

During fiscal 2019, the Company's technical team began work on the design, engineering, planning and permitting of a high-purity electrolytic manganese metal ("HPEMM") and high-purity manganese sulphate monohydrate ("HPMSM") demonstration plant for the Chvaletice Manganese Project, which is intended to produce bulk, multi-tonne high-purity manganese finished product samples for customer testing, evaluation and qualification. Subsequent to fiscal 2019 year-end, the Company entered into a fixed-price, turnkey contract with Changsha Research Institute for Mining and Metallurgy ("CRIMM") for the supply and commissioning of a technology, equipment package for the demonstration plant, which includes performance guarantees, as well as commissioning services and an operator training program.

## **DESCRIPTION OF THE BUSINESS**

### **General**

Euro Manganese is Canadian public company whose shares are listed on the TSXV and the ASX. The Company's principal business is the evaluation and potential development of the Chvaletice Manganese Project, which involves the re-processing of a manganese deposit hosted in historic mine tailings to produce high purity manganese products. The Company's activities in the Czech Republic are conducted through its wholly-owned subsidiary, Mangan, which holds the rights to the Chvaletice Manganese Project and related exploration tenures, permits and real property.

With the development of the Chvaletice Manganese Project, the Company aims to establish a reliable producer of HPEMM and/or HPMSM to satisfy the needs of producers of lithium-ion battery precursor materials, as well as producers of specialty steel and aluminum alloys.

The Company is committed to advancing the Chvaletice Manganese Project in an effective, efficient and prudent manner while adhering to the best practices in corporate governance, application of technology, environmental excellence and social integration. The Company's goal is to develop a state-of-the-art, commercially-viable and environmentally sustainable business enterprise.

### **Evaluation and Planning Activities**

In 2017, the Company conducted an extensive drilling program, using state-of-the-art Sonic sampling technology to sample the tailings for resource estimation and bulk-sampling purposes, conducted a broad range of tests and analyses at leading laboratories in Europe, North America and Asia, and implemented a quality assurance and quality control program to ensure the integrity of its resource estimates.

The Company conducted an additional phase of drilling at the Chvaletice Manganese Project in July and August 2018, designed to upgrade the confidence level of the resource estimate. A total of 80 holes were drilled, totaling 1,510 metres in length, comprising of: 54 Sonic drill holes totaling 1,410 metres, consisting of 35 vertical holes, totaling 661 metres, and 19 inclined holes, totaling 749 metres (focused on sampling the embankment of the tailings piles, which was largely classified as an inferred resource following the 2017 drill program, as it could not be accessed using vertical drill holes); and 26 hand-auger holes, totaling 100 metres. A total of 767 samples were sent for assaying and various other tests. An additional 63 samples were sent for analysis, as part of a comprehensive quality assurance/quality control program, that included blind insertion of duplicates, blanks and standards, as well as independent check assays. Final results were received in late November 2018 and are incorporated in the updated Technical Report.

The metallurgical testwork program involved completion of over 535 individual bench and pilot-scale tests, and 8,125 assays. It also entailed extensive equipment vendor testing and third-party exploratory, confirmation and verification tests. The program included beneficiation testwork, principally focused on magnetic separation, as well as leaching, solution purification, solid-liquid separation, wash water reagent recovery, electrowinning, and passivation and crystallization tests. It also included 21 days of locked-cycle pilot-scale test runs, on a pilot plant that was purposely built for this program. A summary of these findings by Tetra Tech is presented in the Technical Report in the context of the PEA released in March 2019.

In 2018, the Company initiated hydrological and hydrogeological studies to extend the baseline environmental monitoring program, and initiated a study on mining, tailings storage operations and reclamation design, and waste management plans. Planning and preparation of the Company's Environmental Assessment application has been initiated, with the objective of filing a Project Description/Notification in the second quarter of 2020 followed by the submission of the EIA documentation to the Czech Ministry of the Environment by the fourth quarter of calendar 2020.

The Company has also undertaken scoping and pre-feasibility-level process design studies, evaluating plant and site infrastructure layout alternatives, elaboration of preliminary capital and operating cost estimates, planning and extensive environmental impact studies. It has also initiated widespread community and regulatory agency consultations. The Company believes that it must involve local communities in the development of the Chvaletice Manganese Project, and meaningfully incorporate local input to ensure the project's economic, environmental and social viability. The Company continues to advance its investigations to narrow down potential plant and related facilities site options, and to advance the Company's land acquisition program.

### **The Chvaletice Manganese Project Mineral Resource Estimate**

The Chvaletice Manganese Project manganese resource is contained in three adjacent tailings piles that were emplaced on flat terrain immediately below the site of a flotation mill site, adjacent to the former Chvaletice open pit mine. Based on the additional phase of drilling conducted in mid-2018, the Company filed the Technical Report on March 15, 2019, which is the Company's current technical report. See "*Chvaletice Manganese Project – 1.4 Mineral Resources.*"

A summary of the mineral resource estimate for the Chvaletice Manganese Project included in the Technical Report is presented in the table below:

Tailings Cell #	Classification	Dry In - situ Bulk Density (t/m <sup>3</sup> )	Volume (m <sup>3</sup> )	Tonnage (metric tonnes)	Total Mn (%)	Soluble Mn (%)
#1	MEASURED	1.52	6,577,000	10,029,000	7.95	6.49
	INDICATED	1.47	160,000	236,000	8.35	6.67
#2	MEASURED	1.53	7,990,000	12,201,000	6.79	5.42
	INDICATED	1.55	123,000	189,000	7.22	5.30
#3	MEASURED	1.45	2,942,000	4,265,000	7.35	5.63
	INDICATED	1.45	27,000	39,000	7.90	5.89
<b>TOTAL</b>	<b>MEASURED</b>	<b>1.51</b>	<b>17,509,000</b>	<b>26,496,000</b>	<b>7.32</b>	<b>5.86</b>
	<b>INDICATED</b>	<b>1.50</b>	<b>309,000</b>	<b>464,000</b>	<b>7.85</b>	<b>6.05</b>
<b>COMBINED</b>	<b>M&amp;I</b>	<b>1.51</b>	<b>17,818,000</b>	<b>26,960,000</b>	<b>7.33</b>	<b>5.86</b>

Notes:

1. Mineral Resources do not have demonstrated economic viability but have reasonable prospects for eventual economic extraction. Indicated Resources have lower confidence than Measured Resources. Inferred Resources have lower confidence than Indicated Resources. Mineral Reserves have not been defined for the Project. The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, sociopolitical, marketing, or other relevant issues.
2. Numbers may not add exactly due to rounding.
3. A preliminary break-even grade of 3.20% tMn was estimated to test the mineral resources as reasonable prospects for eventual economic extraction. Since this estimated break-even grade falls below the grades reported for most of the resource blocks (excluding 10,000 t which have grades less than 3.20% tMn) a cut-off grade was not applied to the tailings resource block model.

The original exploration license for the Chvaletice Manganese Project, issued by the Czech Republic's Ministry of the Environment on September 2, 2014, was transferred to Mangan effective January 28, 2015 and was valid until September 30, 2019 ("**Exploration License Trnávka I**"). On December 4, 2018, Mangan received a renewal and extension of this license until May 31, 2023. On May 4, 2018, the Czech Ministry of Environment issued Mangan an additional exploration licence allowing it to drill the slopes on the perimeter of the tailings piles ("**Exploration License Trnávka II**"). Exploration License Trnávka II became effective May 23, 2018 and is valid until May 31, 2023. On April 17, 2018, with effect from April 28, 2018, Mangan was issued a Preliminary Mining Permit by the Ministry of Environment, referred to by the Ministry of Environment as the prior consent of the establishment of the Mining Lease District (the "**Preliminary Mining Permit**"). The Preliminary Mining Permit, valid until April 30, 2023, covers the areas included in Exploration License Trnávka I and the Exploration License Trnávka II (together the "**Licenses**") and now secures Mangan's rights for the entire deposit.

The Preliminary Mining Permit forms one of the prerequisites for the application for the establishment of the Mining Lease District and represents one of the key steps towards final permitting for the project. Based on the Preliminary Mining Permit and other documents, including the Environmental Impact Assessment (which may only commence after the Preliminary Mining Permit is issued), Mangan has until April 30, 2023 to apply for the establishment of the Mining Lease District covering the areas included in the Licenses. The establishment of the Mining Lease District, the application for the final Mining Permit, and applications for permits relating to the construction of infrastructure required for the project, are required prior to mining at the Chvaletice Manganese Project.

At present, Mangan does not hold surface rights to the Chvaletice Manganese Project area, which are considered as those lands of original ground elevation surrounding, and those parcels of original ground underlying and immediately surrounding, the three tailings deposit which comprise the Chvaletice Manganese Project. The area of interest for the Chvaletice Manganese Project overlies 18 privately owned land parcels with surface rights. To date, Mangan has received the consent to conduct exploration activities and to access the site from the landowners whose surface properties underlie the tailings. The Company expects to negotiate the acquisition of surface rights, leases, rights of way, or other arrangements in those areas where it may wish to develop its operations, site facilities and infrastructure. There is no guarantee that areas needed for these activities and facilities will be available. See "*Risk Factors – Risks Relating to the Business of the Company and Industry-related Risks - Rights to use the Surface of the Company's Mineral Properties are not Guaranteed*".

On August 13, 2018, the Company, through its subsidiary, Mangan, signed the EPCS Option Agreement giving it the right to acquire 100% of the equity of EPCS, a small Czech steel fabrication company that owns a 19.94 hectare parcel of land located immediately south of the highway and rail line that bound the Chvaletice tailings deposit and immediately adjacent to the Chvaletice power plant and 1.7-hectare parcel of land and rail siding that was acquired by the Company in November 2017. The land is zoned for industrial use and contains numerous buildings, including office, warehousing and other industrial

structures, several of which are leased to short-term tenants. The land also contains two rail spurs and is served by gas, water and power. The Company has the right to acquire EPCS by making payments aggregating CZK 140 million payable in three cash instalments, the first of which was paid on October 17, 2018 in the amount of CZK 14 million Czech (approx. CAD\$815,000). The Company can complete the acquisition of EPCS by making two additional instalments aggregating CZK126 million (approx. CAD\$7.04 million) as follows:

- i. an instalment of CZK 42,000,000 (approx. CAD\$2.35 million) ("**Second Instalment**"), within 60 days of final approval of the environmental impact assessment for the Chvaletice Manganese Project, and no later than three years after signing the EPCS Option Agreement. The three-year term may be extended under certain circumstances by up to one year; and
- ii. a final payment of CZK 84,000,000 (approx. CAD\$4.69 million) ("**Final Payment**"), due upon receipt of all development permits for the Chvaletice Manganese Project, and no later than five years after signing the EPCS Option Agreement.

The shares of EPCS are being held in escrow pending release of the Final Payment by the Company. To secure the transaction, liens have been placed by the Company on the property and shares of EPCS, while the EPCS Option Agreement is in effect. The vendor of EPCS will continue to operate its steel fabrication business until the Final Payment is received, will retain profits from the business and will remain responsible for any losses incurred by the business during the term of the EPCS Option Agreement. The Company will endeavour to retrain and transition as many of the EPCS employees as possible into the proposed Chvaletice Manganese Project workforce.

On February 7, 2019, the Company signed an amendment to the EPCS Option Agreement (the "**Amendment**"), funding, through EPCS, the purchase of several land parcels adjacent to the land owned by EPCS. These parcels fill small gaps in and around the proposed plant site lands owned by EPCS. Pursuant to the Amendment, in the event that EPCS is not ultimately acquired under the EPCS Option Agreement, the ownership of these land parcels will be transferred to Mangan at no additional cost. The amount of CZK 3,500,000 (\$203,220) was fully paid as at September 30, 2019. The Company also signed a purchase contract with the Municipality of Trnavka for a 2.96-hectare parcel of land adjacent to the Chvaletice Manganese Project tailings, on which the Company plans to construct a visual and acoustic barrier between Trnavka and the Chvaletice Manganese Project tailings. The total amount of CZK 2,026,990 (approximately \$120,000) will be paid in four installments, conditional on the Environmental Impact Assessment ("**EIA**") and permitting milestones. The first payment, representing 10% of the total amount, CZK 202,699 (\$11,867) was during fiscal 2019.

### **The Chvaletice Manganese Project Preliminary Economic Assessment**

On January 30, 2019, the Company completed and reported the results of the Chvaletice Manganese Project PEA for the production of HPEMM and HPMSM. The Technical Report was released and filed on SEDAR on March 15, 2019. See "*The Chvaletice Manganese Project Preliminary - Economic Analysis.*" The highlights of the PEA are as follows and are qualified in their entirety by reference to the Technical Report:

- Recycling of a 27 million tonne Measured and Indicated tailings resource (98.3% Measured) with a combined grade averaging 7.33% Mn, without the requirement of any hard rock mining, crushing or milling;
- 25-year project operating life producing 1.19 million tonnes of HPEMM, two-thirds of which is expected to be converted into HPMSM;

- Saleable product includes 404,100 tonnes of HPEMM and 2.35 million tonnes of HPMSM, focusing principally on Europe's rapidly emerging electric vehicle battery industry;
- Flexibility to supply either HPEMM or HPMSM, to suit customer preference;
- After tax NPV of US\$593 million and pre-tax NPV of US\$782 million, using a 10% real discount rate, and based on average life-of-project HPEMM (containing 99.9% Mn) price of US\$4,617/tonne and an average HPMSM (containing 32% Mn) price of US\$2,666/tonne (prices based on a market study prepared for the Company by CPM Group LLC);
- US\$404 million in pre-production capital, US\$24.8 million in sustaining capital, and US\$31 million in working capital, with an ungeared, pre-tax 25.2% IRR with a 4.5-year payback, and a post-tax 22.6% IRR with a 4.9-year payback;
- Targeting production of ultra-high-purity electrolytic manganese metal with specifications exceeding 99.9% Mn and ultra-high-purity manganese sulphate monohydrate with a minimum manganese content of 32.34%, which exceed typical industry standards;
- Access to excellent transportation, energy and community infrastructure. Proposed process plant site to be located in an industrially-zoned brownfield site, where a historical process plant generated the Chvaletice tailings;
- Exceptional green project credentials with the Project design meeting or exceeding all Czech and European health, safety and environmental standards, resulting in a significant remediation of the Chvaletice tailings site, arresting the ongoing pollution related to historical mining activities;
- Sophisticated, stable and business-friendly European Union jurisdiction that is highly supportive of new and, especially, green investment; and
- Opportunities exist to enhance returns through process optimization initiatives and various investment incentives that may be available through the Czech Republic and European Union.

### **Feasibility Study**

Based on the results of the PEA, the Company advanced the Chvaletice Manganese Project to the feasibility stage and appointed Tetra Tech as the owner's engineering representative for the feasibility study, responsible for overseeing the consultants and service providers and for the preparation of the NI 43-101/JORC feasibility study report. The Company also appointed several other key consultants, including BGRIMM as the lead process plant engineer. The Feasibility Study test work program, which includes numerous optimization and verification tests, commenced earlier this quarter and is targeted for completion in the second half of 2020.

BGRIMM is a division of Beijing General Research Institute of Mining and Metallurgy, a leading provider of innovative technology, diversified products and process-orientated engineering services for the mineral and material industries worldwide. BGRIMM's appointment allows the Company to leverage on the engineering and construction expertise for similar plants that exists in China. BGRIMM has agreed to engage Tractebel Czech Republic, to provide localization, regulatory compliance and cost estimation services. Tractebel Czech Republic is a division of Tractebel Engie, a major worldwide provider of project life cycle and engineering services based in Belgium.

### **Demonstration Plant**

During fiscal 2019, the Company's technical team began work on the design, engineering, planning and permitting of a demonstration plant for the Chvaletice Manganese Project, which is intended to produce bulk, multi-tonne high-purity manganese finished product samples for customer testing, evaluation and qualification.

On December 9, 2019, the Company entered into a fixed-price, turnkey contract with for the supply and commissioning of a technology, equipment package for the demonstration plant, which includes performance guarantees, as well as commissioning services and an operator training program. The demonstration plant replicates the process flowsheet that was used in the PEA. The demonstration plant has been designed as a locked-cycle, semi-batch, manually operated system of interconnected modules that can be utilized as a circuit or as stand-alone components. It will process Chvaletice tailings in two separate buildings adjacent to the Chvaletice tailings site and is intended to produce up to 100 kg/day of dry crystalline HPMSM made from approximately 32 kg/day of ultra HPEMM. The cost of the demonstration plant is expected to be approximately US\$2.5 million, exclusive of EMN's site infrastructure and installation costs, as well cost of operation for one year, which together are estimated at an additional US\$2.5 million. The supply and delivery of the demonstration plant remains subject to financing and the Company is targeting its installation and commissioning by Q4 2020.

Numerous prospective customers have expressed interest in securing long-term supply of high-purity manganese products from the Chvaletice Manganese Project and in testing bulk samples products from the proposed Chvaletice demonstration plant. These have included manufacturers of electric vehicle batteries, precursors and cathodes, as well as chemical, aluminum and steel companies, and electric vehicle manufacturers. The Company has been conducting discussions and negotiations with parties from Europe, Asia and North America. These are expected to lead to the selection of a group of companies that will be given the opportunity to test, evaluate and begin the qualification process for the Chvaletice Manganese Project. These bulk samples are principally expected to be used for the design and testing of precursor and cathode formulations, in combination with specific lithium, nickel and cobalt sources, for use in automotive lithium-ion batteries. The Company also anticipates that some material will be tested in connection with high-end specialty steel, aluminum and other chemical and high-technology applications. To date, the Company has signed a strategic agreement with a potential consumer of high-purity manganese products providing for a framework for strategic and technical cooperation that is focused on large-scale lithium-ion batteries manufacturing, including the production of high-performance lithium-ion batteries for several market segments, including electric vehicles. Upon successful completion of testing and evaluation of these products, EMN would expect to enter into offtake agreement negotiations with these parties.

### **Specialized Skill and Knowledge**

At the current stage of the Company's development, the nature of its business requires specialized skills, knowledge and technical expertise. Such skills and knowledge currently include the areas of geology, management, exploration programs, finance and accounting, engineering, mineral processing, and environmental management and compliance. In addition to the specialized skills listed above, the Company relies on staff members, contractors and consultants with specialized knowledge of logistics and operations in the Czech Republic and local community relations. In order to attract and retain personnel with the specialized skills and knowledge required for the Company's operations, the Company maintains competitive remuneration and compensation packages. To date, the Company has been able to meet its staffing requirements.

## **Competition**

The Company competes with other exploration companies for the acquisition of mineral claims and other mineral interests, as well as for the recruitment and retention of qualified employees or consultants with the technical expertise to find, develop, and operate such properties. Competition in the mining, mineral processing and waste re-processing industry is intense, and includes competition for technical expertise and for capital to fund evaluation and development projects. Further, the Company competes for markets for its proposed manganese products with companies that may be better funded, have lower production costs, have stronger relationships with consumers of manganese and which are better capable of securing access to markets for their competing manganese products. Such competition may result in the Company being unable to acquire or develop desired properties, to recruit or retain qualified employees and consultants or to attract the capital necessary to fund its operations and develop its properties. The Company's inability to compete with other companies for these resources could have a material adverse effect on its business, financial condition, results of operations, cash flows or prospects. See "*Risk Factors – Competition*".

## **Employees**

As at the end of the most recent financial year, September 30, 2019, the Company and its subsidiaries employed a total of eighteen employees, including five executive officers, four of whom were located in Vancouver, Canada. The Company also employs consultants on an as-needed basis.

## **Environmental Protection**

All phases of the Company's operations are subject to environmental regulation. Environmental legislation is evolving in a manner which requires increasingly strict standards and enforcement, increased fines and penalties for non-compliance, more stringent environmental assessments of proposed projects and a heightened degree of responsibility for corporations and their officers, directors and employees. There is no assurance that future changes in environmental regulation, if any, will not adversely affect the Company's operations, including its ability to develop the Chvaletice Manganese Project, capital and operating expenditures, earnings and competitive position.

As further outlined in the Technical Report, the area covered by the Chvaletice Manganese Project tailings has been significantly impacted by past mining and other heavy industrial activities. Czech law exempts landowners and developers from impacts prior to 1989. Mining activity at the Chvaletice Manganese Project predates 1975. The Company is, however, responsible for any new disturbances and impacts that it may cause.

Environmental baseline studies have been in progress since the summer of 2016. These include hydrological sampling and monitoring, as well as fauna and flora surveys.

During the fiscal year 2017, the Company was provided with a report identifying the local requirements and permits required for the project. Local regulatory requirements discussed therein included the permitting process and Czech environmental regulations, standards and best practices for an Environmental Monitoring and Management Plan, including waste water, waste and tailings storage, air, noise and other environmental regulations. A time schedule for the process of an environmental impact assessment, environmental permits and building permits was provided, which suggests that permitting could take approximately 16 months from the time an Environmental Impact Assessment report and permit application is filed.

The Company has initiated pro-active and regular consultation with community stakeholders, which are expected to intensify as the evaluation and planning for the Chvaletice Manganese Project advances. The Company's subsidiary, Mangan, opened a Project Information Center in November 2017 in the Town of Chvaletice's Municipal Culture House to provide local residents with opportunities to learn about the Chvaletice Manganese Project and to provide feedback and suggestions.

Due to the location of the Chvaletice Manganese Project on the shore of the Labe River, there is potential for environmental sensitivities related to run-off and potential impacts to local groundwater and the Labe River. Adequate additional baseline environmental data collection and planning will be required to ensure the effects to the receiving environment are well understood. This baseline work has been initiated, as discussed above, and is ongoing.

The preparation of the Chvaletice Manganese Project's EIA and related permit application is underway. The Company appointed Bilfinger Tebodin Czech Republic s.r.o., to lead the preparation and filing of the Project Description/Notification with the Czech Ministry of the Environment. The Project Description/Notification will include a description of: the manganese production process and resulting environmental footprint; results of baseline and other studies conducted to date; health, safety and environmental management plans; impact assessment, impact mitigation and avoidance plans/measures; socio-economic impacts on local communities; and reclamation plans/ objectives

The Project Description will be available to local communities, residents, organizations and regulators, during a public comment and consultation period. The Project Description and the input and comments received, as well as any requirements for changes, will serve as the basis of further environmental studies, if required, and will form the basis for the last stage of the environmental permitting process. The Company expects the filing of the Project Description/Notification with the Czech Ministry of the Environment to be made in second quarter of calendar 2020 and the completion of the EIA documentation to be submitted to the Czech Ministry of the Environment by the fourth quarter of calendar 2020.

