



# INVESTING IN THE EV FUTURE

## Manganese X Mission

To become the first publicly traded mining company  
in Canada and the US to commercialize high-purity EV-compliant  
manganese



**FSE: 9SC    TRADEGATE: 9SC    TXSV: MN    OTCQB: MNXXF**

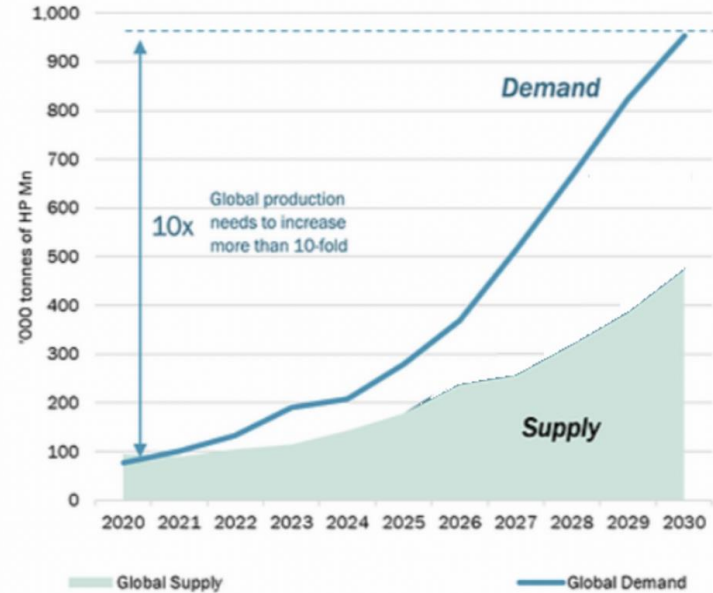
# DISCLAIMER

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# High Purity Manganese Supply & Demand

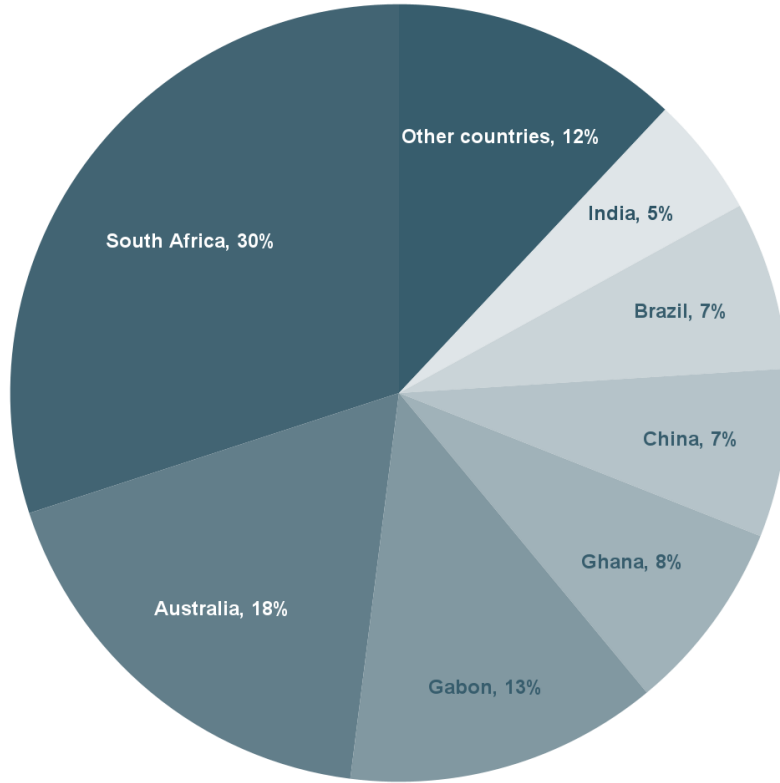
Global High Purity Manganese Demand will increase by tenfold to 2030

Manganese is becoming the EV critical mineral of choice, less expensive to process, provides greater energy, density, larger life-cycles



**China** produces over **90%** of the world's high purity electrolytic Manganese metal (HPEMM) and high purity Manganese sulphate monohydrate (HPMSM)

# NORTH AMERICA IS DEPENDENT ON MANGANESE IMPORTS



Presently, there is no manganese mining production in the United States or Canada. Manganese ore production is dominated by South Africa, with over a third of the total, followed closely by Australia and China

