

Emp Metals Reports Preliminary Economic Assessment On Viewfield Lithium Brine Project With Pre-tax Npv Of Us\$1.49b, Irr Of 55% And Payback Of 2.1 Years

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VANCOUVER, Jan. 9, 2024 - [EMP Metals Corp.](#) (CSE: EMPS) (OTCQB: EMPPF) ("EMP Metals" or the "Company") is announce the highlights of Hub City Lithium Corp.'s ("HCL") preliminary economic assessment (the "PEA") on the Viewfield Lithium Brine Project, Saskatchewan. The PEA outlines the estimated production of battery-quality lithium carbonate equivalent ("LCE") over a 23-year period, which represents an estimated a pre-tax internal rate of return ("IRR") of 55% and a pre-tax net present value ("NPV") of \$1.49 billion USD, at an 8% discount rate.

Preliminary Economic Assessment Highlights

- Pre-tax \$1.49 billion USD NPV, at an 8% discount rate;
- Pre-tax IRR of 55% which represents a payout duration of 2.1 years;
- Total capital expenditures ("CAPEX") of \$571 million USD inclusive of both direct and indirect capital costs, including \$100 million USD in contingency;
- All-in operating costs ("OPEX") of \$3,319 USD per tonne LCE, \$40 million USD annually, including all direct and indirect costs;
- 23-year project-life producing a total of 282,090 tonnes of battery-grade lithium carbonate, an average of 12,175 tonnes per year;
- Weighted average lithium concentrations of 128 mg/L from 7 target zones over the project life (range of 84 mg/L to 170 mg/L);
- PEA encompasses approximately 11,000 net hectares, or 14% of Hub City Lithium's lands in Southern Saskatchewan.

Preliminary Economic Assessment Results

	Values
Production (LCE)	12,175 tonnes/year
Project Life	23.2 years
Total Capital Cost	\$571 million USD
Average Annual Operating Costs	\$40 million USD
Average Selling Price (LCE)	\$20,000/tonne USD
Pre-Tax Net Present Value (8% discount)	\$1.493 billion USD
After-Tax Net Present Value (8% discount)	\$1.066 billion USD
Cash Operating Costs	\$3,319 / tonne USD
Pre-Tax Internal Rate of Return	55 %
After-Tax Internal Rate of Return	45 %
Payback Period (Pre-Tax)	2.1 years
Payback Period (After-Tax)	2.4 years
Profitability Index (PI8% Before-Tax)	3.2
Profitability Index (PI8% After-Tax)	2.3

Rob Gamley, EMP CEO, commented, "We are very pleased with the results of this Preliminary Economic Assessment. With payback in approximately two years, a 23-year project life and a pre-tax IRR of 55%, our Viewfield project is clearly a world class Lithium asset. The PEA study underpins a significant property value and highlights the benefits of excellent brine concentrations, low operating costs and close proximity to local infrastructure in one of the best mining jurisdictions in the world. The outstanding metrics demonstrated in the PEA represents a highly attractive scenario for EMP shareholders and supports the remarkable potential of this project as we quickly move to a commercial pilot."

Project Development

The PEA encompasses 11,000 net hectares of land at Viewfield project area, representing 46% of Hub City Lithium's Viewfield land holdings and only 14% of Hub City Lithium's total land holdings in Southern Saskatchewan.

The development plan employed in the PEA has been broken into three distinct units:

1. Wellfield: includes all production wellbores, disposal wellbores and pipeline networks.
2. Direct Lithium Extraction ("DLE"): includes infrastructure related to pre-filtration and DLE operations. Koch Techn Solutions ("KTS") was the DLE technical partner selected for the PEA.
3. Concentration, Refining and Conversion ("CRC"): includes all infrastructure downstream of DLE required to refine lithium chloride eluent into battery grade LCE. Saltworks Technologies ("Saltworks") was the CRC technical provider for the PEA.

Based on production testing and fluid analysis conducted by HCL in 2023 in the Viewfield project area, in addition to publicly available lithium testing throughout the area, it is expected to see lithium grades of 84 mg/L to 259 mg/L in the seven target members of the Duperow within the PEA lands. Over the life of the project, an average weighted concentration of 128 mg/L has been estimated.

Exploitation of the resource will occur in two production stages via multi-leg, horizontal wellbores. All project capital (minus end-of life capex) is allocated at the beginning of the project, with production estimated to

commence in Q1 2027.

- Stage 1: Wymark C, D and E (Years 1-7)
 - These zones are the shallowest and highest concentration (160 mg/L to 259 mg/L) zones and will be produced through to depletion
 - Average LCE output during Stage 1 is 18,850 tonnes per year with average OPEX of \$2,332 per tonne USD
- Stage 2: Wymark A, B and Saskatoon A, B (Years 8 onward)
 - These zones are lower concentration (84 mg/l to 145 mg/L) and will be exploited after depletion of Wymark
 - Average LCE output during Stage 2 is 10,200 tonnes per year with average OPEX of \$4,166 per tonne USD

Note: A recovery factor of 50% of Total Lithium in Place was estimated for the PEA

A total of 36 multi-leg production wells will be drilled to exploit 7 target members of the Duperow, in addition to 30 vertical disposal wells to dispose of spent brine and process water. A network of underground pipelines will be constructed to transport the large water volumes from the wellheads to a DLE site for extraction and concentration to lithium chloride, and from there the eluent will be transported via pipelines to a CRC site for refining and conversion into battery-grade LCE. A total of five DLE sites and two CRC sites will process a daily average of 62,000 m³/day of brine, resulting in an average output of 12,175 tonnes per year of battery-grade LCE.