## **Czech Republic**

The Chvaletice Manganese Project is located in the Czech Republic, a member country of the European Union ("EU"). The official language of the Czech Republic is Czech, and the currency is the Czech koruna. The Czech Republic split from Slovakia in January 1993 and is now a stable, modern democracy with a free market economy. Mineral exploration activity in the Czech Republic has increased recently, driven largely by a search for battery making raw materials such as lithium and cobalt.

Through local laws, regulations and standards, which have been harmonized with those that prevail in the EU, the country has robust environmental regulations and a well-informed and engaged population that cares about the health of its environment and the diversity of its ecosystems. The Czech Republic also has a highly-educated, skilled and productive workforce capable of supporting a multitude of technologically advanced industries.

Corporate income tax in the Czech Republic at a rate of 19% will apply to the profits generated by all companies, including branches of foreign companies. Czech resident companies are required to pay corporate income tax on income derived from worldwide sources and non-resident companies are subject to taxation on income sourced in the Czech Republic. There are no regional or local income taxes in the Czech Republic. Additionally, Czech companies are required to withhold tax on payments of dividends to non-residents in the amount of 15%, unless the recipient is a company that owns at least a certain amount of the capital or a certain amount of the voting shares of the company paying the

dividend directly, such as Euro Manganese, in which case the withholding is reduced to 5%. The Czech Republic imposes royalties on the extraction of minerals, and the rate currently applicable for manganese is 2,308.43 Czech Koruna (approximately \$135) per tonne of manganese sold.

The Chvaletice Manganese Project is located approximately 90 kilometers east of the country's capital, Prague, in an area served by excellent infrastructure. The site has direct access to rail, road and a navigable river for transportation. It is also immediately adjacent to an 820-megawatt power station - an important node in the Czech national power grid - that provides the Chvaletice Manganese Project with direct and efficient access to competitively priced electrical power. The surrounding region is agrarian, yet industrialized, and a skilled workforce is available in the local market. In addition to the adjacent power station, within a radius of five kilometers of the Chvaletice Manganese Project site are two rock quarries, an industrial and municipal waste disposal site, metal and pre-cast concrete fabrication facilities, warehousing facilities, a plastic pipe manufacturer, a steel foundry and a ready-mix concrete plant. A commuter train trip from Prague to the nearby village of Chvaletice takes approximately one hour.

Despite the attractiveness of the Chvaletice Manganese Project being located in the Czech Republic, its activities are subject to the risks normally associated with the conduct of business in foreign countries. See "*Risk Factors – Country Risks*". The occurrence of one or more of these risks could have a material and adverse effect on the Company's profitability or the viability of its affected foreign operations, which could have a material and adverse effect on the Company's business viability, results of operations, financial condition and prospects.

### **Social or Environmental Policies**

The Company emphasizes a safe and secure working environment for all of its employees, contractors and consultants, and recognizes the importance of operating in a sustainable manner. The Company has adopted a Code of Ethics and Business Conduct (the "**Code**"), which sets out the standards which guide the conduct of its business and the behavior of its directors, officers, employees and consultants. All new employees must read and acknowledge that they will abide by the Code. The Code, among other things, sets out standards in areas relating to the Company's: commitment to health and safety in its business operations; compliance with applicable occupational health and safety laws and regulations; promoting and providing a work environment in which individuals are treated with respect, and is free of all forms of discrimination and abusive and harassing conduct; providing employees with equal opportunity; and ethical business conduct and legal compliance.

The Code also requires the Company to conduct its exploration, development and mining operations using environmental best practices with a goal of protecting human health, minimizing impact on the ecosystem and returning exploration and mining sites to a high environmental standard, and always in compliance with all applicable environmental laws and regulations. Further, the Code requires that the Company conduct its operations with a view to respecting and enhancing the economic and social situations of the communities in which the Company operates.

The Company has also adopted a whistleblowing policy (the "**Whistleblower Policy**") wherein employees and consultants of the Company are provided with the mechanics by which they may raise concerns with respect to falsification of financial records, unethical conduct, harassment, theft, and violation of the Code, or any other "wrong-doing" in a confidential, anonymous process. The Whistleblower Policy provides employees and contractors with information regarding who to contact with a complaint, how the Company will respond to a complaint, and timeframes for the Company to respond. The Company will respect the confidentiality of any whistle blowing complaint received by the Company where the complainant requests that confidentiality.

## CHVALETICE MANGANESE PROJECT

The Chvaletice Manganese Project is the Company's only material mineral property. Please refer to the Technical Report filed on the Company's SEDAR profile, for detailed disclosure relating to:

- Project Description and Location;
- History;
- Geological Setting and Mineralization
- Deposit Types;
- Exploration;
- Drilling;
- Sampling Preparation, Analyses and Security;
- Data Verification;
- Mineral Processing and Metallurgical Testing;
- Mineral Resource Estimates;
- Proposed Extraction Methods;
- Proposed Processing and Recovery Operations;
- Infrastructure, Permitting and Compliance Activities; and
- Capital and Operating Costs.

The following is the extracted summary section from the Technical Report prepared by Mr. James Barr, P. Geo, Senior Geologist, Mr. Jianhui (John) Huang, Ph.D., P. Eng., Senior Metallurgical Engineer, Mr. Mark Horan, P. Eng., Mr. Hassan Ghaffari, P. Eng., and Mr. Chris Johns, P. Eng., all of Tetra Tech and each of whom are "qualified persons" under NI 43-101, and is subject to any updated information contained elsewhere in this AIF. The Technical Report is incorporated by reference herein and for full technical details, reference should be made to the complete text of the Technical Report.

The following summary does not purport to be a complete summary of the Chvaletice Manganese Project and is subject to all the assumptions, qualifications and procedures set out in the Technical Report and is qualified in its entirety with reference to the full text of the Technical Report. Readers should read this summary in conjunction with the Technical Report.

### Summary

#### 1.1 Introduction

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The Chvaletice Manganese Project (CMP) is located in the western area of the Pardubice region of the Czech Republic, approximately 89 km by road east of Prague, on the southern shore of the Labe River (Figure 1-1). The CMP contemplates reprocessing of fine-grained tailings material for production of high-purity, selenium and chromium-free, 99.9% electrolytic manganese metal (HPEMM) and high-purity manganese sulphate monohydrate (HPMSM), at a hydrometallurgical refinery expected to be located adjacent to the tailings cells. The tailings were deposited into three separate above-ground tailings cells, referred to as Cell #1, Cell #2; and Cell #3, from historical mining and processing activities.

Euro Manganese Inc. and its wholly-owned subsidiary, Mangan Chvaletice s.r.o (Mangan) (collectively referred in this Technical Report as EMN) retained Tetra Tech Canada Inc. (Tetra Tech) to prepare a Technical Report and Preliminary Economic Assessment (PEA), based on the data generated from work completed on the CMP by various consultants and EMN/Mangan to date, including:

- CINF Engineering Co., Ltd. (CINF): HPEMM process design, overall site infrastructure and supporting service design, and related capital cost and operating cost estimates
- Changsha Research Institute of Mining and Metallurgy Co., Ltd. (CRIMM): Metallurgical test work, HPMSM process and related supporting service design, and related capital cost and operating cost estimates
- GET s.r.o. (GET): CMP tailings extraction and environmental studies
- Bilfinger Tebodin B.V. (Belfinger Tebodin): Localization and environmental studies
- EMN/Mangan: Resource estimate related work, permits, owner capital cost estimates and environmental studies.

This PEA report has been prepared for the CMP in accordance with National Instrument 43-101 (NI 43-101) guidelines and following Canadian Institute for Mining, Metallurgy and Petroleum (CIM) Best Practices. The effective date for this report is January 29, 2019.

## 1.2 Property Description and Location

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The Chvaletice Property (the Property) is the subject of two exploration licences, numbered 631/550/14-Hd and MZP/2018/550/386-Hd (together the Exploration Licences) and a Preliminary Mining Permit, numbered MZP/2018/550/387-HD, which is registered to include mineral rights over an area of 0.98 km<sup>2</sup> (the Protected Area, covering approximately 98 ha, encompassing all three tailings cells) (Figure 1-2).

The Exploration Licences and the Preliminary Mining Permit are held by Mangan (a private Czech company) that was repurposed in 2014, as a partnership between GET, Geomin s.r.o. (Geomin), and Orex Consultants s.r.o. (Orex). Today, EMN owns 100% of Mangan. Terms of the purchase agreement dated May 2016 included a transfer of the exploration licence, number 631/550/14-Hd, from GET to Mangan and the purchase of 100% of Mangan by EMN. The original exploration licence number 631/550/14-Hd was originally valid until September 30, 2019, but on December 4, 2018, this licence was extended to May 31, 2023. On May 4, 2018, the Czech Ministry of Environment issued Mangan an additional exploration licence, MZP/2018/550/386-Hd, covering the perimeter of the tailings cells. The additional exploration license became effective May 23, 2018 and is valid until May 31, 2023. Further, in April 2018, Mangan was issued a Preliminary Mining Permit, valid until April 30, 2023, which covers the area included in the Exploration Licences. The Preliminary Mining Permit is a precursor to applying for a Mining Permit and grants EMN the right to conduct an environmental impact assessment (EIA). Three net smelter royalty (NSR) agreements, having an aggregate NSR of 1.2%, are held by the original shareholders of Mangan. The NSR agreements were granted as part of the purchase transaction by EMN for 100% ownership of Mangan.

Infrastructure in the vicinity of, and accessible to the CMP includes highways, a major rail corridor, a navigable river, water supply, a natural gas line, a pre-cast concrete plant and a ready-mix concrete plant.

The region surrounding the CMP is rural, yet quite industrialized. Within 25 km of the CMP one can find several automotive plants, chemical plants, metal fabricators and numerous heavy and light industrial facilities. An 820 MW lignite coal-fired power plant is located directly adjacent to the CMP. A significant skilled and trainable labour workforce is accessible in the nearby communities, including the villages of Chvaletice (population of 3,200) and Trnavka (population 250) and the nearby towns and cities of Kutna Hora (population 21,000), Kolin (population 31,000), Pardubice (population 89,000), Hradec Kralove (population 93,000), and Prague (population 1,200,000).

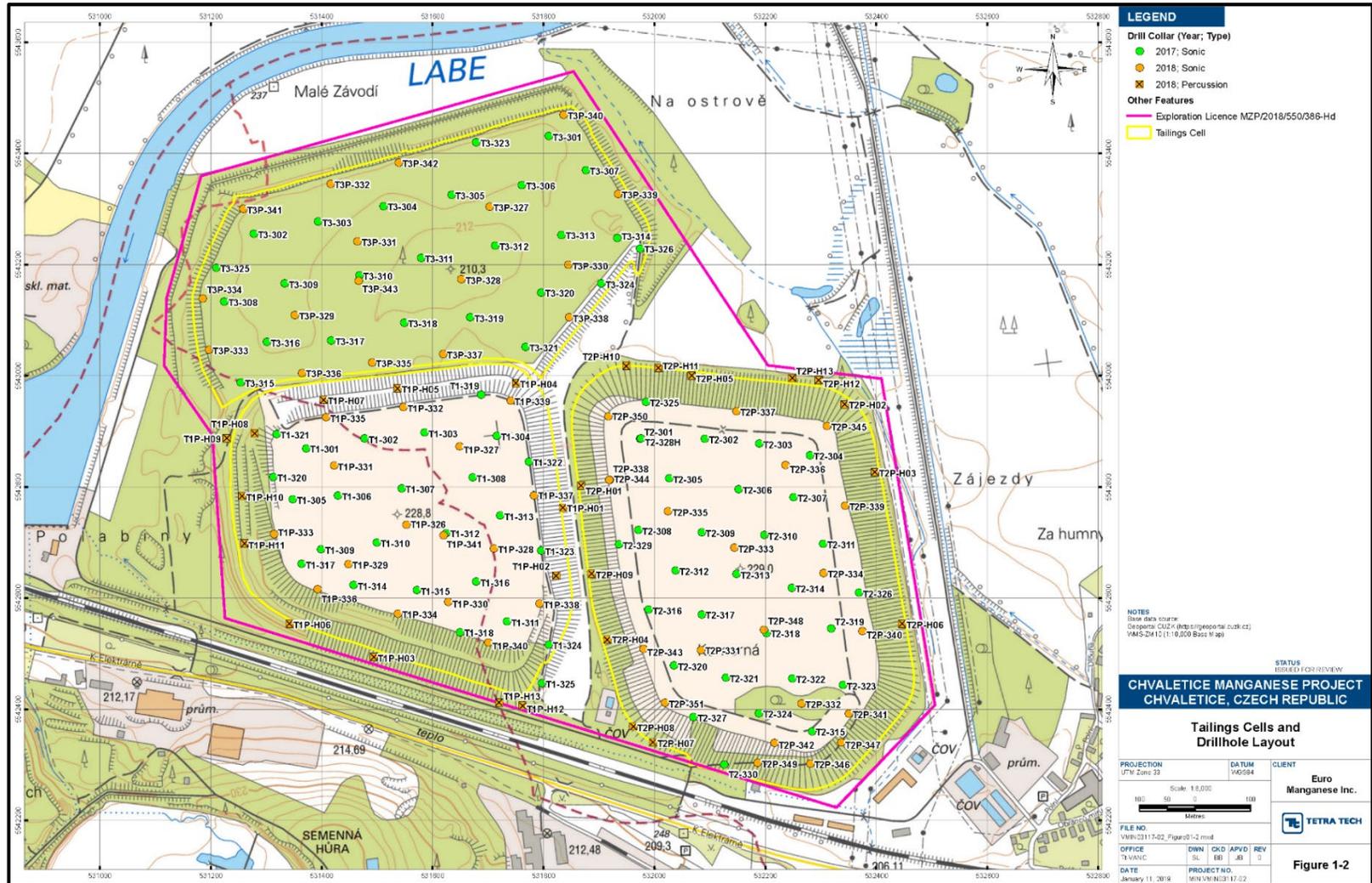
Mining supplies, equipment, services and technical expertise can be found mainly in Ostrava, Prague and Pardubice.

At present, Mangan does not hold surface rights to the CMP area, which are considered as those lands of original ground elevation surrounding, and those parcels of original ground underlying and immediately surrounding, Cells #1, #2, and #3. The area of interest for the CMP overlies 18 privately owned land parcels with surface rights. Mangan received the consent to conduct exploration activities and to access the site from the land owners whose surface properties underlie the tailings.

**Figure 1-1: Location of the Chvaletice Manganese Project**



Figure 1-2: CMP Tailings Cells: 2017 and 2018 Drill Hole Layout



On August 13, 2018, EMN signed an option agreement with EP Chvaletice s.r.o to purchase a 19.94 ha industrial zoned parcel of land located immediately to the south and across the highway from the tailings deposits and contiguous with a 1.7 ha parcel of land purchased by EMN's Czech subsidiary in November 2017. The aggregated land package now totals 21.64 ha and is the proposed site for the development of the CMP's process facility.

EMN has initiated planning and preparation of the CMPs permit application, with the objective of filing a Project Description/Notification in the second quarter of calendar 2020 with the Czech Ministry of the Environment. The Project Description/Notification will include a description of:

- Manganese production process and resulting environmental footprint
- Results of baseline and other studies conducted to date
- Health, safety and environmental management plans
- Impact mitigation and avoidance plan/measures
- Socio-economic impacts on local communities
- Short- and long-term reclamation plan/objectives

These will be made available to local communities, residents and organizations, as well as to regulators, during a public comment and consultation period. Input and comments received, as well as any regulatory requirements for changes or additional studies, will serve to form the basis of an EIA application, which Mangan currently intends to file in the fourth quarter of calendar 2020.

### 1.3 History

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Historical mining in the region dates back to approximately 677 AD through to medieval times according to records of iron (Fe) production from small local mines. Intermittent mining for iron in the region continued through until the mid-19<sup>th</sup> Century, when iron and manganese (Mn) minerals near Chvaletice were discovered. Systematic underground mining within the Chvaletice Mine produced manganese ore between the years 1915 and 1945. Thereafter, from 1951 to 1975, open pit mining and milling operations occurred for the recovery of pyrite as basic raw material for the production of sulphuric acid and gave rise to the the three adjacent CMP tailings deposits. Conversion from underground to bulk tonnage open pit mining occurred during this period, during which time an estimated 32 Mt of material was mined for pyrite, with approximately 20 Mm<sup>3</sup> of waste rock deposited on the spoil heaps, and over 17 Mm<sup>3</sup> of flotation waste was placed into the unlined tailing ponds. These tailings ponds are the target of the CMP and are referred to as Cells #1, # 2, and #3. Mining, milling and production of tailings material was terminated in 1975.

An extensive evaluation of the tailings material was conducted between April 1986 and July 1988 by Bateria Slany, the former Czechoslovakian, State-owned manufacturer of batteries, for the potential manufacture of electrolytic manganese dioxide (EMD). The results from their investigation included a "reserve calculation", currently registered as the "Řečany – Tailings Pond 3" and "Chvaletice – Tailings Ponds 1, 2" as a "State Reserve" with the Czech Republic Government. This historical calculation comprised 27,557,441 t of "reserves", containing 25,496,299 t at a grade of 5.15% leachable manganese (7.06% total manganese [tMn]) at a "C2" category, and 2,061,143 t of material average grade of 4.97% of leachable manganese (7.39% tMn) at a "C1" category. The definition of C2 and C1 categories references a system developed in the Union of Soviet Socialist Republics (USSR) for classification of mineral "resources" and "reserves", where resources classified as C1 are

supported in greater detail than those that are classified as C2. The Czech system differs significantly from the classification system defined under the CIM Terms and Definitions as referenced by NI 43-101 and cannot be misconstrued to imply a similar level of confidence. This historical calculation cannot be relied upon as being accurate, particularly since the raw data that served as the basis for these calculations has not been found by EMN, as it appears to have been lost or destroyed following the end of Communism in the Czech Republic.

#### 1.4 Mineral Resources

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Based on work conducted by EMN, under the supervision of Tetra Tech, the three tailings cells are estimated to contain approximately 18.6 Mm<sup>3</sup> of material, with approximately 17.8 Mm<sup>3</sup> comprised of silt and clay sized particulate tailings material. The remaining estimated 0.8 Mm<sup>3</sup> is native soils that were used for dam construction, erosion and dust control, and slope stabilization. Cell #1 averages approximately 26.6 m thick, with a surface area of approximately 326,400 m<sup>2</sup>, and has a volume of approximately 6,720,300 m<sup>3</sup>. Cell #2 averages approximately 28.7 m thick, with a surface area of approximately 393,200 m<sup>2</sup>, and has a volume of approximately 8,035,200 m<sup>3</sup>. Cell #3 averages approximately 11 m thick, with a surface area of approximately 313,200 m<sup>2</sup>, and has a volume of approximately 3,035,900 m<sup>3</sup>.

EMN began recent exploration activity on the Property in 2014, when a series of near surface samples were collected from auger holes and test pits for preliminary materials characterization. In June 2017, EMN initiated an 80-hole sonic drilling campaign totaling 1,679.3 m within Cells #1, #2, and #3 to evaluate the mineral resource potential both horizontally and vertically through the full tailings profile, referred to as the 2017 Drilling Program. Drill hole spacing was approximately 100 m throughout each cell. The perimeter embankments of each cell were not safely accessible to the sonic drill rig and were not drilled. To verify the composition of the embankments, four additional drill holes were collared on access ramps. Each drill hole intersected a layer of topsoil with average thickness of approximately 1 m, manganese bearing tailings material, and terminated in native basal soils at elevations consistent with other drill holes. During the summer of 2018, EMN conducted a second campaign of drilling at the CMP with a total of 80 drill holes, totaling 1,509.5 m. The program included completion of 35 vertical and 19 inclined 100 mm diameter sonic holes, totaling 1,409.5 m. An additional 26 mobile percussion drill holes, totaling 100 m, were completed around the perimeter embankments of the tailings piles in areas which were not previously accessed for sampling. The tailings material observed, sampled, and analyzed was generally very consistent in terms of total and soluble manganese grade and mineralogy.

Information collected during these investigations is available for the purposes of mineralogy, hydrological, geotechnical, metallurgical, environmental, and process engineering design.

Samples were collected on intervals ranging from 0.925 to 4.1 m with the average length representative of the 2 m core runs. Each sample was logged for lithology, moisture, particle size, wet mass, and recovery in the field. A total of 1,484 samples were split in the field longitudinally along the core. A 25% sub-sample split of each sample was shipped to SGS Minerals Services (SGS) laboratories in Bor, Serbia, for analysis and testwork. In 2017, the remaining 75% sub-sample was shipped to CRIMM in China, for bulk sample metallurgical and process testwork, respectively. In 2018, the sample was split with a 25% sub-sample collected for testwork in the Czech Republic, and the remaining 75% collected and stored in vacuum-sealed bags, which were then placed in steel barrels, in a warehouse located near the CMP site, in order to remain fresh and unaltered, and available for future metallurgical and pilot plant testing.

A rigorous quality assurance (QA) and quality control (QC) program was implemented by EMN, which included use of field duplicates, lab duplicates, insertion of three certified reference materials (CRMs), and insertion of two certified blank materials. Drill hole twins completed in 2018 were used to verify the 2017 sample database.

Quality control methods were reviewed by Tetra Tech geology Qualified Person (QP) James Barr, P.Geo., during site visits to the Property, and following receipt of analytical results Tetra Tech undertook compilation of the geological database, the verification of laboratory data, and the QA/QC program for data validation. The QP is satisfied that the sampling method and analytical integrity has been preserved throughout sample handling, preparation, and analytical process.

Analysis and testwork conducted on the samples, included:

- Multi-element assay using aqua regia as proxy for soluble manganese (sMn) and by four acid digestions
- Whole rock analysis using fusion x-ray fluorescence (XRF) as proxy for total manganese (tMn) concentrations
- Particle size analysis using laser diffraction and sieve/hydrometer methods
- Mass measurements
- Moisture measurements
- Specific gravity by pycnometer.

EMN conducted a preliminary in situ dry bulk density investigation in advance of the 2017 drilling program using a cylinder test method from near surface samples. This work was followed by an in-depth calculation of in situ dry bulk density using core recovery volumes and dry mass using SGS laboratory measurements following both the 2017 and 2018 drilling investigations. Calculated in situ dry bulk density values for individual samples ranged between 0.35 and 3.154 t/m<sup>3</sup>, with a 95% probability interval of 0.87 to 2.01 t/m<sup>3</sup>, and average value of 1.49 t/m<sup>3</sup> ±0.017 t/m<sup>3</sup>.