Manganese X Energy has the potential to become **North America's most significant supplier of manganese** products for the North American and European markets



# WHY MANGANESE X IS A GOOD INVESTMENT

- ✓ Our  $\text{MnSO}_4$  is 99.95% pure, contains few impurities and is free of selenium, which is highly toxic to batteries
- ✓ 90% of the global capacity for production of high-purity manganese sulphate for EV batteries is located in China
- ✓ There is currently no production of manganese in North America
- ✓ Our Manganese is a carbonate ore and is much more environmentally friendly than a manganese oxide ore
- ✓ Strategically located 12 km from the U.S. (Maine) border
- ✓ We have recently completed our robust economic PEA and started our pilot project
- ✓ TESLA, VW, Ford, GM plan to build new electric vehicles or gigafactories in Canada
- ✓ Our Phase 3 processing and metallurgical work have been completed





# WHY MANGANESE IS A BETTER CHOICE THAN COBALT

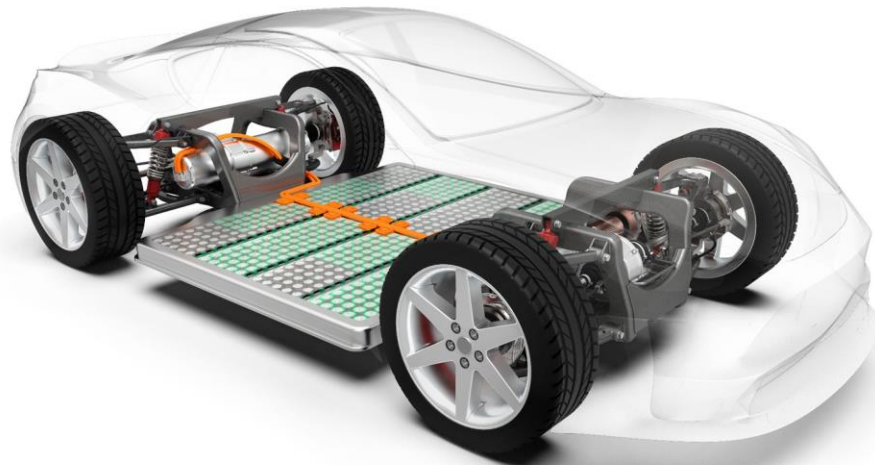
## Manganese is vastly more affordable

Manganese trades **11-37 times cheaper** than cobalt which is much more cost effective in the EV cathode

Manganese can be mined ethically

Manganese-based batteries are **safer than cobalt-based batteries**

Manganese batteries are more stable, less toxic, more robust, denser, have quicker charging power as well as longer distance performance and are much more economical



- ✓ Major EV and OEM companies have identified plant locations in Ontario and Quebec with over **\$35 Billion** proposed investments
- ✓ By **2030**, experts predict 240 worldwide mega-factories utilizing manganese as their prime mineral
- ✓ **GM** is investing \$10 billion in developing 25 EV models
- ✓ **Ford** is forecast to invest \$22 billion through 2025 into their Hybrid EV vehicle projects
- ✓ The new **BASF** EV battery uses 70% manganese in the cathode
- ✓ **Tesla** projected to put into operation 5 new Gigafactories around the world in the next 5 years. The new Tesla 4680 battery contains 33% manganese in the cathode
- ✓ Tesla, Volkswagen and Stellantis, the merger of Fiat and Chrysler, are now utilising manganese-nickel chemistries in their batteries
- ✓ **Volkswagen** intends to build 6 new Gigafactories by 2030



# MANGANESE X ENERGY VALUE PROPOSITION



## Strategically Located and One of the Largest NA Deposits

The Battery Hill manganese deposit is one of the largest manganese carbonate deposits in North America. Strategically located in New Brunswick, Canada, with proximity to North America and Europe's top consumer of manganese



## Simple Metallurgical Process

Battery Hill carbonate ore is easily leachable, allowing for direct production of high-purity battery-grade manganese sulphate



## Potential for Large Resource and Multiple Products

Battery Hill project mineral resource estimate consists of 34.86 million tonnes of measured and indicated mineral resources grading 6.42% manganese plus an additional 25.91 million tonnes of inferred mineral resources grading 6.66% manganese utilizing a 2.5% manganese cut-off grade that reflects total operating costs having reasonable prospects for economic extraction.

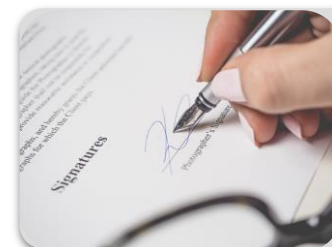
Sensitivity analysis of the Battery Hill deposit to cut-off grade indicates 12.25 million tonnes of measured and indicated mineral resources at 8.77% manganese and 10.61 million tonnes of inferred mineral resources grading 9.05% manganese utilizing a cut-off grade of 7% manganese



## Great Upside at Lower Risk

Kemetco's metallurgical research projects have yielded economic results and state of the art technology that has resulted in the advancement of our published PEA.

Our processing costs are extremely economical



## In Collaboration with Downstream Players

The company has signed a collaboration agreement with ev makers, OEM's and cathode materials producer



# Battery Hill is an ESG Responsible Green Energy Project

## Our Vision is to be a Leading Environmentally Responsible Producer

- ✓ Vision to be the leading environmentally responsible producer of High Purity Manganese for the North American EV battery industry
- ✓ To help create a cleaner world by enabling the green energy transition needed
- ✓ Deliver a sustainable, secure and traceable supply for North America. Currently no manganese mines in North America. The developing country mines have issues: environmentally damaging, human rights issues, sustainability concerns, etc.
- ✓ Potential to integrate renewable energy methods to further reduce sustainability metrics



- ✓ Project aims are to provide an indication of the environmental impact of production of high-purity manganese sulphate monohydrate (HPMSM) by Manganese X Energy from the Battery Hill Site
- ✓ Mine to market carbon footprint of Battery Hill HPMSM to be established
- ✓ Will assist in project development and highlight the environmental hotspots where mitigation opportunities and potential improvements will be most impactful
- ✓ Will be an ISO-compliant (ISO-14040/14044) LCA report
- ✓ The LCA will be based on the most recent design/engineering data available and the preliminary economic assessment (PEA)

# BATTERY MINERALS AND TECHNOLOGY ASSETS

## Primary Corporate Assets

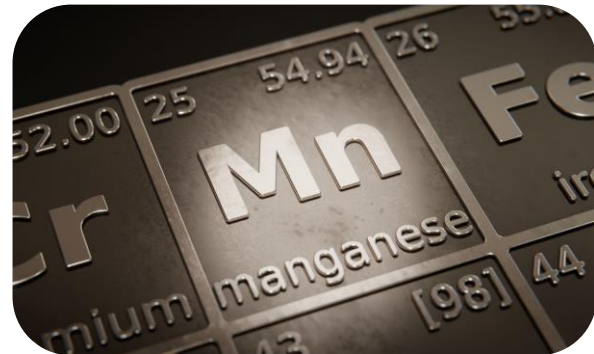
- ★ Flagship Asset - Battery Hill Manganese Deposit (47 year mine life based on PEA)

## Other Assets

- ★ Peter Lake Nickel-Cobalt project
- ★ Disruptive Battery Corp.

## Innovative purification technology Process

- ★ High Purity Manganese extraction processing technology in progress



# BATTERY HILL

## Responsible and Ethical Source of Manganese



- The Battery Hill project consists of 55 claims totaling 1228 hectares located in New Brunswick
- It encompasses all or part of five Manganese zones, Iron Ore Hill, Moody Hill, Sharpe Farm, Maple Hill and Wakefield
- The deposits have excellent location, being approximately 5 km northwest of the town of Woodstock and are easily accessible from the Trans-Canada highway via all-weather roads
- It is strategically situated 12 kilometers from the US (Maine) border, near existing power transmission lines, railway and road access that provide suitable transport to major shipping lanes on the Atlantic Ocean and Saint Lawrence Seaway



# BATTERY HILL Manganese Mineral Deposit

## PEA

- Recent PEA produced by WOOD PLC. determined robust economics and commercial viability