Manganese is primarily hosted in carbonate minerals with lesser amounts as silicate and oxide minerals, as identified by x-ray diffraction (XRD). Mineralogical studies have been completed by EMN in 2015 and reported by AMEC in their initial investigation in 2016 (AMEC 2016), and by CRIMM in 2017. The combined work identified that 80% of the manganese occurs as carbonate and 19% of the manganese occurred as silicate. The primary manganese carbonate is rhodochrosite (MnCO<sub>3</sub>), with lesser amounts of manganese bearing carbonates having variable proportions of iron, calcium (Ca) and magnesium (Mg) with carbonate to form a wide variety of minerals from the rhodochrosite(Mn)-siderite(Fe)-dolomite(Mg)-calcite(Ca) spectrum. Scanning electron microscopy (SEM) investigation work identified a rare and locally named mineral kutnohorite (Ca(Mn<sup>2+</sup>, Mg, Fe<sup>2+</sup>)(CO<sub>3</sub>)<sub>2</sub>) found with in this spectrum and identified as a significant manganese bearing carbonate. Manganese bearing silicates include spessartine (Mn<sub>3</sub>Al<sub>2</sub>(SiO<sub>4</sub>)<sub>3</sub>), rhodonite ((Mn, Fe, Mg, Ca)SiO<sub>3</sub>) and trace concentrations of sursassite (Mn<sub>2</sub><sup>2+</sup>Al<sub>3</sub>(SiO<sub>4</sub>)(Si<sub>2</sub>O<sub>7</sub>)(OH)<sub>3</sub>). Trace amounts of the manganese oxide pyrolusite (MnO<sub>2</sub>) were also detected. Predominant gangue minerals are quartz, albite, muscovite, pyrite and apatite.

Total sulphur concentration in the tailings averages approximately 3.4% which is sourced from sulphide, sulphate, and organic sulphur origin. Total carbon concentrations average approximately 3.5%, which includes contributions from graphite, organic carbon and carbonate origins. Photo 1-1 shows photos of core recovered from drill hole T1-312, near the core of Cell #1.

**Photo 1-1: Core Photos from Drill hole T1-312, from Depths 3 to 4 m, 9 to 10 m, and 23 to 25 m**



#### **1.4.1 Mineral Resource Estimate**

A three-dimensional model was created for Cells #1, #2, and #3 using a digital topographic model (DTM) compiled by GET using data from the 5<sup>th</sup> generation digital elevation model (DEM) 5G developed by the Land Survey Office in Prague from light detection and ranging (LiDAR) data in the System Jednotne Trigonometricke Site Katastralni (S-JTSK) (Krovak East North) coordinate system and the Baltic Vertical Datum (Bpv). The topography has been used to constrain volume estimates for each cell.

Lithology logs were used to construct an upper contacting surface between tailings and topsoil, then used to construct a lower contact surface between tailings and native subsoil. The intervening volume defined the volume of tailings material in each cell and was used to constrain all laboratory analysis and testwork data that was subsequently used to model various physical and chemical attributes of the tailings material.

Data was analyzed in Phinar X10-Geo v.1.4.15.8, Snowden Supervisor v8.9.0.2 and Seequent Leapfrog<sup>®</sup> Geo v.4.4.2, and models were developed using Seequent Leapfrog<sup>®</sup> Geo v.4.4.2. All sample data was composited to 2 m, and each cell was modelled separately. No capping was applied to manganese grades as no outliers were identified on the normally distributed data.

Interpolated block models were developed for physical parameters including grain size, in situ dry bulk density, and moisture content, as well as an additional 18 elements. Grain size was represented using  $D_{50}$ ,  $D_{80}$ ,  $D_{90}$ , which are the average diameter of the particles at the 50<sup>th</sup>, 80<sup>th</sup> and 90<sup>th</sup> percentiles, respectively, and using  $P_{75}$  which is the percentage of the sample that passes a standard 200 mesh, equivalent to a 75  $\mu\text{m}$  nominal mesh. The model

results show that particle size transitions from coarse to fine inwards in each. Average P<sub>75</sub> for each cell ranged from 66.48 to 71.29%, indicating that the bulk of the material is silt size or smaller. In situ dry bulk density varies throughout each cell and is a function of the composite mineral densities in addition to the degree of compaction in the soils. Modelled in situ dry bulk density values ranged from 1.10 to 2.15 t/m<sup>3</sup>, with an overall average of 1.51 t/m<sup>3</sup>. Moisture content measured from each sample ranges from approximately 1.2 to 39.3% and averaging 21.14% overall. As with particle size distributions, moisture shows a strong zonation towards the center of each cell where the material is observed to be saturated with above average moisture contents.

Total and soluble manganese concentrations were interpolated using inverse distance (cubed) (ID<sup>3</sup>) interpolation method into a sub-block model with 50 m by 50 m by 4 m parent blocks, and 12.5 m by 12.5 m by 2 m sub-blocks. The dry in situ bulk density model was applied to the sub-block model to calculate block tonnages. The block model was classified and validated by Tetra Tech QP James Barr, P.Geo., using guidelines set forth by NI 43-101 and CIM Best Practices. The Mineral Resource Estimate (MRE) was classified as Measured and Indicated based on sample spacing and variance assessment. Table 1-1 lists the MREs which have an effective date of December 8, 2018. This MRE supersedes the previous MRE with effective date of April 27, 2018.

**Table 1-1: Mineral Resource Estimate for the Chvaletice Manganese Project, Effective December 8, 2018**

Cell	Class	Volume ('000 m <sup>3</sup> )	Tonnage (kt)	In Situ Dry Bulk Density (t/m <sup>3</sup> )	tMn (%)	sMn (%)
#1	Measured	6,577	10,029	1.52	7.95	6.49
	Indicated	160	236	1.47	8.35	6.67
#2	Measured	7,990	12,201	1.53	6.79	5.42
	Indicated	123	189	1.55	7.22	5.30
#3	Measured	2,942	4,265	1.45	7.35	5.63
	Indicated	27	39	1.45	7.90	5.89
<b>Total</b>	<b>Measured</b>	<b>17,509</b>	<b>26,496</b>	<b>1.51</b>	<b>7.32</b>	<b>5.86</b>
	<b>Indicated</b>	<b>309</b>	<b>464</b>	<b>1.50</b>	<b>7.85</b>	<b>6.05</b>
<b>Combined</b>	<b>M&amp;I</b>	<b>17,818</b>	<b>26,960</b>	<b>1.51</b>	<b>7.33</b>	<b>5.86</b>

Notes:

- Estimated in accordance with the CIM Definition Standards on Mineral Resources and Mineral Reserves adopted by CIM council, as amended, which are materially identical to the Joint Ore Reserves Committee Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves 2012 Edition (JORC Code).
- The Chvaletice Mineral Resource has a reasonable prospect for eventual economic extraction. Mineral Resources do not have demonstrated economic viability, and no Mineral Reserves have been defined for the CMP.
- Indicated Mineral Resources have lower confidence than Measured Mineral Resources. A break-even grade of 3.20% tMn has been estimated for the Chvaletice deposit based on preliminary pre-concentration operating costs of USD\$5.22/t feed, leaching and refining operating cost estimates of USD\$173/t concentrate, 63% recovery for magnetic separation derived from the average total manganese recovery of 87.7% on the average head grade, 71% recovery for leaching and refining, and a metal price of USD\$2.00/kg for 99.7% electrolytic manganese metal (EMM) (Shanghai Metals Market, December 2018). The commodity price for high purity 99.9% EMM is expected to be higher.
- A cut-off grade has not been applied to the block model. The estimated break-even cut-off grade falls below the grade of most of the blocks (excluding 10,000 t which have grades less than 3.20% tMn). It is assumed that material segregation will not be possible during tailings extraction due to inherent difficulty of grade control and selective tailings extraction for this deposit type.
- Grade capping has not been applied.
- Numbers may not add exactly due to rounding.

## 1.5 Mineral Processing and Metallurgical Testing

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Starting in 1986, several metallurgical test programs have been carried out to assess metallurgical responses of recovering manganese from the tailings materials that originated from pyrite mining conducted from 1951 to 1975. During 2015, 2017, and 2018, EMN undertook further manganese recovery test programs, including semi-continuous pilot plant testing. The testwork conducted before early 2017 has been discussed in the report titled *Technical Report and Mineral Resource Estimate for the Chvaletice Manganese Project, Chvaletice, Czech Republic*, released on June 21, 2018 (Tetra Tech 2018).

A comprehensive test program has been conducted since September 2017 using a total of 743 drilling core interval samples from the 2017 drill program. The main objectives of the test program are to verify the previous test findings and develop and optimize the process flowsheet and conditions to produce HPEMM. A separate testwork program was conducted in 2018 to investigate the generation of HPMSM from the magnetic separation concentrate and from the EMM flakes.

A total of 25 composite samples were constructed from the 2017 drill core interval samples representing different mineralogical characters, including grade, particle size, and spatial location variations. The total manganese contents of the samples vary from 5.71 to 8.77% tMn. The acid-soluble manganese to total manganese ratio fluctuates in a narrow range of 0.75 to 0.85.

The main 2017-2018 testwork focused on developing and testing a flowsheet for the reliable production of HPEMM and HPMSM using the cleanest available technology to meet all Czech and European Union health, safety, and environmental standards. The testwork program included:

- Process mineralogical study
- Pre-concentration of manganese minerals by high-intensity magnetic separation
- Sulphuric acid dissolution of manganese minerals from the magnetic separation concentrate
- Iron and phosphorus removal and related pregnant solution and leach residue separation
- Pregnant solution purification
- Selenium-free electrowinning followed by chromium (Cr)-free passivation to produce HPEMM
- Magnesium removal without the use of fluorine containing reagents
- HPMSM production directly from magnetic separation concentrate and from electrolytic manganese metal flakes
- Ancillary tests, including leach residue washing, manganese recovery from residual washing solution, and magnetic separation tailings, and leach residue dewatering and detoxification
- Potential equipment vendor verification tests, including magnetic separation, leach residue washing, magnetic separation tailings and leach residue dewatering/solid-liquid separation.

A program of locked-system, semi-continuous pilot plant testing investigated the metallurgical performance of the tailings samples for the flowsheet and process conditions developed from the bench tests and generated sample products, including HPEMM flakes and HPMSM powders.

A process mineralogical study was conducted on the Master Blend (MB) Composite sample. The mineralogical characteristic study includes a mineral component determination by optical microscope, XRD diffraction analysis, SEM, and mineral chemical phase analysis. The study verified the previous findings, indicating that manganese mainly occurs in the form of manganese carbonates, including rhodochrosite and kutnohorite. The manganese carbonates account for approximately 80% of the total manganese. The second main manganese mineral group, approximately 19% of the manganese, is in the form of manganese silicates.

Magnetic separation bench tests were conducted using two types of high-intensity magnetic separation machines, vertical ring-type (VR-type) separator and horizontal ring-type (HR-type) separator. The test results show that manganese recovery varies from 76.7 to 94.3% tMn, averaging 87.7% tMn, and on average magnetic separation can improve the feed manganese content from 7.2% tMn to approximately 14% tMn, ranging from 12.0 to 15.4% tMn.

Considering the downstream iron/phosphorus (P) removal treatment, the optimized leach conditions were determined as: leach temperature at approximately 90°C with a leach retention time of 5 to 6 hours and 0.42 acid to 1.0 feed ratio. On average, approximately 75% of the manganese can be extracted by sulphuric acid leaching, ranging from 71.9 to 82.8% tMn.

Three semi-continuous pilot plant runs were conducted on the MB Composite: a high-grade composite (Composite P1) and a low-grade composite (Composite P2) using the conditions developed from the batch tests. The test flowsheet was based on the batch test results and industrial operation experience. The first pilot plant run on the MB Composite sample showed that some of impurity levels of the electrolytic manganese flakes may exceed the customer’s requirements (the HPEMM’s specifications are confidential and commercially sensitive). A comprehensive testing was further conducted by a quality optimization intervention to optimize solution purification and electrowinning conditions. This optimization testing significantly improved electrowinning circuit performance and electrolytic manganese product quality. It is anticipated that the impurity contents of the HPEMM products should be lower than the criteria required by potential users of HPEMM. With using the optimized process conditions, the subsequent second and third semi-continuous pilot plant runs on Composites P1 and P2 were conducted. According to the assay results by CRIMM, the total manganese contents of the manganese flakes produced were higher than 99.9% (manganese contents were calculated by subtracting impurity contents) and impurity levels are anticipated to be lower than the threshold specified by potential users. Table 1-2 summarizes the key circuit performances.

**Table 1-2 Key Pilot Plant Test Results**

Sample	Magnetic Separation		Acid Leach Extraction (% tMn)	Electrowinning	
	Concentrate Grade (% tMn)	Recovery (% tMn)		Current Efficiency (%)	Power Consumption (kWh/t EMM)
MB Composite	15.1	88.3	75.6	59.7	6,900
Composite P1	16.0	89.1	81.8	64.2	6,200
Composite P2	14.8	86.4	73.5	63.4	6,400

A preliminary test program was conducted to investigate production of HPMSM from the Chvalitice Mineral Resource. Three different process schemes were tested separately, including HPMSM sample production:

- From direct acid leaching of the magnetic concentrate without electrowinning purification

- From 99.9% HPEMM (selenium and chromium free)
- From 99.7% EMM (selenium and chromium containing).

According to the assay by CRIMM, in general, the impurity contents of the HPMSM powders produced from the three process schemes were lower than the target values, excluding the levels of sodium, fluorine, and heavy metals in the HPMSM directly produced from the magnetic concentrate. The best quality HPMSM, containing higher than 32.2% manganese, was produced from the HPEMM flakes generated from the pilot plant runs without the use of fluorine containing reagents.

Independent multi-element analysis is currently being conducted to verify the certain assay results reported by CRIMM on both the HPEMM and HPMSM products produced.

## **1.6 Tailings Extraction Methods**

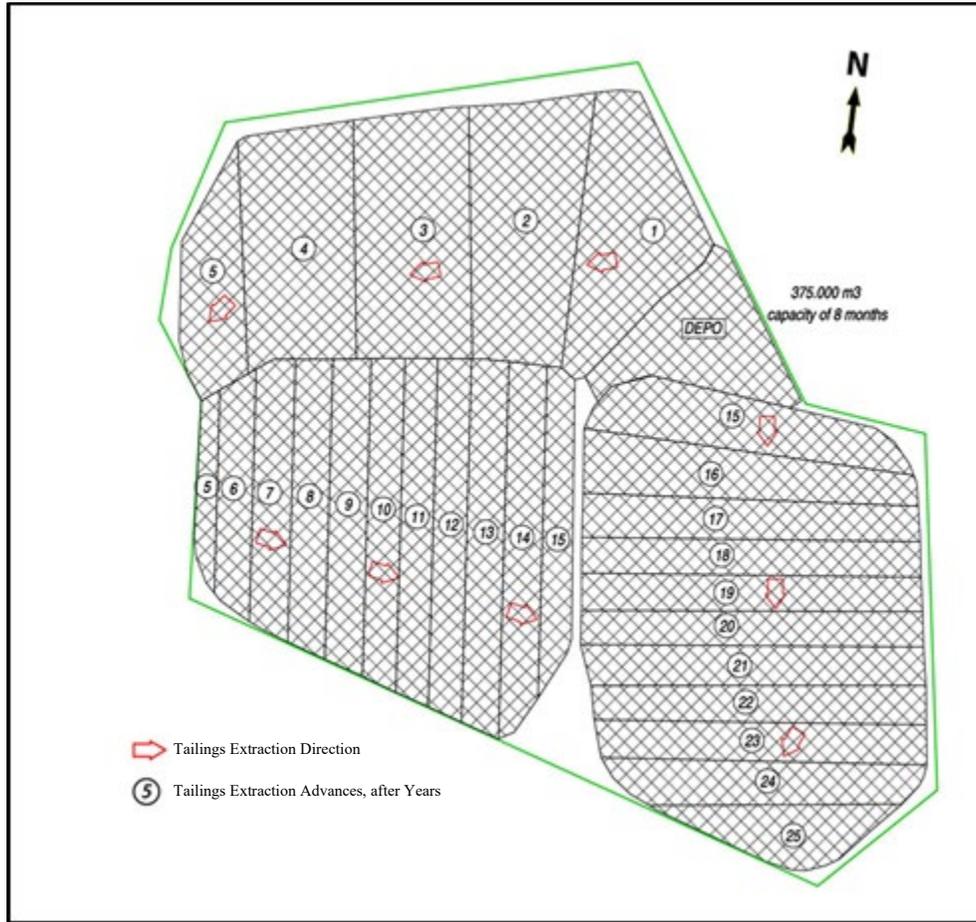
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Extraction of the three CMP tailings cells at Chvaletice will be done using trucks and shovels at approximately 1,100,000 dry tonnes per year. This will be done in 5 m high benches with a minimum 20 m wide berm and a bench face angle of 45°. The extraction will operate 250 d/a, with two, 8 h shifts per day, 5 d/wk, excluding public holidays.

To excavate the tailings cells, the working face must have a moisture content of less than 10%. As the moisture content varies with location and cell, Tetra Tech recommends that special attention be paid to the short-term tailings extraction plan and the tailings extraction of many active faces to allow for addition time in areas of higher moisture. A preliminary CMP tailings extraction plan is shown in Figure 1-3.

As the tailings cells are excavated out, the reprocessed tailings will be placed back as a dry stack. An existing flat area adjacent to Cells #2 and #3 will allow for dry stacking the initially processed magnetic separation tailings and leach residue for a period of eight months.

Figure 1-3: Conceptual Extraction Sequence for the CMP Tailings



### 1.7 Recovery Methods

The CMP process plant is designed to have a 25-year project life at a nominal production rate of 48,000 t/a of HPEMM, by extracting approximately 1.1 Mt/a of the CMP tailings. Two-thirds of the annual HPEMM flake production is expected to be converted to approximately 100,000 t/a of HPMSM. HPEMM product containing greater than 99.9% manganese is expected to be sold as flakes and powders and is planned to be produced without the use of selenium and chromium. The CMP HPMSM product will be designed to contain no less than 99.9% manganese sulphate monohydrate (MSM), a minimum of 32.34% manganese, and will be sold in powder form, produced without the use of fluorine. Figure 1-4 shows the proposed process flowsheet.



The pregnant solution from the leaching circuit will be purified to remove heavy metals and other impurities and stabilized to prevent uncontrolled crystallization of salts to produce a qualified solution for the downstream electrowinning process.

Electrowinning will be conducted in electrowinning cells following the addition of sulphur dioxide to the tank house feed solution. The tank house would have the capacity to produce 50,000 t/a HPEMM using an energy-efficient and selenium-free process. The proposed electrowinning circuit is designed to have a plating cycle of 24 hours at a cell voltage of 4.2 to 4.4 V and an average cathode-current density of 320 to 370 A/m<sup>2</sup>. Cathodes will be harvested using automatic harvesting machines, washed, passivated without the use of chromium, and stripped of electrodeposited manganese metal using industry-standard automatic cathode plate stripping machines. The design of the CMP tank house includes comprehensive mist emission control and mechanical handling systems that eliminate manual handling of cathodes and other processes. Tank house system design features include the recovery of anode slimes to minimize manganese losses, as well as diaphragm cleaning and ongoing cell maintenance operations. Approximately two thirds of the HPEMM flakes would then be used as feed for HPMSM production. The remaining HPEMM flakes would be packed and directly shipped to customers. Future opportunities include the sale of powders in addition to flakes.

A magnesium removal process has been incorporated into the process plant design to ensure efficient electrowinning operations and high-quality products. The magnesium removal process will maintain the magnesium concentration in the electrowinning solutions at a level that prevents uncontrolled precipitation of salts and scaling. The process will use low-cost reagents without incurring significant losses of manganese and reagent units and will not require the use of magnesium removal reagents containing fluorine.

The PEA production plan proposes to dissolve approximately two-thirds of the HPEMM flakes using sulphuric acid to produce 100,000 t/a of HPMSM powder in a dust-free chemical processing facility. The dissolved HPMSM solution will be further purified to remove trace impurities carried by the HPEMM flakes. The base case plant design assumes the mother solution will be concentrated using an energy-efficient, low-temperature mechanical vapor recompression (MVR) crystallization process to generate a single specification of manganese sulphate monohydrate crystals. The HPMSM crystals will be separated from the saturated MVR crystal slurry using centrifuges. The dewatered crystals will be dried using disc type dryers to produce the final HPMSM powder, while the spent mother solution will return to the HPEMM dissolution circuit or to the crystallization circuit. The dried HPMSM powder product will be packed prior to being shipped in trucks or containers to customers worldwide. Table 1-3 summarize projected manganese product production and metal recovery for the CMP.

**Table 1-3: Projected Manganese Product Production and Metal Recovery**

Year	Tailings Reprocessed (kt)	Plant Feed Grade (% tMn)	HPEMM Produced (kt)*	HPMSM Produced (kt)*	Overall Recovery (% tMn)
1	713	7.91	31.5	20.0	55.5
2	1,146	7.25	50.0	50.0	59.6
3	1,141	7.27	50.0	75.0	59.4
4 to 25 Average	1,083	7.37	47.6	100.0	59.3
<b>Total</b>	<b>26,828</b>	<b>7.33</b>	<b>1,185.2</b>	<b>2,345.0</b>	<b>59.2</b>

Note: \*Approximately two-thirds of the annual HPEMM production is converted to HPMSM on the site, with the balance being sold as HPEMM.

## 1.8 Project Infrastructure

The CMP is a brownfield project immediately adjacent to existing infrastructure which includes an 820 MW coal-fired power station operated by Severní Energetická a.s., a pre-cast concrete plant operated by TIBA Chvaletice s.r.o., a main railway, and railway spur lines. A new cast iron foundry by KASI spol.s r.o. and a new asphalt plant by Obalovna Chvaletice a.s. are currently under construction, immediately adjacent to the proposed CMP plant site. Highway #322 connects to Prague, approximately 89 km by road, via Kolin and Highway #12. The railway acts as a main transportation line from Prague to communities in the Eastern Czech Republic. The proposed location for the high-purity manganese production plant is located at the same site of the former flotation plant that produced the CMP tailings.