## Pre-feasibility drill program

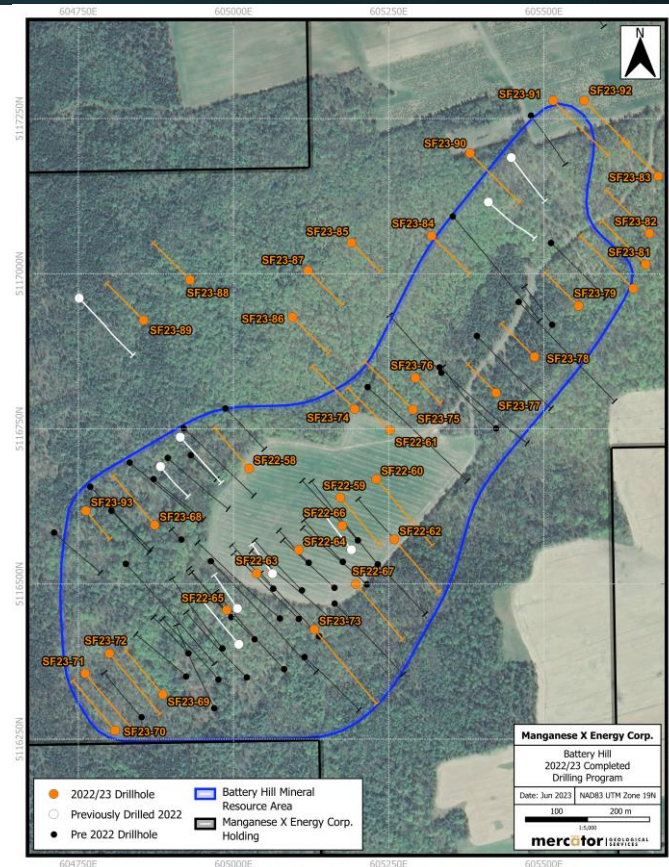
- Completed Battery Hill infill and step-out drilling program, consisted of **35 drill holes** totalling **4700m** which will expand measured and indicated resources in preparation of upcoming pre-feasibility study in 2024

## Annual Production (PEA)

- 47 years of production with average production approximately of 68,000 tonnes HPMSM with potential for expansion

## Mineral Resource

- Sensitivity analysis of Battery Hill deposit to cut-off grade indicates 12.25 million tonnes of measured and indicated mineral resources at 8.77% manganese and 10.61 million tonnes of inferred mineral resources grading 9.05% manganese, utilizing a cut-off grade of 7% manganese





## Robust Economics

- NPV (10% discount rate): **USD486 million**
- **25% internal rate of return** ("IRP")
- Capital costs ("CAPEX") of **USD350 million** with a **payback of 2.8 years**
- Average annual gross revenue of **USD177 million** per year over the **47 years Project life**
- Life of mine ("LOM") operating cost ("OPEX") of **USD122/t** material processed

## HPMSM Market Price

- Base case market price of **USD2,900/t** for battery-grade high-purity manganese sulphate ("HPMSM") is well below the long-term forecast price of **USD4,200/t** HPMSM estimated by CPM Group

## Project Objectives

- High Purity Manganese Plant Pilot Project started and now advancing towards pre-feasibility study
- 2023/2024 Drilling program to upgrade and expand manganese resources has been completed