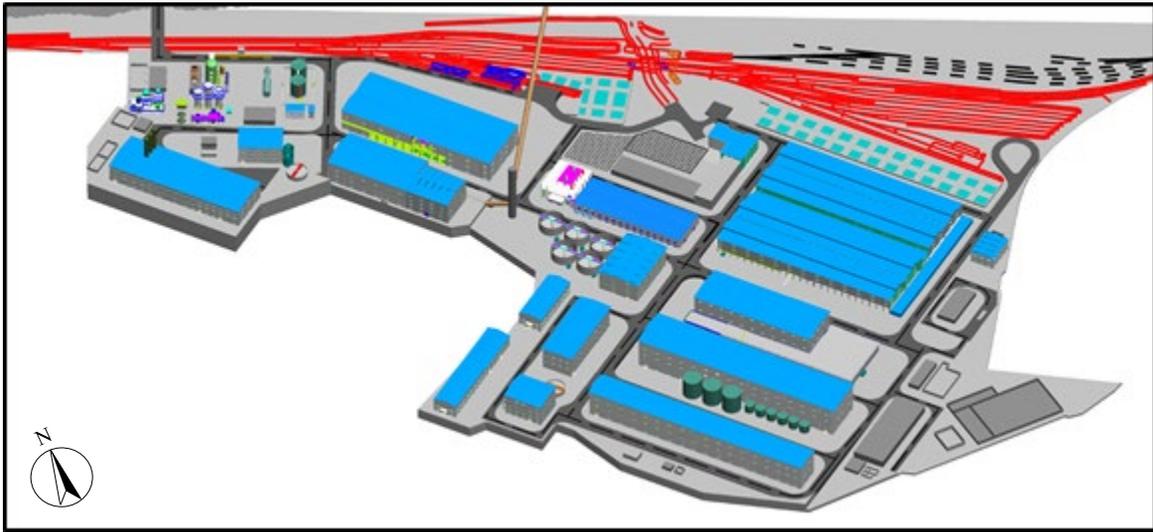
**Figure 1-5: CMP Project Site Layout**



There will be two separate operation sites for the CMP (Figure 1-5). The tailings extraction and reclamation area will be located at the existing CMP tailings site and the process plant will be located immediately south of Highway #322. New and refurbished infrastructure will be built to service the CMP, including:

- Existing CMP tailings site: CMP tailings excavation and handling facility, including mobile fleet maintenance workshop and office complex, the tailings pulping facility and temporary storage facilities for the plant feed, and dewatered NMT/LR dry stacking on a lined RSF. The NMT/LR blend will be conveyed to the excavated CMP tailings area where will be lined with a geomembrane liner and a cover liner sand layer for protection and drainage of the filtered residue stack.
- A south and north site connection bridge which will service the tailings slurry transport from the north site to the south site and the NMT/LR mixture transport by a tube conveyor from the south site to the dry stacking area at the north site. The bridge will also provide other services, such as power lines and water lines.
- Process plant site: Main process facilities, as shown in the preliminary layout in Figure 1-6, will be located at the site, including:
  - Magnetic separation facility, including non-magnetic tailings dewatering circuit
  - Magnetic concentrate dewatering, temporary concentrate storage, and concentrate re-pulping facility
  - Concentrate acid sulphuric acid leaching and iron and phosphorus removal facility
  - Leach residue washing, residue dewatering, and residual manganese recovery (from washing water solution) facilities
  - Ammonia recovery facility
  - Magnesium removal facility
  - Pregnant solution purification facility
  - HPEMM electrowinning, passivation, stripping, packing and storage facility
  - HPMSM production facilities, including HPEMM dissolution, solution purification, crystallization, HPMSM crystal dewatering and drying, and product handling facilities
  - Central control system.

**Figure 1-6: Preliminary Process Plant Site Layout (3D Format)**



There will also be other service infrastructure located at the process plant site, including:

- Two, 110 kV step-down substations; four, 380 V/36 kA rectifier transformers and various local step-down transformers
- Process equipment maintenance workshop, spare part and maintenance supply warehouses, and cold storage facilities
- Water supply and management system, including run-off water collection and treatment, process water treatment, and sewage treatment facilities, and a fire water system
- Assay and metallurgical test laboratories for operation supporting and QA/QC control
- General management office
- Change rooms and dining facility
- Commercial truck and private car parking areas
- Upgraded rail spur system and related loading and unloading facilities, including sulphuric acid storage tanks, hydrated lime silos and sea container storage yards
- Insite road network, servicing overall site facilities
- Waste storage and management facility, including anode slime storage and other waste material temporary storages prior to being shipped offsite for recycling or disposal.

Local electrical power is supplied by the Czech electrical grid. There is an 820 MW power coal-fired station which provides the regional power supply to many local communities. The station is a key node in the Czech electrical grid. The estimated power demand of the CMP is approximately 75 MW. Incoming power will come from the Czech 110 kV electrical grid. The power will feed to two, 110 kV/10 kV step-down substations for alternative current power supply and four, 380 V/36 kA rectifier transformers for direct current supply. The local

step-down transformers feeding the main plant overhead power distribution system will deliver energy throughout the process plant site and excavation site.

The water supply system will consist of process make-up water, cooling circulation water, potable water, and fire water supply systems. The pore water from the existing CMP tailings will be as part of the process make-up water. All the process water used in the process circuits will be directly re-used or treated and re-used as process make-up water. Contact water from direct runoff from the south and north sites will be collected and be treated at the water treatment plant at the south site and used as process make-up water. Any excessive treated run-off water and process water will be discharged into the environment. Apart from the process water treatment plant and the site run-off water collection and treatment plant, a separate sewage water treatment plant is also planned for the CMP.

Fresh water will be supplied from the local water supply system or from the Labe River. Potable water will be supplied from local water service system.

The steam used for the CMP will be mainly for indirect heating of leaching and iron/phosphorus removal circuit and ammonia recovery. It is assumed that the steam will be sourced from the adjacent coal-fired power station.

Compressed air will be supplied from various local compressor stations, servicing various process circuits, mainly iron/phosphorus removal circuit and filtration circuits, maintenances, and instrumentation systems.

### **1.8.1 Residue Storage Facility**

The preliminary RSF design involves placement of filtered NMT/LR in an engineered and geomembrane lined containment area constructed within the same footprint as the existing CMP tailings piles. The prepared RSF foundation will incorporate perimeter surface water diversion and a geomembrane liner for contact water collection from the filtered residue stack. The facility will be constructed in stages to suit residue storage requirements. Progressive cover placement/reclamation will be undertaken during the operational life where possible. The ultimate shape and typical section are shown in Figure 1-7.

**Figure 1-7: RSF Design Ultimate Storage – Preliminary Concept (Final design subject to community and regulatory consultation)**



## **1.9 Environmental Studies, Permitting and Social or Community Impact**

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The CMP entails the reprocessing of mine tailings deposited in close proximity to several communities, farms, light and heavy industrial operations, recreation areas, forested and rural fauna and flora habitats, as well the Labe River. The tailings cells and proposed process plant area are brownfield sites that have been significantly impacted by past industrial activities. The tailings have been placed directly on former farm fields in the alluvial plain of the Labe Valley without any underlying containment or lining system. These tailings have been leaching metals and minerals into the underlying sediments and aquifer for decades and continue to do so. The proposed plant site contains numerous buildings and infrastructure in various states of disrepair, when the site was used for the production of the pyrite material for sulphuric acid production, dating back to 1951-1975. Numerous buildings on this site continue to be occupied by small, light industrial businesses. Mining activity at the CMP ended in 1975. Czech law exempts land owners and developers from impacts prior to 1989, when communism ended in the then Czechoslovakia.

Environmental baseline studies and other environmental studies have been in progress since the summer of 2016. These studies include collection of flora, fauna, hydrological, hydrogeological, climatic, air quality, land-use and socio-economic data, as well as airshed and emissions modelling.

Since 2017, GET, a Czech mining, geological and environmental services firm, has produced several studies for the CMP, including environmental baseline studies. These included ecosystem mapping, documentation of the physical and environmental characteristics of the CMP site and an assessment of land use plans of the adjoining municipalities. Significant local features were recorded, including sensitive and protected areas, vegetation, landscape elements, and areas or sites of historical, cultural, archaeological or geological importance. Climate; air; water; soil; natural resources; fauna, flora and ecosystems; landscape; and population of the area were inventoried. The baseline studies provide an overall assessment of the environment conditions that prevail in the CMP area of interest including the impacts of past industrial activities on and around the site. The following further studies are planned for various disciplines as part of the EIA process:

- Acoustics Study
- Dispersion Modelling Study
- Impact Assessment on Public Health
- Hydrogeological Assessment
- Biological Assessment (Industrial Zone)
- Dendrological Assessment (Industrial Zone)
- Traffic Assessment
- Landscape Impact Assessment
- Comprehensive Plan for Remediation and Reclamation

Bilfinger Tebodin, the Czech division of a major European industrial and chemical engineering firm, has provided localization services for EMN that identified local requirements and permits required for the CMP. Bilfinger Tebodin also conducted wide-ranging process plant site selection studies, prior to securing the currently proposed plant site. Bilfinger Tebodin also provided a review of local regulatory requirements for the permitting process and a review of Czech environmental regulations, standards and

environmental practices, including waste water, waste and tailings storage, air, noise and other regulations. A time schedule for the process of an environmental impact assessment, environmental permits and building permits were provided, which suggested that permitting could take approximately 16 months from the time the permitting process is initiated. In order to secure all the necessary permits the project must fully comply with all health, safety and environmental protection standards as defined in Annex #4 of Law 100/2001 Sb. The Czech EIA system is very descriptive and prescriptive and addresses all technical and non-technical parameters that may have any significant impact on health, safety and the environment as well as on the cultural heritage or ecological functions of the area. EMN has initiated proactive and regular consultation with community stakeholders, which are expected to intensify as the CMP evaluation and planning advances. In November 2017, EMN's subsidiary, Mangan, inaugurated a Project Information Center in the Town of Chvaletice's Municipal Culture House, to provide residents with opportunities to learn about the CMP, help them to develop relationships with EMN and its team, and to provide feedback and suggestions during the CMP evaluation and planning stage. In November of 2018, Mangan relocated its registered office to Chvaletice. This move is intended as a first step towards ultimately basing its head office in this municipality, in close proximity to its operations.

Planning and preparation of EMN's EIA application has been initiated, with the objective of filing a Project Description/Notification in the second quarter of calendar 2020.

The construction of the CMP facilities is expected to last approximately 18 to 24 months. The productive life of the project is planned to last 25 years. Reclamation and restoration of the site to a natural, productive state is expected to take a further one to two years. The vast majority of the reclamation is scheduled to be conducted progressively beginning shortly after commencement of commercial operations. While extensive efforts have been made to design a world-class manganese operation, applying best international practices and cleanest available technology, there are numerous site-specific and local sensitivities that still need to be addressed by the CMP development and operations plan, and potential impacts that must still be avoided or mitigated. Many of these will be identified in the context of an extensive community, stakeholder and regulatory agency consultation process. These will be addressed in the project's EIA process. The CMP initiated a full EIA process in 2019, following the submission of a Project Description/Notification.

Mangan, as operator of the CMP, has initiated extensive environmental and social baseline studies, evaluated the applicable environmental, health and safety regulatory requirements, and sought to apply standards, measures, technologies and practices, aimed at bringing the proposed design and operation of the CMP in full-compliance with all applicable laws and regulations of the Czech Republic and the European Union, and in keeping with local community land use plans.

Due to the location of the CMP on the shore of the Labe River and a shallow aquifer in the Labe Valley, there are significant environmental sensitivities related to ongoing leaching of the tailings by rainwater and related impacts to local groundwater. Currently, EMN has knowledge of impacted groundwater caused by the historical mining and processing activity in the area, in particular, the ongoing leaching of metals and other pollutants from the tailings. EMN continues to regularly monitor these impacts in groundwater wells and expects that the reprocessing of the Chvaletice tailings would result in a significant reduction or elimination of ongoing groundwater pollution caused by the currently unlined tailings facility.

The CMP operation would result in the environmental remediation of a polluted site, where metals and other compounds currently leach into the groundwater. As extraction, reprocessing, and proper disposal of the CMP tailings is carried out, the site is planned to be progressively rehabilitated in compliance with Czech and European environmental requirements. The process technology proposed for the CMP will not use selenium-, chrome-, or fluorine-containing reagents.

EMN has initiated the planning and design of a comprehensive reclamation and restoration plan with the following high priority key objectives:

1. Restoring and stabilizing the site; halting the leaching of metals and minerals into the underlying aquifer
2. Phased extraction of the tailings followed by progressive reclamation
3. Dry stacking of post extraction tailings, placed on an impermeable liner, with suitable drainage to capture and facilitate treatment of remnant moisture
4. Covering tailings with an impermeable geomembrane cap and a stable, clean soil cover that will facilitate natural revegetation and restoration of the site
5. Development of a long-term reclamation and restoration action plan in close consultation and collaboration with adjoining communities, local stakeholders and regulatory agencies
6. Complete removal from the tailings and process plant site area of all industrial infrastructure, buildings and facilities, other than those that can be put to productive and beneficial use by local residents and communities.

EMN has extensively engaged and plans to continue meaningful consultation with local residents, communities, organizations, and regulatory agencies, soliciting active local participation and input in the CMP evaluation and planning process. Since the inception of the CMP, EMN has sought-out, trained, and helped to develop numerous talented Czech professionals. EMN expects that the CMP would employ Czech residents during construction and operations. The CMP would be expected to employ approximately 400 people during operations.

During its construction period and its 25-year life, total expenditures within the Czech Republic are estimated at \$2.70 billion (CZK62.0 Kč billion), which would include corporate and payroll taxes and royalties payable within the Czech Republic of approximately \$1.07 billion (CZK23.8 Kč billion).

## **1.10 Capital and Operating Cost Estimates**

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### **1.10.1 Capital Cost Estimate**

The total estimated initial capital cost for the design, construction, installation, and commissioning of the CMP is USD\$403.9 million. A summary breakdown of the initial capital cost is provided in Table 1-4. This total includes all direct costs, indirect costs, Owner's costs, and contingency. All costs are shown in US dollars unless otherwise specified.

**Table 1-4: Capital Cost Summary**

Area		Cost (USDS million)
<b>Direct Costs</b>		
10	Overall Site	35.2
30	CMP Tailings Extraction	2.2
40	HPEMM Process	166.8
46	HPMSM Process	25.4
50	NMT/LR Management	4.4
70	On-site Infrastructure	21.0
<b>Direct Cost Subtotal</b>		<b>255.0</b>
<b>Indirect Costs</b>		
90	Project Indirect Costs	72.7
98	Owner's Costs	32.0
99	Contingency	44.2
<b>Indirect Cost Subtotal</b>		<b>148.9</b>
<b>Total</b>		<b>403.9</b>

The accuracy range of the estimate is  $\pm 35\%$ . The base currency of the estimate is US dollars. Table 1-5 shows the foreign currency exchange rates used by Tetra Tech for the estimates, where applicable. The foreign exchange rates are based on average foreign exchange rates from the second half of 2018.

**Table 1-5: Foreign Exchange Rates**

Base Currency (USDS)	Foreign Currency
1.00	CAD\$1.31
1.00	CZK22.39 Kč
1.00	EUR€0.87
1.00	RMB¥6.86

### 1.10.2 Operating Cost Estimate

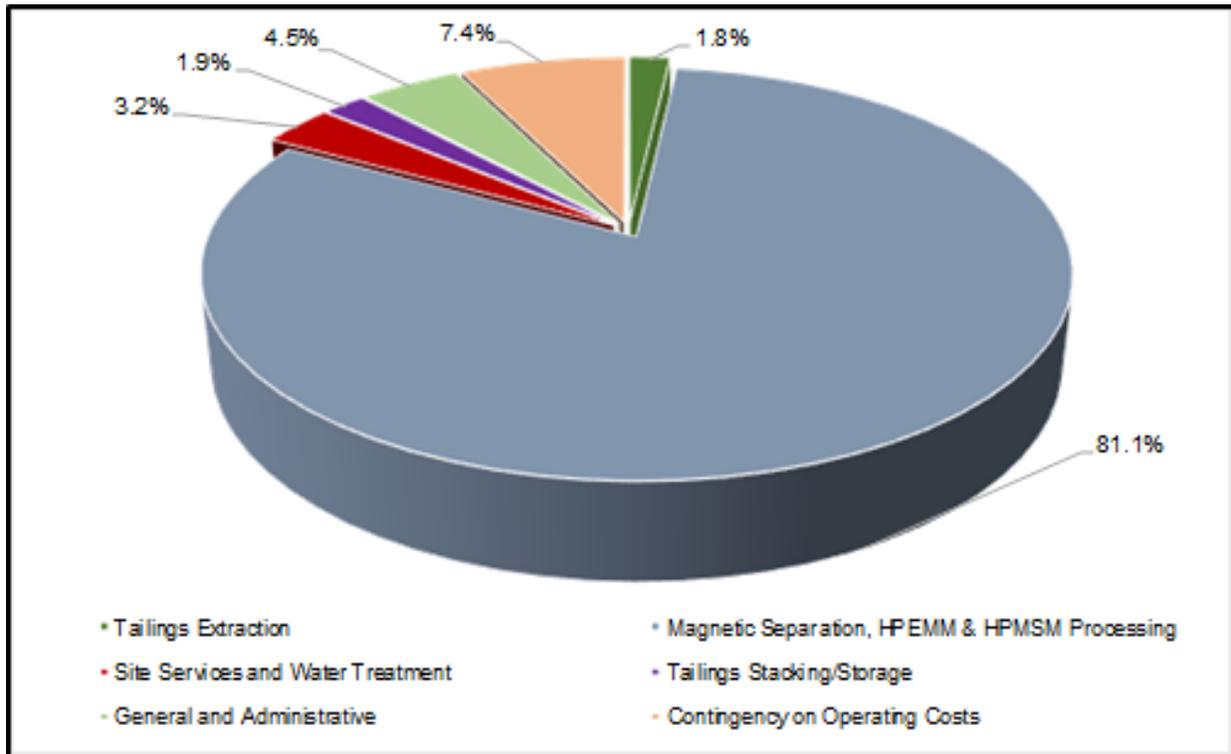
On average, the on-site operating costs were estimated as USD\$111.28/t of CMP tailings reprocessed, or plant feed. The operating costs are defined as the direct operating costs including CMP tailings extraction, processing, water treatment, NMT/LR dry stacking, site servicing, and general and administrative (G&A) costs, and excluding product freight costs, sale related costs, and royalties, which are included in the project economic analysis. The estimates are based on an average annual plant feed rate of approximately 1.1 Mt of the CMP tailings, or an average annual manganese metal production of 47,230 t (total manganese equivalent in HPEMM and HPMSM, ranging from 45,990 to 49,520 t manganese per year, excluding the first ramp-up year). Table 1-6 shows the cost breakdown for various areas and Figure 1-8 shows the cost distribution. A contingency of 8% was included in the estimate. The expected accuracy range of the operating cost estimate is  $\pm 35\%$ .

**Table 1-6: Life-of-Project Average HPEMM and HPMSM Production Operating Cost Summary**

Area	Unit Operating Cost	
	(USD\$/t processed)	(USD\$/kg Mn)*
Tailings Extraction	2.02	0.05
Magnetic Separation, HPEMM and HPMSM Processing	90.21	2.08
Site Services and Water Treatment	3.60	0.08
Tailings Stacking/Storage	2.16	0.05
G&A	5.05	0.12
Contingency on Operating Costs	8.24	0.19
<b>Total Operating Cost</b>	<b>111.28</b>	<b>2.57</b>

Note: Unit cost per kilogram manganese metal produced (equivalent) contained in HPEMM and HPMSM.

**Figure 1-8: Overall Operating Cost Distribution by Area**



### 1.11 Highlights of Independent HPEMM and HPMSM Market Study

EMN commissioned the independent research and consultancy firm of CPM Group LLC (CPM Group) to provide an HPEMM and HPMSM product market outlook study for the CMP. The CPM Group team prepared a comprehensive market research report and have provided an extended executive summary of the report that summarizes market information for high purity manganese products, including market demand and supply and projected HPEMM and HPMSM prices. Cairn Energy Research Advisors (Cairn ERA) contributed technical and battery industry inputs to the CPM Group report. The Extended Executive Summary of the CPM Group market outlook entitled *Market Outlook for High-Purity*

*Electrolytic Manganese Metal and High-Purity Manganese Sulfate Monohydrate*, dated January 21, 2019 is reproduced in Section 19.0 of this report. The following represents selected highlights from the Extended Executive Summary.

Electrolytic manganese metal (“Conventional EMM” containing ~99.7% Mn produced in a process utilizing selenium dioxide) is used principally by comparatively small markets of steel and aluminium alloys, while manganese sulphate monohydrate (MSM, 98%  $\text{MnSO}_4 \cdot \text{H}_2\text{O}$ ) is used largely by the agrochemical and pharmaceutical industries. Only about 8-10% of all manganese mined is processed into EMM and MSM, while the vast majority is used for production of ferroalloys: silicomanganese and ferromanganese. The high purity versions of the above-mentioned products make up an even smaller market: In 2017, the total global production of HPEMM (greater than 99.9% manganese) was only 0.22% of the total manganese ore mined. The same figure for HPMSM (greater than 99.8%  $\text{MnSO}_4 \cdot \text{H}_2\text{O}$ ) was 0.12% (metal contained) of all manganese mined.

These niche markets behave more like high-tech product markets or specialised chemicals markets than traditional metal markets. Prices paid depend more on the purity (or lack of certain impurities) of the material rather than on the underlying manganese prices in the ferroalloys industry. The number of high-purity manganese producers is very limited: HPEMM is currently produced by two plants in China and one plant in South Africa and HPMSM is produced by seven producers in China, one in the USA, one in Mexico, one in Belgium and one in Japan. Additional HPEMM and HPMSM plants are under construction or planned in China.

Traditional applications for HPEMM are mainly in steel alloys, super alloys, aluminium alloys, and welding powders, but the share of battery use of HPEMM is rapidly growing. HPMSM is used primarily in the production of battery cathode materials, with small quantities also being used in production of speciality chemicals.

Production of rechargeable lithium-ion batteries for electric vehicles is expected to dominate the market for HPEMM and HPMSM over the next two decades dwarfing any other application for these products. Following Cairn ERA’s research into battery markets and combining it with its own research, CPM Group forecasts an 80-fold increase in the use of manganese in rechargeable Li-ion batteries between 2017 and 2037.

Europe is expected to play an important part in this “electric vehicle revolution” with nine battery and battery precursor factories, and no fewer than twelve electric car factories, already under construction or announced recently. Europe is expected to become the second most important centre (after China) of the global electric car and battery industries.

### **1.11.1 Manganese Demand from Batteries**

Although battery use accounts only for a very small fraction of overall manganese consumption (approximately 4%) this specialised sub-sector is expected to achieve double-digit compound annual growth rate (CAGR) over the next two decades.

One particular type of secondary batteries or rechargeable batteries, the lithium-ion battery (a.k.a. Li-ion, or LiB), has recorded an extraordinary growth in demand: production of these batteries since 2010 grew at a rate of 25% p.a. (CAGR). One of the applications for Li-ion batteries is the propulsion of electric vehicles (EVs). Demand for batteries for EVs is expected to grow at a CAGR of 35% between 2017 and 2027 and at a slightly slower rate (around 10% CAGR) for the period 2027-2040. Most (but not all) Li-ion battery chemistries are using high-purity manganese. These include lithium-ion batteries with NMC (Nickel Manganese Cobalt) and LNMO (Lithium nickel Manganese oxide) formulations.

NMC and LNMO cathode makers principally use HPMSM to deliver the manganese inputs of these batteries. A significant portion of the NMC cathode makers prefer to use HPEMM to make their own HPMSM, largely to maintain a strict quality control and prevent inclusion of harmful impurities. As the EV battery industry matures, CPM Group expects increasing purchases of HPMSM and a proportional lowering in demand for HPEMM in this sector, but battery makers are expected to retain a certain proportion of their manganese requirements in the form of HPEMM.

CPM Group's forecast for manganese use in Li-ion batteries also includes other battery applications such as Energy Storage Systems (ESS, grid-electricity storage, or renewable sources electricity storage) and consumer electronics. Demand from batteries for EVs is expected to account for about 84% of all manganese demand from the battery sector in 2037. CPM Group and other battery experts like Cairn ERA expect the demand for manganese from the battery sector to grow over 80 times by 2037 when compared to 2017. This demand can be satisfied by HPEMM and/or HPMSM.

### **1.11.2 Global Battery Industry**

The lithium-ion battery industry has its own structure and supply chain with many specialised manufacturers. A prospective producer of HPEMM and/or HPMSM such as EMN is positioned at the beginning of the chain as a supplier to the precursor materials or chemicals that are used to make cathodes. EMN could sell its products to different manufacturers depending on the level of supply chain integration by the various battery and EV manufacturers. The ultimate product is a battery pack sold to or made by an EV manufacturer.

Until 2018 China, Japan and Korea accounted for almost 90% of the world Li-ion battery cell production. Ramping up of production by Tesla has brought the USA into second place, while Europe still barely registers as a battery making region. However, this picture is quickly changing with Europe's battery capacity being forecast to have 40% more than the USA and 84% more than Asia (excluding China) by 2028, making it the second largest battery making region after China. The concentration of battery makers in China is not surprising given that this country makes up 50% of demand for EVs.

### **1.11.3 Battery Industry in Europe**

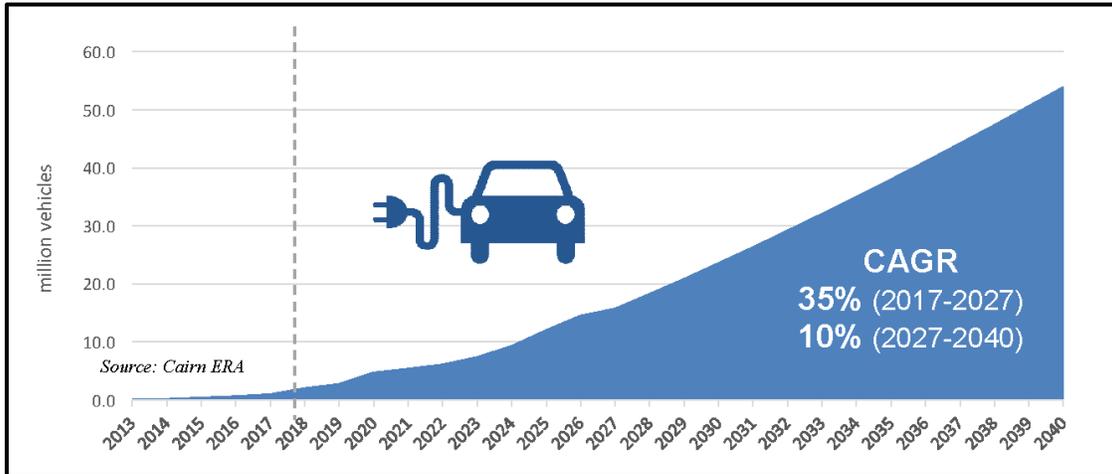
There are currently 12 electric car factories in Europe and nine battery and battery precursor factories under construction or announced recently.

The CMP owned by EMN is located in the Czech Republic, hence the European market for HPEMM and HPMSM is important for this project. CPM Group believes that the entire planned output of the CMP can be easily consumed by the growing lithium-battery sector in Europe. Local supply chains are being built in Europe and apart from the convenient logistics, companies located within the European single market benefit from frictionless trading and additional benefits (e.g. imported MSM is subject to a 5% European Union import tariff.) Further, the European Battery Alliance, a powerful body created by the European Union, was created to ensure that EV-related industries in Europe secures all the regulatory approvals and funding required. The CMP currently stands to become the only primary producer of manganese products for the battery industry within the European Union, making it of significant potential strategic importance in the context of the creation of a European battery raw materials supply chain.

### 1.11.4 Electric Vehicles Market

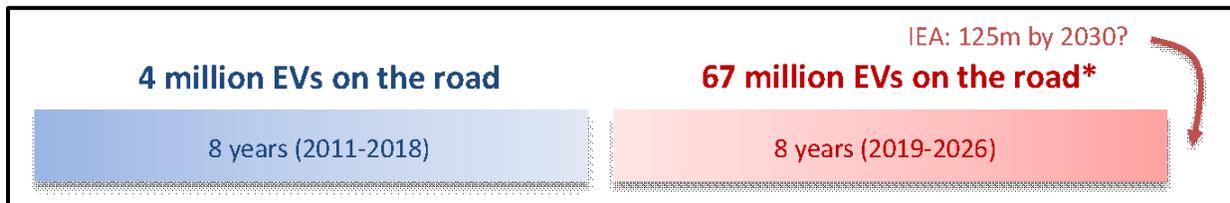
Data from the motor vehicle industry indicates that the number of electric vehicles on the roads of the world surpassed the 3 million mark in 2017 with 1/3<sup>rd</sup> of this number sold in 2017 alone. In 2018, China on its own produced more than a million EVs<sup>1</sup> and is expected to double this amount by 2020.

**Figure 1-9: Annual EV Sales Forecast to 2040 (million vehicles, including plug-in hybrids)**



China is by far the largest market for EVs and accounts for nearly 40% of all EVs sold between 2011-2018 and for more than 50% sold in 2017-2018. Chinese electric car maker BYD is the world leader with 11% global market share (439,185 vehicles sold) followed by Tesla (10%) and Nissan (9%)<sup>2</sup>. USA is the second largest market with nearly 1 million EVs on its roads (24% of world EV stock), and Japan is the third (5.7%).

EV production and sales are approaching a point of accelerated market penetration that will lead to stronger sales for the next couple of decades at least, based on the forecasts from Cairn ERA and the International Energy Agency.



Source: CPM Group calculation based on Cairn ERA EV sales forecast; \*) assuming the oldest EV on the road in 2026 is 11 years old

<sup>1</sup> Not counting electric bicycles, scooters and three-wheelers

<sup>2</sup> Bloomberg BNEF Service, 18 October 2018.

### **1.11.5 Energy Storage Systems**

A sector which seems to have a double-digit growth potential in driving the demand for Li-ion batteries is ESS, which store grid energy generated at times of low demand to be used later, during peak times, or store electricity generated by renewable generators. Peak shifting (which accounts for the vast majority of battery usage on the grid) is gravitating towards Li-ion because of its small footprint, low maintenance, high efficiency and long life. Several ESS batteries installed to date are based on manganese-based cathode formulations, but, over time, these are expected to be overtaken by other emerging battery formulations that contain little or no manganese, as the ESS industry does not require the same low-volume, lightweight, high energy density nor frequent cycling performance batteries that are needed for electric vehicles. Nevertheless, CPM Group expects some ongoing demand from the ESS industry for manganese products.

### **1.11.6 HPEMM and HPMSM Supply Demand Balance**

The HPEMM and HPMSM markets are going to be radically transformed over the coming decades as a result of the “electric vehicle revolution”. Most, but not all, of the lithium-ion batteries that power electric vehicles are expected to use manganese in their cathodes, and these manganese-intensive types of battery chemistries are likely to dominate the battery market for the next two decades.

As a result, CPM Group expects that the demand for manganese from the battery sector is likely to increase 80 times between 2017 and 2037 (from 10.7 kt to 855 kt of manganese contained) and 94 times between 2017 and 2040 (to 1,003 kt). When other, “traditional” uses of HPEMM are added the demand goes to 1,059 kt in 2040 – more than 22 times the current production levels for HPEMM. The 94-times rise refers to manganese contained in both HPEMM and HPMSM. Such a massive demand increase requires a proportional supply response, but the currently known expansion and new projects plans do not come anywhere near to satisfying this demand. What is unknown is what other market entrants and capacities may appear in 15 to 20 years. It is also worth remembering that the electric vehicle market is a nascent industry and technologies may change (to less or more manganese intensive cathode chemistries). This, however, is not as likely in the next 10 years, as having made their investments automotive and battery companies will want the return on their capital and are unlikely to make radical changes to their plants and technologies lightly.

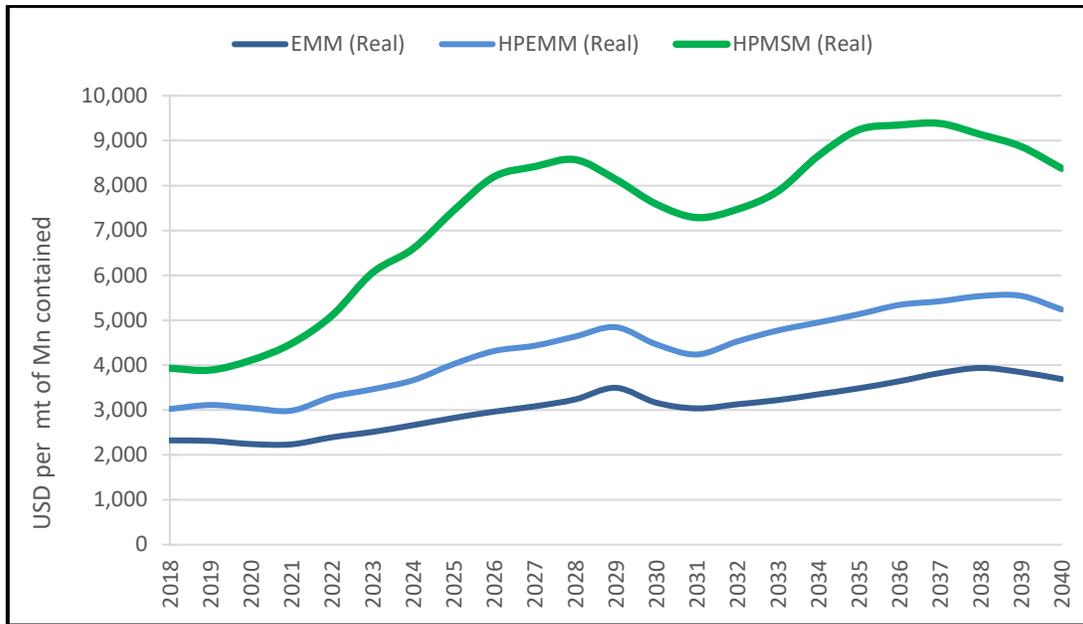
The manganese product that battery makers ultimately need is high-purity manganese sulfate solution (HPMSS), the soluble form of HPMSM (powder), with many buying HPEMM (metal) and to make HPMSS in-house or buying HPMSM to make the solution. As the industry matures, CPM Group expects that battery cathode makers are more likely to buy more third-party HPMSM and use less HPEMM. So, it is a very much the “either/or” case. CPM Group has used the measure of “manganese contained” to prevent double counting of demand from these supply sectors. CPM Group’s current assumption is that in the long-run 70% of the market will be supplied by HPMSM makers and the balance will purchase HPEMM and make their own HPMSS.

CPM Group’s assessment of the industry indicates that there are very few large capacity HPEMM projects planned at the moment, but it is difficult to say what projects might appear in 15 or 20-years’ time. CPM Group notes however, that there is a massive expansion of HPMSM capacity in China underway underpinned by an exponential rise of lithium batteries production. This expansion in HPMSM production may prove challenging, as the limiting factor may turn out to be the lack of local, good quality ore feedstock. Even assuming Chinese HPMSM production capacity will find the right quality feedstock, CPM Group still anticipates significant HPMSM deficits developing from the late 2020s. As a result, CPM Group is projecting a prolonged significant deficit in both HPEMM and HPMSM, primarily as a result of demand exceeding known and projected supply.

### 1.11.7 HPEMM and HPMSM Price Outlook

Prices of both products were derived from the price of “conventional” EMM (99.7% manganese), which is traded much more widely than HPEMM and HPMSM, and prices of which are quoted regularly by services like Metal Bulletin (now Fast Markets) or Platts. The average price of EMM 99.7% in 2018 was \$2,306/t, while its 13-year long term average was USD\$2,490/t. HPEMM trades at a premium to “conventional” EMM. Historically this premium fluctuated between USD\$500 and USD\$1,000 per mt, depending on the market conditions. The average HPEMM premium in 2018 was around \$700 per mt (or 30%). CPM Group expects that this historical premium trading range is likely to get wider as the demand pressure grows and has will reach USD\$1,700/mt (or 47%) in real terms in 2036 before tapering off as HPEMM loses ground to HPMSM in battery making.

**Figure 1-10: EMM, HPEMM, and HPMSM Price Outlook to 2040 (USD per metric ton of Manganese contained, real prices, Base, 2019)**



Source: Bloomberg; Asian Metal, CPM Group.  
 EMM Asian Metal: China Manganese Flake 99.7% Europe.  
 HPMSM: 32% Mn, Main European Destinations (CPM Group calculations)

While HPMSM is treated like a chemical product rather than a metal product, its price however is still derived from the EMM price due to its comparable quality and low impurity content. The average price of HPMSM in China in 2018 was USD\$3,155 per metric ton of the manganese contained, implying a premium of 37% to the price of conventional EMM. According to industry insiders, this premium varies between regions and fluctuates within a broad range: 20-40% in China, 40-100% in Europe, and 100-140% in Japan.

The HPEMM premium rise may be limited over a longer period due to the battery industry switching to HPMSM use instead of HPEMM, while the prices of the HPMSM are likely to rise more steeply initially due to the same reason. This rise may be limited by a rapid supply response, particularly in China, but it remains to be seen if all the announced capacity increases will materialise and if the final product will be of a quality acceptable by battery makers.

CPM Group expects a significant diversification of qualities (and premiums) within the “high-purity” spectrum of HPEMM and HPMSM. The critical factor with these new chemistries is not so much the manganese content, but rather the levels of impurities contained within the last 0.1% of the chemical composition of these products.

CPM Group’s graphs and tables in their report reflect all the above factors as well as their view of a macroeconomic situation with inevitable periodical recessions in the 22-year time horizon. The reader needs to be aware though of the difficulty of forecasting both prices and supply and demand balances in niche, opaque markets serving the nascent high-tech, electro-mobility and ESS industries.

CPM Group’s forecast annual prices in Europe through 2040 of manganese flake (EMM 99.7% Mn) and HPEMM (99.9% Mn) are presented in Section 19.0. CPM Group’s forecast annual prices through 2040 of manganese metal contained in HPMSM and HPMSM powder (32% Mn) are also presented in Section 19.0. Please note that prices on CPM Group’s graphs and tables are expressed in real 2019 US dollars, unless otherwise stated.

## 1.12 Economic Analysis

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**A PEA should not be considered a Prefeasibility or Feasibility study, as the economics and technical viability of the Project have not been demonstrated at this time. The PEA is preliminary in nature and includes Mineral Resources that have not been converted to Mineral Reserves. Furthermore, there is no certainty that the conclusions or results reported in the PEA will be realized. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.**

Tetra Tech completed a pre-tax preliminary economic analysis based on estimated costs and revenues for extracting and processing the Chvaletice deposit. The economic analysis is based on the sale of two products: HPEMM and HPMSM. The analysis was based on the recycling of approximately 27 Mt of tailings resource with a grade averaging 7.33% tMn for 25 years. The projected prices for the high-purity manganese products are based on the market outlook study, entitled *Market Outlook for High-purity Electrolytic Manganese Metal and High-purity Manganese Sulphate Monohydrate*, prepared by CPM Group, dated January 2019. The economic analysis concluded the following financial results:

- Pre-tax net present value (NPV) of USD\$782 million at a 10% real discount rate
- Pre-tax internal rate of return (IRR) of 25.2%
- Pre-tax payback period of 4.53 years.

BDO Tax a.s. (BDO), based in the Czech Republic, prepared:

- the Czech tax depreciation calculations based on the capital expenditure information and the allocation of such expenditures into the Czech tax depreciation groups, both as provided by EMN
- the Czech corporate income taxes payable for the CMP economic analysis based on existing income tax legislation in the Czech Republic, based on the Czech tax depreciation calculations described above, and based on other information provided by EMN.

The CMP project has been conservatively modelled from a tax perspective, with a full tax burden, based on Czech legislated tax rates. The CMP project may qualify for certain investment incentives which exist in the Czech Republic and the European Union for qualified investments, including investment tax credits, grants, and accelerated depreciation. Mangan/EMN will endeavour to determine which of these

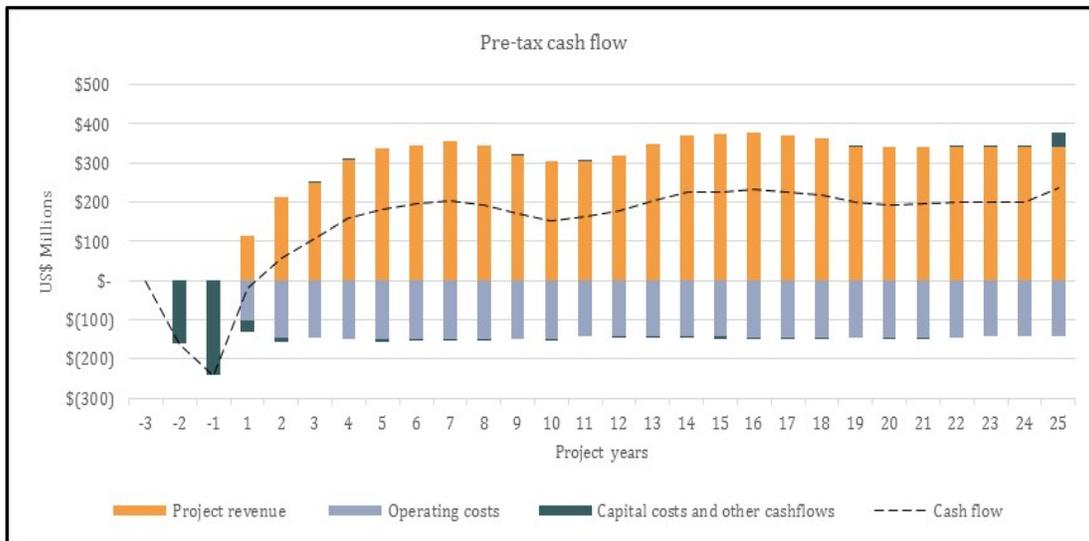
incentives and other opportunities CMP will qualify for as it advances the CMP through the feasibility study stage.

The post-tax economic analysis for the life of the project yields the following financial results:

- Post-tax NPV of USD\$593 million at a 10% real discount rate
- Post tax IRR of 22.6%
- Post-tax payback period of 4.86 years.

Figure 1-11 shows a summary of the financial modelling results in graphical form.

**Figure 1-11: Summary of Financial Results**



### 1.13 Recommendations

The CMP is considered to be economically viable based on the results of the work presented in this report. Tetra Tech recommends that EMN proceed to the feasibility level of study to more completely assess the viability of the CMP, including process optimization, potential cost savings, and additional revenue generating opportunities. Table 1-7 shows the cost breakdown by discipline for future recommended work. Recommendations are further detailed in Section 26.0 of the Technical Report.

**Table 1-7: Recommended Costs for Future Work Up to Feasibility Study**

Area	Estimated Cost (US\$)
Geology and Mineral Resources	100,000
Geotechnical and Hydrogeological – RSF	200,000
Mineral Processing and Metallurgical Testing*	930,000
Tailings Extraction	25,000
Recovery Methods/Trade-off Studies	100,000
Infrastructure	300,000
Marketing and Transportation Studies	80,000
Environmental/Permitting	500,000
<b>Estimated Total</b>	<b>2,235,000</b>

Note: \*excluding costs for potential demonstration construction and testing

## RISK FACTORS

An investment in the Shares should be considered highly speculative due to the nature of the Company's business and its earlier stage of development. Investments in mineral exploration and development issuers, such as the Company, involve a significant degree of risk. The exploration and development of the Chvaletice Manganese Project is highly speculative, characterized by significant inherent risk and may not be successful. Metal prices are also subject to significant volatility, which affects the economic viability of the Chvaletice Manganese Project. Anyone investing in the Company must rely on the ability, expertise, judgement, discretion, integrity and good faith of the management of the Company. There is no guarantee that the Company will be able to secure financing to meet the future development needs of its mineral projects.

The risks and uncertainties described below are not the only risks and uncertainties that the Company faces. Additional risks and uncertainties of which the Company is not aware or that the Company currently believes to be immaterial may also adversely affect the Company's business, financial condition, results of operations or prospects. If any of the possible events described below occur, the Company's business, financial condition, results of operations or prospects could be materially and adversely affected.

This AIF also contains forward-looking statements that involve risks and uncertainties. The Company's actual results may differ materially from those anticipated in these forward-looking statements as a result of various factors, including the risks described below and elsewhere in this AIF. See "*Forward Looking Statements*".

### **Risks Relating to the Business of the Company and Industry-related Risks**

#### ***Mineral Exploration and Development is a Highly Speculative Business and most Exploration Projects do not Result in the Discovery of Commercially Mineable Deposits***

Exploration for minerals is a highly speculative venture necessarily involving substantial risk. The expenditures made by the Company described herein may not result in discoveries of commercial quantities of minerals. The failure to find an economic mineral deposit on the Chvaletice Manganese Project will have a negative effect on the Company.

The Company's Chvaletice Manganese Project is primarily at the exploration stage and thus, has no known commercial quantities of minerals. Development of mineral properties involves a high degree of risk and few properties that are explored are ultimately developed into commercially operating projects. The commercial viability of a mineral deposit is dependent upon a number of factors which are beyond the Company's control, including the attributes of the deposit, commodity prices, government policies and regulation and environmental protection. Fluctuations in the market prices of minerals may render resources and deposits containing relatively lower grades of mineralization uneconomic. Further exploration, development and/or metallurgical work in connection with a feasibility study for the Company's Chvaletice Manganese Project will be required before a final evaluation as to the economic and legal feasibility of any of the Company's properties is determined. Most exploration and development projects do not result in the discovery of commercially mineable mineral deposits.