## Long Mine Life

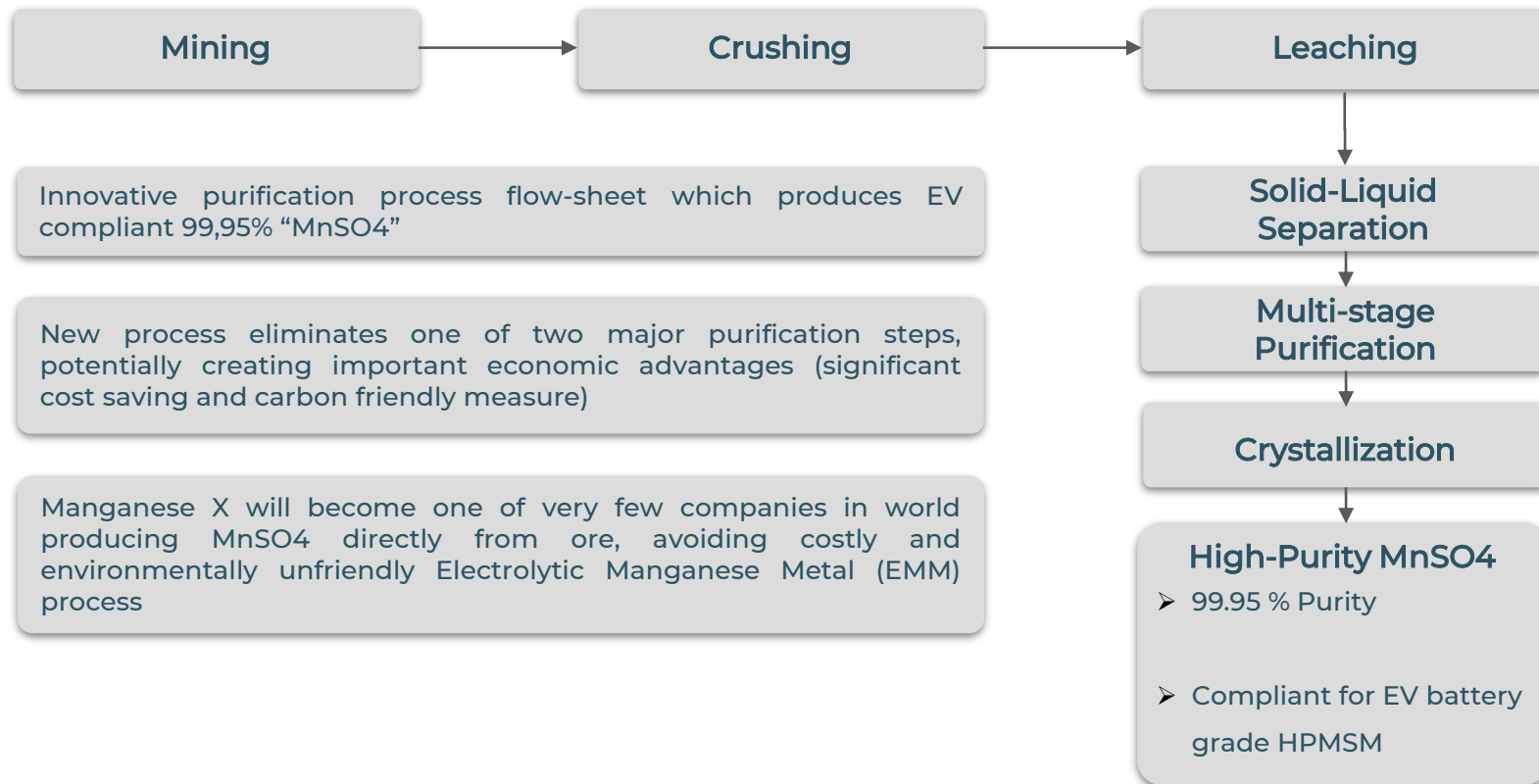
- Potential to expand production. If market is there, can double production to meet the demand
- **40-year mine production life** and seven years of stockpile reclaim feed
- Total LOM production of 3.2 million tonnes of HPMSM
- Average annual HPMSM production of **68,000 tonnes** over LOM
- Average annual HPMSM production of **84,000 tonnes** in first seven years of production

## Low Environmental Impact

- **No risk of acid drainage**
- **No tailings pond (dry stacking)**



# Innovative purification technology process flow-sheet



# Eliminating Major EMM Standard Processes

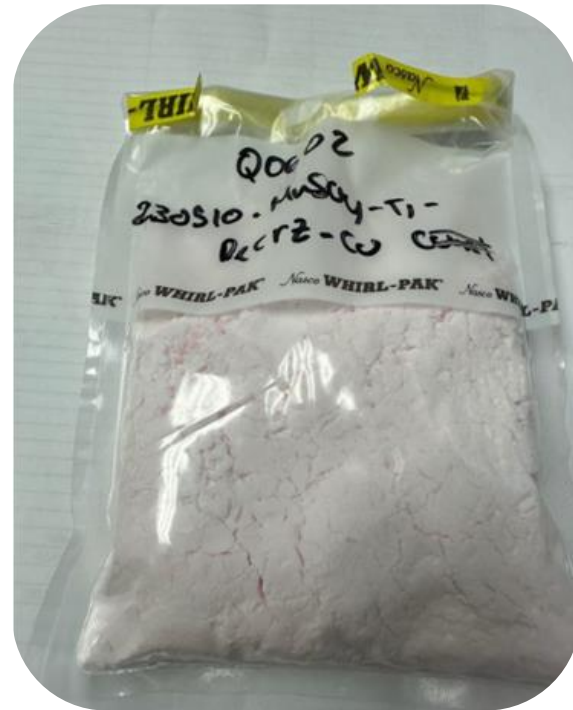
- ✓ The EMM production process requires excessive electrical costs for electroplating and electrowinning and is not environmentally friendly. In addition, it must be then converted to a HPMSM end-product before EV battery production
- ✓ All contaminant levels, including calcium and magnesium, are below 100 parts per million, a crucial threshold level for battery-grade HPMSM
- ✓ High purity final product contains no selenium, considered a toxic pollutant and yet utilized by some of the existing HPMSM producers worldwide to reduce their costs of production