Estimates of reserves and resources, mineral deposits and production costs can be affected by such factors as environmental permit regulations and requirements, indigenous communities' rights, weather, environmental factors, unforeseen technical difficulties, unusual or unexpected geological formations and work interruptions. As a result, there is a risk such estimates are inaccurate. For example, the Technical Report includes a resource estimate prepared by Tetra Tech in accordance with NI 43-101. The grade of metals ultimately discovered may differ from the indicated drilling results. If the grade of the resource was lower, there would be a negative impact on the economics of the Chvaletice Manganese Project. There can be no assurance that metals recovered in small-scale tests will be duplicated in large-scale tests under on-site conditions or in production scale. If a property does not contain any reserves, any funds spent on exploration of that property will be lost. The failure of the Company to find an economic mineral deposit on any of its exploration concessions will have a negative effect on the Company.

***None of the Properties in which the Company has an Interest has any Mineral Reserves***

Currently, there are no mineral reserves (within the meaning of NI 43-101) on the Company's Chvaletice Manganese Project. See "*Chvaletice Manganese Project*." Only those mineral deposits that the Company can economically and legally extract or produce, based on a comprehensive evaluation of cost, grade, recovery and other factors, are considered mineral reserves. The resource estimates contained in the Company's technical reports are measured and indicated resource estimates only and no assurance can be given that any particular level of recovery of manganese or other minerals from mineralized material will in fact be realized or that an identified mineralized deposit will ever qualify as a commercially mineable mineral deposit. Further, substantial additional work would be required in order to determine if any economic deposits exist on the Company's properties and substantial expenditures would be required to establish mineral reserves through metallurgical and other testing techniques. The costs, timing and complexities of upgrading the mineralized material to proven or probable reserves may be greater than the value of the Company's reserves on a mineral property and may require the Company to write-off the costs capitalized for that property in its financial statements. The Company cannot provide any assurance that future feasibility studies will establish mineral reserves at its properties. The failure to establish mineral reserves could restrict the Company's ability to successfully implement its strategies for long-term growth.

***Estimates of Mineral Resources are based on Interpretation and Assumptions and are Inherently Imprecise***

The mineral resource figures referred to in the Technical Report have been determined and valued based on assumed future prices, cut-off grades and operating costs. However, until mineral deposits are actually extracted and processed, any mineral resources must be considered as estimates only. Estimates can be imprecise and depend upon geological interpretation and statistical inferences drawn from drilling and sampling analysis, which may prove to be unreliable. In addition, the grade and/or quantity of metals ultimately recovered may differ from that indicated by drilling results. There can be no assurance that metals recovered in small-scale tests will be duplicated in large-scale tests under on-site conditions or in production scale. The grade of the reported mineral resource estimates is uncertain in nature and it is uncertain whether further technical studies will result in an upgrade to them. Any material change in the quantity of mineralization, grade or mineralization to waste ratio or extended declines in market prices for manganese may render portions of the Company's mineralization uneconomic and result in reduced reported mineralization. Any material reductions in estimates of mineralization, or of the Company's ability to extract this mineralization, could have a material adverse effect on the Company's results of operations or financial condition.

***The Company's Rights and Title to its Mineral Properties may be Challenged***

The granting and transfer, by the Czech authorities, of the original Chvaletice Manganese Project's exploration license to Mangan and its predecessor holders was reviewed by the Company prior to the acquisition of Mangan. The Company was granted a second exploration license on May 4, 2018 covering the slopes on the perimeter of the tailings piles and was granted a Preliminary Mining Permit on April 17, 2018 covering the areas included in the exploration licenses. Although the Company believes the Preliminary Mining Permit along with the Licenses secure Mangan's rights for the entire deposit, there still may be undetected title defects affecting such mineral rights. Third parties may have known or unknown valid claims underlying portions of the Company's interests, including claims from prior holders of mineral interests in the same area or technical defects in the granting or approval of mineral interests or in the transfers of any mineral interest. Title may be affected by, among other things, undetected defects, including legal defects, which could have a material adverse effect on the Company's results of operations or financial condition.

***Rights to use the Surface of the Company's Mineral Properties are not Guaranteed***

The Company does not control the surface rights over the claims which comprise its Chvaletice Manganese Project. Some surface rights are owned by local communities, some surface rights are owned by private residential interests, and there are potential overlapping surface usage issues in some areas. The Company may be required to negotiate the acquisition of surface rights, leases, rights of way, or other arrangements in those areas where it may wish to develop its operations. There is no guarantee that areas needed for extractive activities, including potential waste disposal, infrastructure, or areas for processing plants and related facilities, will be available. The Company's interest in the Chvaletice Manganese Project could be adversely affected by delays or an inability to obtain surface access rights, or by challenges, regardless of merit, to existing surface access agreements.

***No Guarantee that Licenses and Permits required by the Company will be Obtained or Renewed***

The original Chvaletice Manganese Project exploration license was set to expire September 30, 2019. On December 4, 2018, Mangan received a renewal and extension of this license until May 31, 2023. A second exploration license, issued May 4, 2018, covering the slopes on the perimeter of the tailings piles expires May 31, 2023. Should additional exploration and evaluation work be anticipated after these dates, the Company will be required to renew or extend the Licenses prior to their expiration. Further, the Company's Preliminary Mining Permit, which was issued on April 17, 2018, is now set to expire on April 30, 2023. Although the Company considers this permit to be a key step towards final permitting for the project, it will still require additional approvals and permits from various governmental authorities relating to, among others, the following (i) mineral extraction and exploitation rights; (ii) water use rights; (iii) maintenance of title; (iv) employees; (v) health and safety; (vi) repatriation of capital and exchange controls; and (vii) permits relating to the construction of infrastructure required for the project. Material delays or failure to receive these additional permits may result in the expiration, loss or cancellation of the Company's rights.

Companies engaged in mineral extraction and operation of related processing facilities generally experience increased costs and delays in production and other schedules as a result of the need to comply with the applicable laws, regulations and permits. There can be no assurance that all future permits which the Company may require for the construction of the Chvaletice Manganese Project facilities and conduct of processing operations will be obtainable on reasonable terms, if at all, or that such laws and regulations would not have an adverse effect on any mineral project which the Company might undertake.

Failure to comply with applicable laws, regulations and permitting requirements may result in enforcement actions including orders issued by regulatory or judicial authorities causing operations to cease or be curtailed, and may include corrective measures requiring capital expenditures, care and maintenance, installation of additional equipment or remedial actions. Parties engaged in the extraction of minerals may be required to compensate those suffering loss or damage by reason of its activities and may have civil or criminal fines or penalties imposed upon them for violation of applicable laws or regulations.

Amendments to current laws, regulations and permits governing operations and activities of companies in the recovery of minerals, or more stringent implementation thereof, could have a material impact on the Company and cause increases in capital expenditures or production costs or reduction in levels of production at producing properties or require abandonment or delays in the development of new mining properties.

***Substantial Capital Expenditures Required***

Substantial expenditures are required to establish ore reserves through drilling, to develop metallurgical processes to extract metal from the ore and, in the case of new properties, to develop the extraction and processing facilities and infrastructure at any chosen site. Although substantial benefits may be derived from the discovery of a major mineralized deposit, no assurance can be given that minerals will be discovered in sufficient quantities to justify commercial operations or that the funds required for development can be obtained on a timely basis or on terms acceptable to the Company.

The discovery of mineral deposits is dependent upon a number of factors. The commercial viability of a mineral deposit once discovered is also dependent upon a number of factors, some of which relate to particular attributes of the deposit, such as size, grade and proximity to infrastructure, and some of which are more general factors such as metal prices and government regulations, including environmental protection. Most of these factors are beyond the Company's control. In addition, because of these risks, there is no certainty that the expenditures to be made by the Company on the exploration of the

Company's mineral properties as described herein will result in the discovery of commercial quantities of ore.

***Access to Infrastructure, Critical Supplies, and Utilities, Including Power and Water***

The exploration, extraction, processing and development of mineral projects depend, to one degree or another, on adequate infrastructure. Reliable roads, power sources and particularly water supply are important determinants that affect capital and operating costs. Process reagents, as well as critical infrastructure equipment, may need to be imported. An inability to create or access such infrastructure due to weather phenomena, sabotage, government or other interference could adversely affect the operations, profitability, financial condition, results of operations and prospects of the Company. The Company will need to ascertain whether the power and ground water and/or surface water currently present on or near its current projects will be available and sufficient to support future mineral processing operations.

Fluctuations in the prices and availability of commodities consumed in connection with exploration activities or used as part of development and processing activities, such as natural gas, diesel, oil, electricity, sulphuric acid and other reagents can significantly impact the operating cost of exploration and mineral extraction activities. These price fluctuations can be unpredictable, can occur over short periods of time and may have a materially adverse impact on operating costs or the timing of future costs.

***Management Experience and Dependence on Key Personnel and Employees***

The Company's success is currently largely dependent on the performance of the Company's directors and officers. The Company's management team has experience in the resource exploration and development business. The experience of these individuals is a factor which will contribute to the Company's continued success and growth. The Company will initially be relying on the Company's employees, board members, as well as independent consultants, for certain aspects of the Company's business. The amount of time and expertise expended on the Company's affairs by each of the Company's management team and the Company's directors will vary according to the Company's needs. The Company does not intend to acquire any key man insurance policies and there is, therefore, a risk that the death or departure of any member of management, the Company's board, or any key employee or consultant, could have a material adverse effect on the Company's future. Investors who are not prepared to rely on the Company's management team should not invest in the Company's securities.

***Uncertainty of Additional Funding***

Sufficient funding may not be available to the Company for further exploration and development of its property interests. Failure to obtain such additional financing could result in delay or indefinite postponement of further exploration and development of the Company's properties. Accordingly, additional financing will be required to operate its business and to continue with exploration on its properties, and additional capital may not be available when needed, if at all, or be available on terms favourable to the Company. Any unexpected costs, problems or delays could severely impact the Company's ability to continue exploration and development activities and obtain additional financing.

***Negative Cash Flow, No History of Production and No Revenue from Operations***

The Company has a limited history of operations, with no revenues and no history of earnings, cash flow or profitability. The Company has had negative operating cash flow since the Company's inception, and the Company will continue to have negative operating cash flow for the foreseeable future given that the Chvaletice Manganese Project is still at the exploration and evaluation stage. As such, the Company is subject to many risks common to such enterprises, including under-capitalization, cash shortages, limitations with respect to personnel, financial and other resources and lack of revenues. The Company

has no source of operating cash flow and no assurance that additional funding will be available for further exploration and development of the Chvaletice Manganese Project when required. No assurance can be given that the Company will ever attain positive cash flow or profitability.

### ***The Company relies on International Advisors and Consultants***

The Company conducts its exploration activities in the Czech Republic. The legal and regulatory requirements in this country with respect to conducting mineral exploration and mining activities, banking system and controls, as well as local business culture and practices are different from those in Canada and the United States. The officers and directors of the Company must rely, to a large extent, on the Company's local legal counsel and local consultants retained by the Company in order to keep abreast of material legal, regulatory and governmental developments as they pertain to and affect the Company's business operations, and to assist the Company with its governmental relations. The Company must rely, to some extent, on those members of management and the Company's board of directors who have previous experience working and conducting business in the Czech Republic in order to enhance its understanding of and appreciation for the local business culture and practices. The Company also relies on the advice of local experts and professionals in connection with current and new regulations that develop in respect of banking, financing, labour, litigation and tax matters in this jurisdiction. Any developments or changes in such legal, regulatory or governmental requirements or in local business practices are beyond the control of the Company. The impact of any such changes may adversely affect the business of the Company.

### ***Operating Hazards and Risks***

Mineral exploration and development involve risks, which even a combination of experience, knowledge and careful evaluation may not be able to overcome. Operations in which the Company has a direct or indirect interest will be subject to hazards and risks normally incidental to exploration, development and production of minerals, any of which could result in work stoppages, damage to or destruction of property, loss of life and environmental damage.

The Company currently carries a US\$5 million general liability policy to insure against such risks, and also ensures that its contractors have adequate insurance coverage. However, the nature of these risks is such that liabilities might exceed any insurance policy limits, the liabilities and hazards might not be insurable, or the Company might not elect to insure ourselves against such liabilities due to high premium costs or other factors. Such liabilities may have a materially adverse effect upon the Company's financial condition.

### ***Competition***

The mineral exploration and extraction industry is intensely competitive. The Company competes with other mining companies, many of which have greater financial resources and technical expertise. Competition in the mining industry is primarily for: (i) properties which can be developed and can produce economically; (ii) the technical expertise to find, develop, and operate such properties; (iii) labour to operate such properties; and (iv) capital to fund such properties. Such competition may result in the Company being unable to acquire desired properties, to recruit or retain qualified employees and consultants or to acquire the capital necessary to fund its operations and develop its properties. The Company's inability to compete with other mining companies for these resources could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

Many competitors not only explore for and mine minerals but conduct refining and marketing operations on a worldwide basis. In the future, the Company may also compete with such mining companies in refining and marketing its products to international markets. Any inability to successfully compete with

established competitors could also have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

### ***Country Risks***

The Chvaltice Manganese Project is located in the Czech Republic and therefore its activities are subject to the risks normally associated with the conduct of business in foreign countries. Investors should note that the Czech Republic is not a country with a rich mining history and projects in other nearby Eastern European countries have encountered substantial resistance from local communities at the time of development. The occurrence of one or more of these risks could have a material and adverse effect on the Company's profitability or the viability of its affected foreign operations, which could have a material adverse effect on the Company's business, results of operations, financial condition and prospects.

The Company's ability to carry on its business in the normal course in the Czech Republic may be adversely affected by political and economic considerations such as civil unrest, war (including in neighbouring states), terrorist actions, labour disputes, fraud, theft, corruption, sovereign risk, political instability, the failure of foreign parties or governments to honour contractual relations, consents, rejections or waivers granted, changing (or arbitrary) government regulations with respect to mineral processing including environmental requirements, the declaration of high-purity manganese products as strategic commodities, taxation, land tenure, foreign investments, income repatriation and capital recovery, fluctuations in currency exchange and inflation rates, import and export restrictions, challenges to the Company's title to properties, problems renewing licenses and permits, opposition to mineral extraction and processing from environmental or other nongovernmental organizations, increased financing costs, instability due to economic under-development, inadequate infrastructure, and the expropriation of property interests. In addition, the Czech Republic government, or its court system, may not recognize, protect or enforce the Company's legal rights. The Government may take action which is arbitrary or illegal under Czech, European Union or International Law. Any of these events could result in conditions that delay or prevent the Company from exploring, developing, or ultimately operating its mineral projects.

While the Company believes that the political climate in the Czech Republic provides a suitable environment for its proposed operations, there is no guarantee against the possibility that the current, or a future, government may adopt substantially different policies or take arbitrary action which might halt exploration, involve the re-nationalization of private assets or the cancellation of contracts, the cancellation of mineral exploration, extraction and processing rights and/or changes in taxation treatment cannot be ruled out, any of which could result in a material and adverse effect on the Company's business, results of operations, financial condition and prospects.

### ***The Company may be subject to Legal or Illegal Opposition and Legal Proceedings***

The Company may be subject to regulatory investigations, civil claims, lawsuits and other proceedings in the ordinary course of its business. The results of these legal proceedings cannot be predicted with certainty due to the uncertainty inherent in regulatory actions and litigation, the difficulty of predicting decisions of regulators, judges and juries and the possibility that decisions may be reversed on appeal. Defense and settlement costs of legal disputes can be substantial, even with claims that have no merit. Management is committed to conducting business in an ethical and responsible manner, which it believes will reduce the risk of legal disputes. However, if the Company is subject to legal disputes, there can be no assurances that these matters will not have a material adverse effect on the Company's business, rights, financial condition, results of operations, cash flows or prospects.

Additionally, the Czech legal system is relatively young and continues to evolve at a rapid pace. Accordingly, there is often limited jurisprudence and authoritative opinion on commercial issues, which

in turn makes legal outcomes less predictable. It may also be noted that European Union law continues to evolve in terms of interpretation and application to local laws and contracts governed thereunder. Furthermore, the legal system in the Czech Republic, like any country, has inherent uncertainties that could limit the legal protections available to the Company, which include: (i) inconsistencies between and within laws; (ii) limited judicial and administrative guidance on interpreting legislation, particularly that relating to business, corporate, mineral extraction, and securities laws; (iii) substantial gaps in the regulatory structure due to a delay or absence of enabling regulations; (iv) a lack of judicial independence from political, social and commercial forces; (v) corruption; and (vi) bankruptcy procedures that are subject to abuse, any of which could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects. Furthermore, it may be difficult to obtain swift and equitable enforcement of a judgement in the Czech Republic, or to obtain enforcement of a judgement by a court of another jurisdiction, which could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

### ***Global Economic Uncertainty***

Changes in the global economic environment have created market uncertainty and volatility in recent years. The market and demand for metal commodities and related products has in recent years been adversely affected by global economic uncertainty, reduced confidence in financial markets, bank failures and credit availability concerns. These macro-economic events negatively affected the mining and minerals sectors in general. Global financial conditions remain subject to sudden and rapid destabilizations in response to economic shocks. A slowdown in the financial markets or other economic conditions, including but not limited to consumer spending, employment rates, business conditions, inflation, fuel and energy costs, consumer debt levels, lack of available credit, the state of the financial markets, interest rates and tax rates, may adversely affect the Company's growth and profitability. Future economic shocks may be precipitated by a number of causes, including the ongoing European debt situation, a rise in the price of oil and other commodities, the volatility of metal prices, geopolitical instability, terrorism, the devaluation and volatility of global stock markets and natural disasters. Any sudden or rapid destabilization of global economic conditions could impact the Company's ability to obtain equity or debt financing in the future on terms favorable to the Company or at all. In such an event, the Company's operations and financial condition could be adversely impacted.

The Company assesses on a quarterly basis the carrying values of its exploration and evaluation assets. Should market conditions and commodity prices worsen and persist in a worsened state for a prolonged period of time, an impairment of the Company's mineral properties may be required.

### ***Fluctuating Mineral Prices***

HPEMM and or HPMSM, high-purity manganese products, are the products intended to be produced at the Chvaletice Manganese Project. The profitability of the Chvaletice Manganese Project will be significantly affected by changes in the market prices of these products. Prices of HPPEMM and HPMSM, as well as certain metals or products in the production of which HPPEMM and HPMSM are consumed, such as steel and aluminum alloys, as well as lithium ion battery precursor materials, fluctuate and historically have been subject to significant annual price fluctuations and are affected by numerous factors beyond the control of the Company such as the level of interest rates, the rate of inflation, central bank transactions, world supply and demand of steel and other metals, foreign currency exchange rates, international investments, monetary systems, speculative activities, international economic conditions, political developments and the production levels and production costs in key mineral producing countries. As a result, there is no assurance that, even if commercial quantities of mineral resources are discovered, that mineral prices will be such that the Company will be profitable.

Fluctuations in the prices of HPEMM and HPMSM could adversely affect the Company's financial performance and results of operations. Further, if the market price of these metals falls or remains depressed, the Company may experience losses or asset write-downs and may curtail or suspend some or all of the Company's exploration, development and mining activities.

***Inadequate Insurance, and Uninsured or Uninsurable Risks***

The Company's business is subject to a number of risks and hazards. Although the Company maintains insurance to protect against certain risks in such amounts as it considers to be reasonable, its insurance will not cover all the potential risks associated with its activities, including current and any future mining operations. The Company may also be unable to obtain or maintain insurance to cover its risks at economically feasible premiums, or at all. Insurance coverage may not continue to be available or may not be adequate to cover any resulting liability. Moreover, insurance against risks such as environmental pollution or other hazards as a result of exploration, development or production may not be available to the Company on acceptable terms. The Company might also become subject to liability for pollution or other hazards which it is not currently insured against and/or in the future may not insure against because of premium costs or other reasons. Losses from these events may cause the Company to incur significant costs which could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

***Compliance with Environmental Regulations can be Costly***

The Company's exploration on the Chvaletice Manganese Project, as well as the planned development of the Chvaletice Manganese Project, are all subject to environmental regulation. Regulations cover, among other things, water quality standards, land reclamation, the generation, transportation, storage and disposal of hazardous waste, the construction and operation of tailings dams, and general health and safety matters. There is no assurance that the Company has been or will at all times be in full compliance with all environmental laws and regulations or hold, and be in full compliance with, all required environmental and health and safety approvals and permits. The potential costs and delays associated with compliance with such laws, regulations, approvals and permits could prevent the Company from economically operating or proceeding with the further development and exploration of the Chvaletice Manganese Project, and any non-compliance with such laws, regulations, approvals and permits at the Chvaletice Manganese Project could result in a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

Environmental approvals and permits are currently, and may in the future be, required in connection with the Company's current and planned operations. To the extent such environmental approvals and permits are required and not obtained, the Company's plans and the operation of mines may be curtailed, or it may be prohibited from proceeding with planned exploration or development of additional mineral properties. Failure to comply with applicable environmental laws, regulations and permitting requirements may result in enforcement actions, including orders issued by regulatory or judicial authorities causing operations to cease or be curtailed, and may include corrective measures requiring capital expenditures, installation of additional equipment, or remedial actions.

There is no assurance that any future changes in environmental regulation will not adversely affect the Company's operations. Changes in government regulations have the potential to significantly increase compliance costs and thus reduce the profitability of current or future operations.

Environmental hazards may also exist on the Chvaletice Manganese Project that are unknown to the Company at present and that have been caused by previous or existing owners or operators of the property and for which the Company may be liable for remediation. Parties engaged in the extraction of minerals, including the Company, may be required to compensate those suffering loss or damage by reason of their

activities and may have civil or criminal fines or penalties imposed for violations of applicable environmental laws or regulations, regardless of whether the Company actually caused the loss or damage. The costs of such compensation, fines or penalties could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

***Changes in climate conditions may affect the Company's operations***

A number of governments have introduced or are moving to introduce climate change legislation and treaties at the international, national, state/provincial and local levels. Regulation relating to emission levels (such as carbon taxes) and energy efficiency is becoming more stringent. If the current regulatory trend continues, this may result in increased costs at the Company's operations. In addition, the physical risks of climate change may also have an adverse effect on the Company's operations. These risks include the following:

- changes in sea levels could affect ocean transportation and shipping facilities that are used to transport supplies, equipment and workforce and products from the Company's operations to world markets;
- extreme weather events (such as prolonged drought) have the potential to disrupt operations at the Company's operations and may require the Company to make additional expenditures to mitigate the impact of such events; and
- the Company's facilities depend on regular supplies of consumables (diesel, tires, reagents, etc.) to operate efficiently. In the event that the effects of climate change or extreme weather events cause prolonged disruption to the delivery of essential commodities, production levels at the Company's operations may be reduced.

There can be no assurance that efforts to mitigate the risks of climate change will be effective and that the physical risks of climate change will not have an adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

***Social and Environmental Activism can Negatively Impact Exploration, Development and Mining Activities***

There is an increasing level of public concern relating to the effects of resource extraction on the natural landscape, on communities and on the environment. Certain non-governmental organizations, public interest groups and reporting organizations ("NGOs") who oppose resource development can be vocal critics of the resource extraction industries. In addition, there have been many instances in which local community groups have opposed resource extraction activities, which have resulted in disruption and delays to the relevant operation. While the Company seeks to operate in a socially responsible manner and believes it has good relationships with local communities in the regions in which it operates, NGOs or local community organizations could direct adverse publicity against and/or disrupt the operations of the Company in respect of one or more of its properties, regardless of its successful compliance with social and environmental best practices, due to political factors, activities of unrelated third parties on lands in which the Company has an interest or the Company's operations specifically. Any such actions and the resulting media coverage could have an adverse effect on the reputation and financial condition of the Company or its relationships with the communities in which it operates, which could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

***The Company may be Responsible for Corruption and Anti-bribery law Violations***

The Company's business is subject to the Canada's *Corruption of Foreign Public Officials Act* ("CFPOA"), which generally prohibits companies and company employees from engaging in bribery or other prohibited payments to foreign officials for the purpose of obtaining or retaining business. Since all of the Company's presently held interests are located in the Czech Republic, there is a risk of potential CFPOA violations, whether intentional or not, by any of the Company's employees, representatives or contractors. In addition, the Company is subject to the anti-bribery laws of the Czech Republic. The Company's employees or other agents may, without its knowledge and despite its efforts, engage in prohibited conduct under the Company's policies and procedures and the CFPOA or other anti-bribery laws for which the Company may be held responsible. The Code mandates compliance with these anti-corruption and anti-bribery laws. However, there can be no assurance that the Company's policies and procedures will always protect it from recklessness, fraudulent behavior, dishonesty or other inappropriate acts committed by its affiliates, employees, contractors or agents. If the Company's employees or other agents are found to have engaged in such practices, the Company could suffer severe penalties and other consequences that may have a material adverse effect on its business, financial condition and results of operations.

***The Company is Exposed to the Possibility that Applicable Taxing Authorities could take Actions that Result in Increased Tax***

The Company pays or will pay upon the commencement of future operations in the future, a variety of taxes, fees and other governmental charges in connection with the operation of its business, including income taxes, mining royalties, ad valorem property taxes, sales and use taxes, social security contributions and various assessments. These taxes, fees and other charges are assessed by a variety of taxing authorities pursuant to applicable laws, regulations and rules. From time to time, the Company may also enter into specific agreements with such taxing authorities that provide for the reduction, abatement or deferral of such taxes, fees or charges in exchange for certain payments or undertakings on the Company's part. If the Company enters into any such arrangements, the Company can give no assurance that any such reduction, abatement or deferral arrangements will be honored or that the applicable taxing authorities will not take actions that materially increase the amount of such taxes, fees or other governmental charges that the Company is required to pay. Additionally, the Company may incur additional and unanticipated costs and expenses in connection with the Company's efforts to resist any proposed increases in such taxes, fees or other charges or in connection with the Company's efforts to enforce any reduction, abatement or deferral arrangements that the Company has previously put in place.

The Czech Republic government may implement changes to the tax regime that may affect the Company. These changes could include changes in prevailing tax rates and the imposition of new or temporary taxes, the proceeds of which are earmarked for designated government purposes. Some of these changes may result in increases in the Company's tax payments, which could have an adverse effect on the Company's operations or profitability. The Company cannot provide assurance that it will be able to be profitable following any increases in taxes applicable to the Company and the Company's operations.

### ***Future Acquisitions***

As part of the Company's business strategy, the Company may seek to grow by acquiring companies and/or assets or establishing joint ventures that the Company believes will complement the Company's current or future business. The Company may not effectively select acquisition candidates or negotiate or finance acquisitions or integrate the acquired businesses and their personnel or acquire assets for the Company's business. The Company cannot guarantee that the Company can complete any acquisition the Company pursues on favourable terms, or that any acquisitions completed will ultimately benefit the Company's business.

### ***Reliability of Historical Information***

The Company has relied on, and the disclosure from the Technical Report, is based, in part, upon historical data compiled by previous parties involved with the Chvaletice Manganese Project. To the extent that any of such historical data is inaccurate or incomplete, the Company's exploration plans may be adversely affected.

### **Risks Relating to the Shares**

#### ***Liquidity and Future Financing Risk***

The Company is in the early stages of its business and has no source of operating revenue. The Company will likely operate at a loss until the Company puts the Chvaletice Manganese Project into production. The Company's ability to secure any required financing to sustain operations will depend in part upon prevailing capital market conditions and business success. There can be no assurance that the Company will be successful in its efforts to secure any additional financing or additional financing on satisfactory terms, if at all. If additional financing is raised by issuance of additional Shares from treasury, control may change, and shareholders may suffer dilution. If adequate funds are not available, or are not available on acceptable terms, the Company may be required to scale back its current business plan or cease operating.

#### ***Currency Fluctuations can result in Unanticipated Losses***

The Company maintains its accounting records and reports its financial position and results in Canadian dollars, but a portion of the Company's operating and capital expenses are or will be incurred in Czech Republic Koruna and U.S. dollars, and the high-purity manganese products that the Company expects to produce from the Chvaletice Manganese Project will be sold based principally on a US dollar price. Exchange rate fluctuations in these currencies are beyond the Company's control and such fluctuations could have an adverse effect on the Company's business, financial condition and results of operations.

#### ***Share Price Fluctuations***

In recent years, the stock market has experienced extreme price and volume fluctuations. This volatility has had a significant effect on the market price of securities issued by many companies for reasons unrelated to the operating performance of these companies. The market price of the Shares could similarly be subject to wide fluctuations in response to a number of factors, most of which the Company cannot control, including, but not limited to:

- (a) fluctuations in the market price of mineral resources;
- (b) the public's reaction to the Company's press releases, announcements and filings with Canadian securities regulatory authorities and those of its competitors;
- (c) fluctuations in broader stock market prices and volumes;

- (d) changes in market valuations of similar companies;
- (e) investor perception of the Company's industry or prospects;
- (f) additions or departures of key personnel;
- (g) commencement of or involvement in litigation;
- (h) changes in environmental and other governmental regulations;
- (i) announcements by the Company or its competitors of strategic alliances, significant contracts, new technologies, acquisitions, commercial relationships, joint ventures or capital commitments;
- (j) variations in the Company's quarterly results of operations or cash flows or those of other comparable companies;
- (k) revenues and operating results failing to meet the expectations of securities analysts or investors in a particular quarter;
- (l) the expiration of lock-up or other transfer restrictions on outstanding Shares;
- (m) news reports relating to trends, concerns, technological or competitive developments, regulatory changes and other related industry and market issues affecting the mining sector;
- (n) future issuances and sales of Shares, or of debt securities of the Company;
- (o) demand for and trading volume of Shares;
- (p) changes in securities analysts' recommendations and their estimates of the Company's financial performance; and
- (q) changes in general conditions in the domestic and worldwide economies or financial markets.

The realization of any of these risks and other factors beyond the Company's control could cause the market price of the Shares to decline significantly.

Additionally, as the Shares will be traded on the TSXV and the CDIs will be traded on the ASX, there is a possibility that there will be substantial price and volume disparities between the two markets.

#### ***Dividends to Shareholders***

The Company has not, since the date of its incorporation, declared or paid any dividends or other distributions on its Shares. The Company does not anticipate paying cash dividends on the Shares in the foreseeable future. The Company currently intends to retain all future earnings to fund the development and growth of its business. Any payment of future dividends will be at the discretion of the directors and will depend on, among other things, the Company's earnings, financial condition, capital requirements, level of indebtedness, statutory and contractual restrictions applying to the payment of dividends, and other considerations that the directors deem relevant. Investors must rely on sales of their Shares after price appreciation, which may never occur, as the only way to realize a return on their investment.

#### ***Securities or Industry Analysts***

The trading market for Shares could be influenced by research and reports that industry and/or securities analysts may publish about the Company, its business, the market or competitors. The Company does not have any control over these analysts and cannot assure that analysts will cover it or provide favourable coverage. If any of the analysts who may cover the Company's business change their recommendation

regarding the Company's stock adversely, or provide more favourable relative recommendations about its competitors, the stock price would likely decline. If any analyst who may cover the Company's business were to cease coverage or fail to regularly publish reports on the Company, it could lose visibility in the financial markets, which in turn could cause the stock price or trading volume to decline.

#### ***Dilution from Future Equity Financings***

In order to execute the Company's growth strategy, the Company may from time to time raise funds through the issuance of Shares or the issuance of debt instruments or other securities convertible into Shares. The Company cannot predict the size or price of future issuances of Shares or the size or terms of future issuances of debt instruments or other securities convertible into Shares, or the effect, if any, that future issuances and sales of the Company's securities will have on the market price of the Shares. Sales or issuances of substantial numbers of Shares, or the perception that such sales or issuances could occur, may adversely affect prevailing market prices of the Shares. With any additional sale or issuance of Shares, or securities convertible into Shares, investors will suffer dilution to their voting power and the Company may experience dilution in its earnings per share.

#### ***Public Companies are Subject to Securities Class Action Litigation Risk***

In the past, securities class action litigation has often been brought against a company following a decline in the market price of its securities. If the Company faces such litigation, it could result in substantial costs and a diversion of management's attention and resources, which could materially harm its business.

#### ***It may be Difficult to Enforce Judgements and effect Service of Process on Directors and Officers***

Some of the directors and officers of the Company reside outside of Canada, and some or all of the assets of those persons may be located outside of Canada. Therefore, it may not be possible for investors to collect or to enforce judgments obtained in Canadian courts predicated upon the civil liability provisions of applicable Canadian Securities Laws against such persons. Moreover, it may not be possible for investors to effect service of process within Canada upon such persons.

#### ***Global Financial Conditions can Reduce the Price of the Shares***

Following the onset of the credit crisis in 2008, global financial conditions were characterized by extreme volatility and several major financial institutions either went into bankruptcy or were rescued by governmental authorities. While global financial conditions subsequently stabilized, there remains considerable risk in the system given the extraordinary measures adopted by government authorities to achieve that stability. Global financial conditions could suddenly and rapidly destabilize in response to future economic shocks, as government authorities may have limited resources to respond to future crises. Future economic shocks may be precipitated by a number of causes, including a rise in the price of oil, geopolitical instability and natural disasters. Any sudden or rapid destabilization of global economic conditions could impact the Company's ability to obtain equity or debt financing in the future on terms favourable to the Company. Additionally, any such occurrence could cause decreases in asset values that are deemed to be other than temporary, which may result in impairment losses. Further, in such an event, the Company's operations and financial condition could be adversely impacted.

Furthermore, general market, political and economic conditions, including, for example, inflation, interest and currency exchange rates, structural changes in the global mining industry, global supply and demand for commodities, political developments, legislative or regulatory changes, social or labour unrest and stock market trends will affect the Company's operating environment and its operating costs, profit margins and share price. Any negative events in the global economy could have a material adverse effect on the Company's business, financial condition, results of operations, cash flows or prospects.

### ***Conflict of Interest***

Certain of the Company's directors and officers are, and may continue to be, involved in the mineral exploration industry through their direct and indirect participation in corporations, partnerships or joint ventures which are potential competitors of the Company. Situations may arise in connection with potential acquisitions or opportunities where the other interests of these directors and officers may conflict with the Company's interests. Directors and officers of the Company with conflicts of interest will be subject to and must follow the procedures set out in applicable corporate and securities legislation, regulations, rules and policies. Notwithstanding this, there may be corporate opportunities which the Company is not able to procure due to a conflict of interest of one or more of the Company's directors or officers.

### **DIVIDENDS AND DISTRIBUTIONS**

The Company has never declared or paid a dividend. The Board intends to retain future earnings for reinvestment in the Company's business, and therefore, has no current intention to declare or pay dividends on the Shares in the foreseeable future. The Company's dividend policy will be reviewed from time to time in the context of its earnings, financial condition and other relevant factors. There can be no assurance that the Company will generate sufficient earnings or cash flow to allow it to pay dividends.

### **DESCRIPTION OF CAPITAL STOCK**

The Company's authorized share capital consists of an unlimited number of Shares without par value. The following is a summary of the Company's capital. It does not purport to be complete and is subject to, and is qualified in its entirety by reference to, the applicable provisions of British Columbia corporate law, the Company's notice of articles and articles. As at the date of this AIF, 175,065,435 Shares are issued and outstanding, including 77,672,567 Shares in the form of CDIs. In addition, as of the date of this AIF, there were 15,500,000 Shares issuable on the exercise of incentive stock options and 5,756,750 Shares issuable on the exercise of common share purchase warrants.

#### **Shares**

All of the Shares rank equally as to voting rights, participation in a distribution of the assets of the Company on a liquidation, dissolution or winding-up of the Company and entitlement to any dividends declared by the Company. The holders of the Shares are entitled to receive notice of, and to attend and vote at, all meetings of shareholders, with each Share carrying the right to one vote. In the event of the liquidation, dissolution or winding-up of the Company, or any other distribution of the assets of the Company among its shareholders for the purpose of winding-up its affairs, the holders of the Shares will be entitled to receive, on a pro rata basis, all of the assets remaining after the payment by the Company of all of its liabilities. The holders of Shares are entitled to receive dividends as and when declared by the Board in respect of the Shares on a pro rata basis. The Shares do not carry any pre-emptive, subscription, redemption or conversion rights.

### **MARKET FOR SECURITIES**

#### **Markets**

The Shares were listed on the TSXV on October 2, 2018 under the symbol "EMN". The closing price of the Shares on the TSXV on December 16, 2019 was \$0.13. The Company's Shares, in the form of CDIs were admitted to the Official List of the ASX effective September 28, 2018 and commenced trading on the ASX October 2, 2018 under the symbol "EMN." From the date the Shares and CDIs commenced

trading to December 16, 2019, 9,290,359 Shares have been converted into CDIs. The closing price of the Shares on the ASX on December 16, 2019 was A\$0.165.

### Trading Price and Volume of the Shares

The following sets forth the high and low market prices and the volume of the Shares and CDIs traded on the TSXV and ASX, respectively, during the most recently completed financial year ended September 30, 2019 and to the end of the month prior to the date of this AIF, stated in Canadian dollars and Australian dollars, respectively:

Month / Year	TSXV Trading			ASX Trading		
	High CAD\$	Low CAD\$	Volume	High A\$	Low A\$	Volume
October 2018	\$0.25	\$0.15	10,756,350	A\$0.33	A\$0.18	5,186,081
November 2018	\$0.22	\$0.15	5,663,450	A\$0.28	A\$0.17	3,137,597
December 2018	\$0.24	\$0.19	1,373,744	A\$0.265	A\$0.16	2,065,338
January 2019	\$0.27	\$0.19	1,369,844	A\$0.31	A\$0.19	2,157,578
February 2019	\$0.435	\$0.25	1,753,091	A\$0.33	A\$0.25	3,735,377
March 2019	\$0.28	\$0.25	1,288,640	A\$0.285	A\$0.24	1,532,188
April 2019	\$0.26	\$0.20	551,338	A\$0.27	A\$0.205	2,466,591
May 2019	\$0.23	\$0.20	1,655,532	A\$0.235	A\$0.185	1,317,333
June 2019	\$0.23	\$0.18	757,538	A\$0.225	A\$0.18	356,390
July 2019	\$0.20	\$0.15	870,149	A\$0.22	A\$0.16	864,766
August 2019	\$0.20	\$0.16	1,026,126	A\$0.22	A\$0.16	694,376
September 2019	\$0.17	\$0.17	194,460	A\$0.17	A\$0.155	116,248
October 2019	\$0.17	\$0.17	320,117	A\$0.23	A\$0.15	1,107,309
November 2019	\$0.19	\$0.13	1,221,704	A\$0.175	A\$0.12	718,117

### Prior Sales

The following table sets forth certain information regarding the sale of Shares during the most recently completed financial year ended September 30, 2019 and to the end of the month prior to the date of this AIF.

Date of Issue	Number and Type of Securities	Issue Price Per Securities	Aggregate Issue Price	Nature of Consideration
October 2, 2018	10,000,000 Shares	\$0.25	\$2,500,000	Initial Public Offering on TSXV
October 2, 2018	200,000 Shares	\$0.25	\$50,000	Remuneration to Canadian agent <sup>(1)</sup>
October 2, 2018	400,000 Broker Warrants	\$0.375	-	Remuneration to Canadian agent <sup>(1)</sup>
February 14, 2019	2,725,000 Incentive Stock Options	\$0.25	-	Remuneration
May 13, 2019	1,428,570 Shares	\$.21	\$300,000	Partial consideration for Mangan <sup>(2)</sup>
May 14, 2019	400,000 Incentive Stock Options	\$0.25	-	Remuneration
June 14, 2019	2,335,145 Shares	\$0.11	\$256,866	Exercise of Broker Warrants
July 25, 2019	590,120 Shares	\$0.11	\$64,913	Exercise of Broker Warrants
August 12, 2019	150,000 Incentive Stock Options	\$0.25	-	Remuneration

Notes:

- (1) Fees payable in connection with the Offering included a corporate finance fee of fees \$70,000, fees of 6% of the aggregate gross proceeds of the Offering in excess of \$1,500,000, payable 1% in cash and 5% in Shares (being 200,000 Shares), and warrants entitling the agent to purchase 10% of the Shares issued in excess of 6,000,000 Shares at an exercise price of \$0.375 per Share until October 1, 2021.
- (2) Represents the fourth tranche of the deferred share consideration relating to the acquisition of Mangan (See "*General Development of the Business*").

## **ESCROWED SECURITIES AND SECURITIES SUBJECT TO CONTRACTUAL RESTRICTIONS ON TRANSFER**

The figures in this section are based on the number of securities of the Company outstanding as of the date of this AIF.

### **NP 46-201 Escrow**

In accordance with NP 46-201, all shares of an issuer owned or controlled by its principals are required to be placed in escrow at the time of the issuer's initial public offering. As of the date of this AIF, the following Shares and Options of the Company (the "**NP Escrowed Securities**") remain subject to the terms of an escrow agreement dated October 2, 2018 among the Company, the Escrow Agent and the holders of the NP Escrowed Securities.

<b>Designation of Class</b>	<b>Number of Securities</b>	<b>% of Total Outstanding Class of Securities</b>
Shares	7,261,338	4.15%
Options	1,600,000	10.32%

The remaining NP Escrowed Securities are subject to automatic timed release on April 2, 2020.

### **ASX Escrow Provisions**

In addition to the foregoing escrow provisions, under ASX Listing Rules, Shares, Options and Warrants held by certain promoters, related parties, and consultants (collectively, the "**ASX Escrowed Securityholders**") will be escrowed for a period of up to two years from the ASX listing date of September 28, 2018. Each of the ASX Escrowed Securityholders has entered into an escrow deed in respect of their escrowed Shares, Options and/or Warrants. This deed prevents them from disposing of their escrowed Shares, Options and/or Warrants for the applicable escrow period.

In aggregate, Shares, as of the date of this AIF, Options and Warrants held by the ASX Escrowed Securityholders will be the subject of these escrow arrangements, as set out in the following table (the "**ASX Escrowed Securities**"):

<b>Designation of Class</b>	<b>Number of Securities</b>	<b>% of Total Outstanding Class of Securities</b>
Shares	25,770,569	14.72%
Options	7,175,000	45.27%
Warrants	5,756,750	100%

The ASX Escrowed Securities will be released 24 months from the ASX listing date of September 28, 2018.

### **Application of Escrow Provisions**

Depending on the holder of the Shares, Options and/or Warrants, it is possible that any particular holder, or any particular Share, Option or Warrant, will fall into one or both of the NP Escrowed Securities or the ASX Escrowed

Securities. If a holder of Shares, Options and/or Warrants is subject to both of these escrow regimes, the Share, Option and/or Warrant will not be released from escrow until the release schedule for all regimes have been met. Given this overlap, on any particular release date, despite a Share, Option and/or Warrant being released from a particular escrow regime, such Share, Option and/or Warrant may still be in escrow under another regime.

### DIRECTORS AND EXECUTIVE OFFICERS

The following table sets out the names and country and state or province of residence of the directors and executive officers of the Company, their present position(s) and offices with the Company, their principal occupations during the last five years and their holdings of Shares, as applicable, as at the date hereof.

<b>Name and Province and Country of Residence</b>	<b>Position(s) with the Company</b>	<b>Principal Occupation During Past Five Years</b>	<b>Director since</b>
<b>Roman Shklanka (3)</b>  British Columbia, Canada	Non-Executive Chairman, Director	From September 2004, served as a director and Executive Chairman of Pacific Imperial Mines Ltd.; since April 2019 has served as a director of Dynasty Gold Corp.; and from January 2009 to July 2015, served as a director of Delta Gold Corp.	November 25, 2014
<b>Marco A. Romero (2)</b>  British Columbia, Canada	President & CEO, Director	President and CEO of the Company since September 2015; President and CEO and a director of Delta Gold Corp. from January 2009 to July 2015; President and CEO of Polaris Materials Corporation from 1999 to 2008, and a director from of Polaris Materials Corporation from 1999 to 2017.	November 25, 2014
<b>Pierre F. Massé</b>  British Columbia, Canada	Vice President Finance and Chief Financial Officer	VP Finance and CFO from November 1, 2018; VP Finance and CFO and Corporate Secretary from January 2016 to October 31, 2018; employed by Global Mining Inc. (part of the Ivanhoe Capital group of companies) acting in the capacity as CFO to its related companies, Kaizen Discovery Inc. (from January 2014 to May 2015) and GoviEx Uranium Inc. (from January 2011 to May 2015).	N/A
<b>Harvey N. McLeod (2), (3)</b>  British Columbia, Canada	Director	Vice President Marketing and Principal in, Klohn Crippen Berger, a worldwide geoscience, environmental and engineering consulting firm.	September 14, 2015
<b>John Webster (1), (2)</b>  British Columbia, Canada	Director	Retired in June 2014 after 30 years with PricewaterhouseCoopers LLP; a director of Eldorado Gold Corporation and chair of its audit committee.	September 14, 2015
<b>Daniel Rosický</b> Czech Republic	Director	From 1998, senior partner with PRK Partners s.r.o., a leading Czech corporate law firm.	January 11, 2016

<b>Name and Province and Country of Residence</b>	<b>Position(s) with the Company</b>	<b>Principal Occupation During Past Five Years</b>	<b>Director since</b>
<b>David B. Dreisinger (1), (3)</b>  British Columbia, Canada	Director	Professor at the University of British Columbia since 1984; President of Dreisinger Consulting, providing consulting services on major hydrometallurgical projects and plants; a director of Polymet Mining Corp. since October 2003, Search Minerals Inc. since July 2009, and LeadFX Inc. since June 2017; Vice President Metallurgy of Camrova Resources Inc. since July 2004; Vice President Metallurgy of Search Minerals Inc. from July 2009; from May 2009 to January 2018, held position of Vice President Metallurgy with TriMetals Mining Inc.; and from September 2012 to December 2014, held position of Vice President Metallurgy with Clifton Star Resources Inc.	September 14, 2015
<b>Jan Votava</b>  Czech Republic	Managing Director of Mangan, Director	Managing Director of Mangan, from October 1, 2017; From 2006 to September 2017, held managerial roles including Head of Transformation Team for Europe, Technical Director for Central Europe, as well as Executive Chairman and Managing Director for the Czech Republic for LafargeHolcim, a global building materials company.	September 21, 2017
<b>Gregory P. Martyr (1)</b>  New South Wales, Australia	Director	Since 2017, has served as Executive Director of WarpForge Limited (formerly Carbon Fibre Development Technologies Pty Ltd.), a manufacturer of carbon fibre industrial scale products; from 2011 to 2016, served as Managing Director with Standard Chartered Bank, ultimately as the Global Head of Advisory, Mining and Metals.	March 20, 2018
<b>Thomas Glück</b>  British Columbia, Canada	Vice President, Development	Vice President, Development of the Company since January 1, 2018; From March 2013, provided numerous clients, including the Company, with metallurgical consulting services, as Thomas Glück Consulting.	N/A
<b>Fausto Taddei</b>  British Columbia, Canada	Vice President, Corporate Development and Corporate Secretary	Vice President, Corporate Development and Corporate Secretary of the Company since November 1, 2018; from June 2013, a private financial consultant.	N/A

Notes:

1. Member of Audit Committee, of which John Webster is the Chair.
2. Member of Governance, Compensation, Nominating and Sustainability Committee, of which Harvey McLeod is the Chair.
3. Member of Technical Committee, of which David Dreisinger is the Chair

The term of office of the directors expires annually at the time of the Company's annual shareholder meeting. The term of office of the Company's executive officers expires at the discretion of the Board.