# Pilot Plant Project in progress

Complete plant pilot project by the first quarter 2024 will produce HPMSM EV compliant samples on larger and economic scale validating our technology

HPMSM samples from plant pilot project will be tested and evaluated for EV cathode pre-approval qualification



# MANGANESE X ENERGY Signs MOU With US Battery Technology Leader C4V

- ✓ Recently signed a non-binding agreement Memorandum of Understanding (MOU) with US battery technology leader C4V, leading to a potential offtake deal
- ✓ This MOU is based on the potential supply of Electric Vehicle (EV) compliant High Purity Manganese Sulfate Monohydrate (HPMSM), a sample of which is currently being pre-qualified by C4V for its Gigafactory joint ventures
- ✓ C4V is a US battery technology company and a global leader in renewable battery technology as well as involved in some of the world's largest Gigafactory developments, including Recharge Industries' Gigafactory in Geelong, Australia and iM3NY's Gigafactory in the United States
- ✓ This is a significant step in our mission to become a sustainable and reliable North American supplier of HPMSM and could even potentially lead to being a worldwide supplier. Through this MOU, we can ensure our HPMSM meets C4V specifications with the goal of progressing towards a binding offtake deal for our Battery Hill manganese



# MANGANESE X ENERGY

## 2024 STRATEGIES AND GOALS

- ✓ We have completed our robust economic Battery Hill PEA and fast-tracking directly into pre-feasibility study
- ✓ Pursue negotiations with a multi-national company to explore future development and sales of our value-added manganese materials to the North American markets
- ✓ Continue to aggressively advance the development of our Battery Hill manganese property and the innovative, cost-effective metallurgical process developed to produce high-purity manganese products to the fast-growing North American lithium-ion battery market
- ✓ Complete pilot project by first quarter 2024 which will produce HPMSM EV compliant samples on a larger and economic scale which will validate our technology. Send out HPMSM samples to requested EV battery makers, OEM's and cathode makers for pre-qualification testing in the cathode





✓ Focus on metallurgy  
from the start to de-risk  
project

✓ Target a key strategic product -  
high-grade manganese sulphate  
for electric vehicles and  
stationary battery systems



✓ Invest in research and  
development of downstream  
products

✓ Partnership with  
downstream players



# KEY MILESTONES

2024

- ★ Pilot Metallurgical Project
- ★ Initiate Lifecycle Study Project Evaluation
- ★ Produce high-purity material in preparation for EV OEMs and cell manufacturer testing & prequalification
- ★ Environmental and geotechnical studies in preparation for Pre-Feasibility Study and Permitting
- ★ Pre-feasibility Study
- ★ Application of environmental and mining permits

2025

- ★ Complete the Pre-feasibility Study
- ★ Demonstration plant

2026

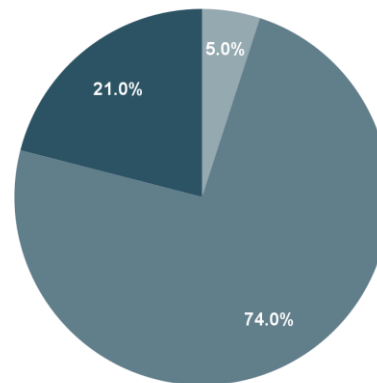
- ★ Feasibility study
- ★ Prepare mining construction for modular production
- ★ Submit the application of environmental and respective mining permits

2027

- ★ Final Construction and Production

# FINANCIAL DETAILS

|                      |                  |
|----------------------|------------------|
| Number of Shares     | 135,763,865      |
| Options              | 8,400,000        |
| Warrants             | 9,108,000        |
| Shares fully diluted | 153,271,865      |
| Market cap (03.2024) | C\$ 15.2 million |



## Ownership

- Management & Insiders
- HWI (high worth investors)
- Retailers
- Institutions, 0%



## **Martin Kepman, Chief Executive Officer & Director**

Martin Kepman and Associates Inc., founded in 1982, is a business development and management consulting firm owned and operated by its President Martin Kepman. Martin, in his 34 years of consulting experience, has consulted on a wide range of projects, in multiple industries ranging from software, soft goods, printing and food to mining.



## **Roger Dahn, Chairman of the Board & Director**

As Chairman of the Board, Mr. Dahn provides guidance and direction to management in advancing Manganese X's Battery Hill project. He acts as a direct liaison between the board and the company's management, through its Chief Executive Officer. From June 2016 - December 2020, Mr. Dahn served as Vice-President of Exploration and significantly advanced the company's Battery Hill project, right from its grassroots start to where it is now awaiting a pre-feasibility study. Mr. Dahn has over 38 years experience in the mining and exploration industry. His experience includes over 16 years with Noranda Inc. and Hemlo Gold Mines Inc. Mr. Dahn is a registered professional geologist and a qualified person as defined by National Instrument 43-101.





## Jay Richardson, Chief Financial Officer & Director

Jay Richardson is a Canadian Chartered Accountant (CA CPA), a Singapore Certified Public Accountant (CPA) and a Fellow of the Insolvency Practitioners' Association of the United Kingdom (FIPA). He has practiced as a Partner at Ernst & Young (Canada and Singapore) and KPMG (UK) prior to establishing his own practice as a company doctor in Toronto, Canada in 1993. He has served as the CEO or Chairman of ten listed public companies and as CFO of numerous others. He has extensive public company governance experience from over one and a half dozen Board memberships including having served as Interim Chairman of the Argus Corporation.



## Perry MacKinnon, Vice-President of Exploration

Perry MacKinnon, PGeo, graduated in 1982 from Acadia University in Wolfville, N.S. (BSc, geology), and is an accredited professional geologist with the respective professional associations in Nova Scotia and New Brunswick. Mr. MacKinnon has over 30 years experience in the mining industry, having worked continent-wide on a variety of projects including the Alaskan Cordillera, the greenstone belts of Northern Manitoba and Quebec, and an array of mineralizing environments in Atlantic Canada, as well as porphyry-style projects in Mexico. He has worked as an independent consultant since 2005, with a significant focus on Canada's east coast. Mr. MacKinnon is a registered professional geologist and a qualified person as defined by National Instrument 43-101.



## **Luisa Moreno, Ph.D., Director**

Dr. Moreno possesses unparalleled expertise in strategic minerals and related processes. She is currently Founder and Managing Director at Tahuti Global. Prior to this, she spent 7 years as a Financial and Senior Equity Analyst at Canadian financial research and investment banking firms. She now serves as CEO of Graphano Energy Ltd. ("GEL"), the significant, separately listed graphite recent (Sept. 2021) spin-out from MN.



## **Robert Tjandra, Director**

Mr. Tjandra brings with him a unique blend of professional management, leadership, and entrepreneurial skills, and has over 25 years of combined experience, working, consulting, and developing businesses in construction, trading, oil and gas, fintech, and cleantech. He is passionate about the development of EV and energy storage, including sustainable mining development. Mr. Tjandra has served on various listed companies. He served as the President, Chief Operating Officer, and director of Canbud Distribution Corporation (CSE: CBDX). He currently serves as a Director of Florence Wealth Management Inc. (a registered Exempt Market Dealer in Canada), and as CEO and Chairman of Mineto Power Corp., a private company in EV materials and Tech space.



*"It is our corporate mandate to become the first publicly traded manganese company in North America to pursue commercialization of a manganese deposit."*

*The company is currently proceeding with a plant pilot project for demonstration purposes that will be capable of repeatedly and consistently generating sufficient EV compliant high purity manganese for end use testing for potential off take possibilities as this will then be followed up with a pre-feasibility study (PFS) as well as the due diligence to document it. Upon conclusion and confirmation of the economic viability of our 100% owned Battery Hill Manganese Project, we will move to the next phase and start commercialization.*

*The EV revolution is underway and innovative battery chemistry will be the catalyst that moves us into an interesting future. We believe that manganese will have a big influence over EV batteries and this will position Manganese X to take advantage of the growing demand for EV batteries."*

***Martin Kepman, CEO of Manganese X Energy Corp.***

FOR FURTHER INFORMATION  
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**THANK YOU**

MANGANESE X ENERGY CORP.