As at the date of this AIF, the Company's directors and executive officers as a group beneficially own, directly or indirectly, or exercise control or direction over an aggregate of 35,867,567 Shares, representing 20.49% of the issued and outstanding Shares.

### **Cease Trade Orders, Bankruptcies, Penalties or Sanctions**

Other than as disclosed below, to the knowledge of management, except as disclosed herein, no director or executive officer of the Company is, as of the date of this AIF, or was, within the 10 years before the date hereof, a director, chief executive officer or chief financial officer of any company that was the subject of a cease trade order, an order similar to a cease trade order or an order that denied the company access to any exemption under securities legislation that was in effect for a period of more than 30 consecutive days, that was issued: (i) while such person was acting in that capacity; or (ii) after such person was acting in such capacity and which resulted from an event that occurred while that person was acting in such capacity.

Dr. Roman Shklanka was a director of the Pacific Imperial Mines Ltd. when it was the subject of a Cease Trade Order issued by the British Columbia Securities Commission on November 8, 2008 (the "**British Columbia Cease Trade Order**") and the Alberta Securities Commission on February 9, 2009 for failure to file financial statements and management's discussion and analysis for the year ended June 30, 2008 (the "**Alberta Cease Trade Order**"). The financial statements have since been filed and, as a result, the British Columbia Cease Trade Order was revoked on June 25, 2010 and the Alberta Cease Trade Order was revoked on September 8, 2010.

To the knowledge of management, except as disclosed herein, no director or executive officer of the Company, or shareholder holding a sufficient number of securities to affect materially the control of the Company is, as of the date of this AIF, or has been, within 10 years before the date hereof, a director or executive officer of any company that, while such person was acting in that capacity, or within a year of that person ceasing to act in that capacity, became bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency or was subject to or instituted any proceedings, arrangement or compromise with creditors or had a receiver, receiver manager or trustee appointed to hold its assets.

To the knowledge of management, no director or executive officer of the Company, or shareholder holding a sufficient number of securities to affect materially the control of the Company has, within the 10 years before the date of this AIF, become bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency, or become subject to or instituted any proceedings, arrangement or compromise with creditors, or had a receiver, receiver manager or trustee appointed to hold the assets of the director, executive officer or shareholder.

To the knowledge of management, no director or executive officer of the Company, or shareholder holding a sufficient number of securities to affect materially the control of the Company has been subject to any penalties or sanctions imposed by a court relating to securities legislation or by a securities regulatory authority or has entered into a settlement agreement with a securities regulatory authority, or has been subject to any other penalties or sanctions imposed by a court or regulatory body that would likely be considered important to a reasonable investor in making an investment decision.

### **Conflicts of Interest**

To the best of the Company's knowledge, there are no existing or potential conflicts of interest among the Company, its directors, officers, or other members of management of the Company except that certain of the directors, officers and other members of management serve as directors, officers and members of management of other public companies and therefore it is possible that a conflict may arise between their duties as a director, officer or member of management of such other companies and their duties as a director, officer or member of management of the Company.

The directors and officers of the Company are aware of the existence of laws governing accountability of

directors and officers for corporate opportunity and requiring disclosure by directors and officers of conflicts of interest and the Company will rely upon such laws in respect of any directors' or officers' conflicts of interest or in respect of any breaches of duty to any of its directors and officers. All such conflicts must be disclosed by such directors or officers in accordance with British Columbia corporate law.

The Company has adopted a Code of Ethics and Business Conduct that applies to all directors, officers, employees and consultants of the Company and its subsidiaries.

## PROMOTERS

Each of Marco Romero and Roman Shklanka took the initiative in founding the Company and arranging for its organization and, accordingly, may be considered to be the promoters of the Company within the meaning of applicable securities legislation in British Columbia. The following table sets out their shareholdings in the Company.

Name of Promoter	Shares Beneficially Owned, or Controlled or Directed, Directly or Indirectly	% of Total Outstanding Class of Shares
Marco A. Romero	9,713,000(1)	5.55%
Roman Shklanka	10,453,335(2)	5.97%

Notes:

1. Includes Shares held by Navigator Management Ltd., a company controlled by Marco A. Romero and owned jointly with his spouse.
2. Includes Shares held by Shklanka Holdings Ltd., a company controlled by Roman Shklanka.

Mr. Romero has, pursuant to the Stock Option Plan, been granted incentive stock options to purchase: 200,000 Shares at an exercise price of \$0.08 per Share until May 16, 2026; 125,000 Shares at an exercise price of \$0.10 per Share until April 6, 2027; 250,000 Shares at an exercise price of \$0.11 per Share until September 22, 2027; 75,000 Shares at an exercise price of \$0.11 per Share until December 14, 2027; 250,000 Shares at an exercise price of \$0.20 per Share until February 21, 2028; and 100,000 Shares at an exercise price of \$0.28 per Share until February 14, 2029. In aggregate, Mr. Romero has 1,000,000 stock options to purchase Shares, representing 6.31% of the total stock options outstanding.

Dr. Shklanka has, pursuant to the Stock Option Plan, been granted incentive stock options to purchase: 200,000 Shares at an exercise price of \$0.08 per Share until May 16, 2026; 200,000 Shares at an exercise price of \$0.10 per Share until April 6, 2027; 300,000 Shares at an exercise price of \$0.11 per Share until September 22, 2027; 75,000 Shares at an exercise price of \$0.11 per Share until December 14, 2027; 300,000 Shares at an exercise price of \$0.20 per Share until February 21, 2028; and 300,000 Shares at an exercise price of \$0.28 per Share until February 14, 2029. In aggregate, Dr. Shklanka has 1,375,000 stock options to purchase Shares, representing 8.68% of the total stock options outstanding.

Mr. Romero acts as a director and is an executive officer of the Company and Dr. Shklanka acts as a director and is Non-executive Chairman of the Company and accordingly, are compensated for their services as such. See section entitled "*Other Matters*" in the Company's management information circular dated January 4, 2019, which is available on SEDAR at [www.sedar.com](http://www.sedar.com), which section is incorporated by reference into this AIF.

## **LEGAL PROCEEDINGS AND REGULATORY ACTIONS**

During the last fiscal financial year, covering the period October 1, 2018 to September 30, 2019, there have been no legal proceedings to which the Company is or was a party or of which any of its property is or was the subject of that involves claims for damages, and the Company is unaware of any such proceedings being contemplated.

During the last fiscal financial year, there have not been any penalties or sanctions imposed against the Company by a court relating to provincial and territorial securities legislation or by a securities regulatory authority, nor have there been any other penalties or sanctions imposed by a court or regulatory body against the Company, and the Company has not entered into any settlement agreements before a court relating to provincial and territorial securities legislation or with a securities regulatory authority.

## **AUDIT COMMITTEE INFORMATION**

### **Audit Committee Charter**

The charter of the Audit Committee is attached as Schedule "B" to this AIF.

### **Composition of the Audit Committee and Independence**

The Audit Committee is comprised of three directors, being John Webster, Gregory P. Martyr, and David Dreisinger, each of whom is "independent" within the meaning of NI 52-110. John Webster is the current chair of the Audit Committee.

### **Relevant Education and Experience**

Each of John Webster, Gregory P. Martyr, and David Dreisinger, are "financially literate" within the meaning of NI 52-110. Each of the members of the Audit Committee has had several years of experience as a senior executive and a member of the board of directors of significant business enterprises in which he has assumed substantial financial and operational responsibility. In the course of these duties, the members have gained a reasonable understanding of the accounting principles used by the Company; an ability to assess the general application of such principles in connection with the accounting for estimates, accruals and reserves; experience analyzing and evaluating financial statements that present a breadth and level of complexity of issues that can reasonably be expected to be raised by the Company's financial statements, or experience actively supervising one or more individuals engaged in such activities; and an understanding of internal controls and procedures for financial reporting.

### **Audit Committee Oversight**

At no time since incorporation was a recommendation of the Audit Committee to nominate or compensate an external auditor not adopted by the Board.

### **Pre-Approval Policies and Procedures**

The Audit Committee charter requires that the Audit Committee pre-approve any services and fees to be provided by the auditor of the Company for the performance of any non-audit services that the Company deems advisable in accordance with applicable legal and regulatory requirements. The pre-approval requirement is waived with respect to the provision of such non-audit services if: the aggregate amount of all such non-audit services provided to the Company constitutes not more than twenty percent of the total amount of fees paid by the Company to its external auditors during the fiscal year in which the non-audit

services are provided; such services were not recognized by the Company at the time of the engagement to be non-audit services; and such services are promptly brought to the attention of the Audit Committee by the Company and approved prior to the completion of the audit by the Audit Committee or by one or more members of the Committee who are members of the Board to whom authority to grant such approvals has been delegated by the Committee. The Audit Committee is permitted to delegate pre-approval authority to one or more of its members; however, the decision of any member of the Audit Committee to whom such authority has been delegated must be presented to the full Audit Committee at its next scheduled meeting.

### External Auditor Service Fees

The following table provides information about the fees billed to the Company, for professional services rendered by PricewaterhouseCoopers LLP, Chartered Professional Accountants, during the financial years ended September 30, 2019 and 2018:

	2019	2018
	(\$)	(\$)
Audit Fees <sup>(1)</sup>	45,150	52,500
Audit Related Fees <sup>(2)</sup>	36,225	34,650
Tax Fees <sup>(3)</sup>	-	-
All Other Fees <sup>(4)</sup>	-	160,100
<b>Total:</b> <sup>(5)</sup>	<b>81,375</b>	<b>247,250</b>

Notes:

- (1) Audit fees were for professional services rendered by the Company's auditors for the audit of the Company's annual consolidated financial statements.
- (2) Audit related fees were for services related to limited procedures performed by the Company's auditors related to interim reports as well as services provided in connection with statutory and regulatory filings.
- (3) Tax fees are for tax compliance, tax advice and tax planning.
- (4) All other fees for services performed by the Company's auditors, includes work performed by PricewaterhouseCoopers LLP in connection with the Company's listing on the TSXV and work performed by PricewaterhouseCoopers Securities Ltd. as Investigating Accountants in connection with the Company's listing on the ASX.
- (5) These fees only represent professional services rendered and do not include any out-of-pocket disbursements or fees associated with filings made on the Company's behalf. These additional costs are not material as compared to the total professional services fees for each year.

### INTERESTS OF MANAGEMENT AND OTHERS IN MATERIAL TRANSACTIONS

The Company is not aware of any material interest, direct or indirect, of any director or officer of the Company, or any person or company that is a direct or indirect beneficial owner of, or who exercises control or direction over, more than ten percent of the Shares, or any affiliate of such persons or companies, in any transaction within the three most recently completed financial years or during the current financial year that has materially affected or will materially affect the Company.

### TRANSFER AGENTS AND REGISTRARS

The transfer agent and registrar for the Shares is Computershare Investor Services Inc. at its offices in Vancouver, British Columbia, Canada.

## **MATERIAL CONTRACTS**

Except for contracts entered into by the Company in the ordinary course of business or otherwise disclosed herein, the Company has no contracts which can reasonably be regarded as material.

## **INTERESTS OF EXPERTS**

### **Names of Experts**

The Company's auditors are PricewaterhouseCoopers LLP, Chartered Professional Accountants, who have prepared an independent auditor's report dated December 16, 2019 in respect of the Company's consolidated financial statements as at September 30, 2019 and September 30, 2018 and for years then ended. PricewaterhouseCoopers LLP has advised that they are independent with respect to the Company within the meaning of the Chartered Professional Accountants of British Columbia Code of Professional Conduct.

The scientific and technical information in this AIF regarding the Chvaletice Manganese Project referred to in the "Description of the Business" section is based on the Technical Report.

### **Interests of Experts**

Mr. James Barr, P. Geo., Mr. Jianhui (John) Huang, Ph.D., P. Eng., Mr. Mark Horan, P. Eng., Mr. Hassan Ghaffari, P. Eng., and Mr. Chris Johns, P. Eng., the authors of the Technical Report, are independent from the Company within the meaning of NI 43-101. Mr. Gary Nordin is a consultant to the Company, and its Chief Geologist, and is the Company's designated Qualified Person for this Prospectus within the meaning of NI 43-101. Mr. Nordin has reviewed and approved the technical information contained in this AIF. Each of Messrs. Huang, Barr, Horan, Ghaffari and Johns beneficially own, directly or indirectly, none of the outstanding Shares. Mr. Gary Nordin beneficially owns, directly or indirectly, less than 1% of the outstanding Shares.

## **ADDITIONAL INFORMATION**

Additional information relating to the Company may be found on SEDAR at [www.sedar.com](http://www.sedar.com).

Additional information, including directors' and officers' remuneration and indebtedness, principal holders of the Corporation's securities and securities authorized for issuance under equity compensation plans will be contained in the Company's management proxy circular for its upcoming annual general meeting.

Additional financial information is provided in the Company's audited consolidated financial statements and management discussion & analysis for the year ended September 30, 2019.

## SCHEDULE "A"

### INTERPRETATION

#### Defined Terms

Certain terms are limited to one section of the AIF and are defined directly in the body of the AIF. Other terms are used throughout, and are defined as follows:

"**ASX**" means the Australian Securities Exchange;

"**BCBCA**" means the *Business Corporations Act* (British Columbia), as amended from time to time, including the regulations promulgated thereunder;

"**Board**" means the board of directors of EMN;

"**CDI**" means a CHESSE Depository Interest (with each CDI representing one fully paid Share);

"**Chvaletice Manganese Project**" mean the Chvaletice Manganese Project owned by EMN in the Czech Republic;

"**Company**" has the meaning ascribed thereto under the heading "*Forward-Looking Statements*";

"**EMN**" means Euro Manganese Inc.;

"**HPEMN**" means high-purity electrolytic manganese metal, a form of highly-refined manganese metal, which can be used to produce certain specialty steel and aluminum alloys, as well as HPMSM;

"**HPSMN**" means high-purity manganese sulphate monohydrate, a form of highly-refined manganese salt, which is a major ingredient in certain common types of lithium-ion batteries;

"**Mangan**" means Mangan Chvaletice s.r.o.;

"**NI 43-101**" means National Instrument 43-101 – *Standards of Disclosure for Mineral Projects*;

"**NI 52-110**" means National Instrument 52-110 – *Audit Committees*;

"**Option**" means an option to acquire a Share granted pursuant to the Stock Option Plan;

"**Qualified Person**" means an individual who is a "Qualified Person" or "QP" within the meaning of NI 43-101;

"**SEDAR**" means the System for Electronic Document Analysis and Retrieval operated by the securities regulatory authorities in each of the provinces and territories of Canada;

"**Shares**" means the Common shares in the capital of EMN; "**Stock Option Plan**" means the stock option plan of the Company;

"**Technical Report**" has the meaning given to it under the heading "*Definitions and Other Information – Scientific and Technical Information*";

"**TSXV**" means the TSX Venture Exchange; and

"**U.S.**" or "**United States**" mean the United States of America, its territories or possessions, any state of the United States and the District of Columbia;

## **SCHEDULE "B"**

### **AUDIT COMMITTEE CHARTER**

#### **1. MANDATE**

The primary function of the audit committee (the "**Committee**") is to assist the Board of Directors in fulfilling its financial oversight responsibilities by reviewing the financial reports and other financial information provided by Euro Manganese Inc (the "**Company**") to regulatory authorities and shareholders, the Company's systems of internal controls regarding finance and accounting and the Company's auditing, accounting and financial reporting processes. Consistent with this function, the Committee will encourage continuous improvement of, and should foster adherence to, the Company's policies, procedures and practices at all levels. The Committee's primary duties and responsibilities are to:

- a) Serve as an independent and objective party to monitor the Company's financial reporting and internal control system and review the Company's financial statements.
- b) Review and appraise the performance of the Company's external auditors.
- c) Provide an open avenue of communication among the Company's auditors, financial and senior management and the Board of Directors.
- d) Provide guidance to the Company's management team and, in particular, the Chief Financial Officer, on appropriate disclosure, accounting and risk management practices and procedures.

#### **2. COMPOSITION**

The Committee shall be comprised of three Directors as determined by the Board of Directors, all of whom shall be "independent" directors as defined in section 1.4 of National Instrument 52-110 and free from any relationship that, in the opinion of the Board of Directors, would interfere with the exercise of his or her independent judgment as a member of the Committee.

At least one member of the Committee shall have accounting or related financial management expertise. All members of the Committee that are not financially literate will work towards becoming financially literate to obtain a working familiarity with basic finance and accounting practices. For the purposes of the Company's Charter, the definition of "financially literate" is the ability to read and understand a set of financial statements that present a breadth and level of complexity of accounting issues that are generally comparable to the breadth and complexity of the issues that can presumably be expected to be raised by the Company's financial statements.

The members of the Committee shall be elected by the Board of Directors as possible after its first meeting following the annual shareholders' meeting. Unless a Chair is elected by the full Board of Directors, the members of the Committee may designate a Chair by a majority vote of the full Committee membership.

#### **3. MEETINGS**

The Committee shall meet at least twice annually, or more frequently as circumstances dictate. As part of its job to foster open communication, the Committee will meet at least annually with the Chief Financial Officer and the external auditors and, if requested by the Committee, in separate sessions.

#### 4. RESPONSIBILITIES AND DUTIES

To fulfill its responsibilities and duties, the Committee shall:

##### Documents/Reports Review

- a) Periodically review and update this Charter.
- b) Review the Company's financial statements, MD&A and any annual and interim earnings, press releases before the Company publicly discloses this information and any reports or other financial information (including quarterly financial statements), which are submitted to any governmental body, or to the public, including any certification, report, opinion, or review rendered by the external auditors.

##### External Auditors

- a) Review annually, the performance of the external auditors who shall be ultimately accountable to the Board of Directors and the Committee as representatives of the shareholders of the Company.
- b) Obtain annually, a formal written statement of external auditors setting forth all relationships between the external auditors and the Company, consistent with Independence Standards Board Standard 1.
- c) Review and discuss with the external auditors any disclosed relationships or services that may impact the objectivity and independence of the external auditors.
- d) Take, or recommend that the full Board of Directors take, appropriate action to oversee the independence of the external auditors.
- e) Recommend to the Board of Directors the selection and, where applicable, the replacement of the external auditors nominated annually for shareholder approval.
- f) At each meeting, consult with the external auditors, without the presence of management, about the quality of the Company's accounting principles, internal controls and the completeness and accuracy of the Company's financial statements.
- g) Review and approve the Company's hiring policies regarding partners, employees and former partners and employees of the present and former external auditors of the Company.
- h) Review with management and the external auditors the audit plan for the year-end financial statements and intended template for such statements.
- i) Review and pre-approve all audit and audit-related services and the fees and other compensation related thereto, and any non-audit services, provided by the Company's external auditors. The pre-approval requirement is waived with respect to the provision of non-audit services if:
  - i. the aggregate amount of all such non-audit services provided to the Company constitutes not more than twenty percent of the total amount of revenues paid by the Company to its external auditors during the fiscal year in which the non-audit services are provided;
  - ii. such services were not recognized by the Company at the time of the engagement to be non-audit services; and

- iii. such services are promptly brought to the attention of the Committee by the Company and approved prior to the completion of the audit by the Committee or by one or more members of the Committee who are members of the Board of Directors to whom authority to grant such approvals has been delegated by the Committee.

Provided the pre-approval of the non-audit services is presented to the Committee's first scheduled meeting following such approval such authority may be delegated by the Committee to one or more independent members of the Committee.

## **5. FINANCIAL REPORTING PROCESSES**

- a) In consultation with the external auditors, review with management the integrity of the Company's financial reporting process, both internal and external.
- b) Consider the external auditors' judgments about the quality and appropriateness of the Company's accounting principles as applied in its financial reporting.
- c) Consider and approve, if appropriate, changes to the Company's auditing and accounting principles and practices as suggested by the external auditors and management.
- d) Review significant judgments made by management in the preparation of the financial statements and the view of the external auditors as to appropriateness of such judgments.
- e) Following completion of the annual audit, review separately with management and the external auditors any significant difficulties encountered during the course of the audit, including any restrictions on the scope of work or access to required information.
- f) Review any significant disagreement among management and the external auditors in connection with the preparation of the financial statements.
- g) Review with the external auditors and management the extent to which changes and improvements in financial or accounting practices have been implemented.
- h) Review any complaints or concerns about any questionable accounting, internal accounting controls or auditing matters.
- i) Review certification process.
- j) Establish a procedure for the confidential, anonymous submission by employees of the Company of concerns regarding questionable accounting or auditing matters.

## **6. RISK MANAGEMENT**

- a) To review, at least annually, and more frequently, if necessary, the Company's policies for risk assessment and risk management (the identification, monitoring, and mitigation of risks).
- b) To request the external auditor's opinion of management's assessment of significant risks facing the Company and how effectively they are being managed or controlled.
- c) To assess the effectiveness of the over-all process for identifying principal business risks and report thereon to the Board.

## **7. OTHER**

Review and approve any related-party transactions and material asset dispositions.