Capital Costs

The anticipated capital costs are:

Capital Costs	Description	Costs (MM USD)
Wellfield Infrastructure	Wellbores, associated equipment and pipelines	\$138.9
DLE and Surface Equip Infrastructure (Koch)	Pre-filtration and DLE	\$147.9
CRC and Surface Equip Infrastructure (Saltworks)	Concentration, Refining and Conversion	\$232.5
Contingency	Applied to direct capital costs	\$51.9
Total		\$571.2

Operating Costs

The anticipated operating costs are:

	Description	Total Annual Cost Per Costs (MM USD)	Tonne LCE (USD)
Wellfield	Electrical, field personnel, repair and maintenance, lease rentals and tax, etc.	\$13.6	\$1,115
DLE and Surface Equip (Koch)	Pre-filtration, electrical, gas, water, LSS media, field personnel, etc.	\$8.6	\$711
CRC and Surface Equip (Saltworks)	Chemicals, electrical, gas, field personnel, repair and maintenance, etc.	\$18.2	\$1,493
Total		\$40.4	\$3,319

Sensitivity Analysis

The economic sensitivities are as follows:

LCE Price (USD/Tonne)	After-Tax NPV 8% (USD Million)	After-Tax IRR
Base (\$20,000)	\$1,066	45 %
Base -20% (\$16,000)	\$728	34 %
Base +20% (\$24,000)	\$1,403	56 %

Lithium Pricing and Production

A detailed future pricing study for lithium carbonate was not completed for this PEA. A constant price of \$20,000 USD per tonne of battery-grade lithium carbonate was chosen by reviewing publicly available pricing data and peer released economic assessments of similar lithium resources. Certain industry peers have used a constant price of \$25,000 USD per tonne LCE in PEAs released over the last 12-months, however in-light of current global pricing for lithium, Hub City Lithium selected a base case of \$20,000 per tonne with price sensitivities included at +/-20%.

Taxes and Royalties

The PEA outlines the taxes based on both the Canadian Federal Government and the Province of Saskatchewan. The Saskatchewan corporate income tax rate is 12 percent. The basic Canadian Federal Corporate tax rate is 38% of the Company's income and 28% after federal tax abatement. After all tax holidays, the Company's net federal tax rate is 15 Percent, with a total combined tax rate of 27 percent.

The majority of the Viewfield project area is on Crown land and is subject to Crown royalties. Within the Province of Saskatchewan, the Crown royalty rate is estimated at 3%, with a one-year royalty holiday for each facility hub. The balance of the Viewfield project area is subject to freehold royalties which commercial terms vary based on individual lease agreements.

Mineral Resource Estimate Incorporated into PEA

The following sets forth the total inferred resource incorporated into the PEA:

- Viewfield Phase 1 Total inferred resource net to Hub City Lithium is 692,288 tonnes LCE
- Concentrations in the 7 target zones of the Duperow range from 84 mg/L to 259 mg/L, with a weighted concentration of 150 mg/L
- Wymark D tested 259 mg/L, the highest recorded concentration to date in Canada

Viewfield Project Area - Q1 2024 Field Pilot

Subsequent to the press release dated December 5, 2023, Hub City Lithium has completed its Treatability Study ("Study") with Koch Technology Solutions, whereby 1,000 litres of feed brine from the Viewfield project area was tested for compatibility with KTS DLE technology. The Study was done in preparation for a DLE field pilot (one of the first in Canada) on the Hub City Lithium well that previously tested 258 mg/L of Lithium. The pilot, scheduled to begin in Q1 2024, will treat Viewfield brine and convert it into a highly concentrated lithium chloride eluent. It's expected to run for 3 to 4 months and will operate 24/7, processing approximately 6,500 - 9,000 litres of feed brine per day.

Quality Assurance and Qualified Persons

The Preliminary Economic Assessment was prepared by Sproule Associates Limited. ("Sproule") with the assistance of the contractors outlined below. All contractors completing the report are Qualified Persons as defined by NI 43-101 and are independent of the Company. The National Instrument 43-101 PEA report will be filed on SEDAR (www.sedar.com) within 45 days.

Sproule Associates Limited: Sproule is a global energy consulting and advisory firm that helps companies, investors and governments minimize risk and optimize business decisions. Ms. Meghan Klein ("Klein"), P.Eng., is the Sr. Manager Engineering at Sproule and a Qualified Person for the PEA.

Red Tree Exploration Inc. ("Red Tree Exploration"): Red Tree Exploration is an independent Geological consulting company with experience in oil and gas, lithium and helium evaluations. Mr. Trevor Else ("Else"), P.Geo., is a Qualified Person for the PEA and the President of Red Tree Exploration.

Koch Technology Solutions: Koch Technology Solutions is a technology licensing business, a part of Koch Engineered Solutions. KTS creates value for its customers across a growing portfolio of technologies including the polyester value chain, the refining industry and lithium extraction fields. Mr. Marc Egbers ("Egbers"), is a Qualified Person for the PEA and the Director of Li-Pro™ Direct Lithium Extraction Commercial Solutions with KTS.

Saltworks Technologies: Saltworks is a team of engineers, scientists and builders focused on the innovation, construction and delivery of full-scale systems to treat industrial wastewater and refine lithium into a battery-grade product. Mr. Ben Sparrow ("Sparrow"), P.Eng., is a Qualified Person for the PEA and CEO of Saltworks.

Each of Klein, Else, Egbers and Sparrow are independent Qualified Persons in accordance with NI 43-101 and have reviewed and approved the technical contents of this news release.

PEA Cautionary Note

The PEA is preliminary in nature and includes inferred resources that are considered too speculative to have the economic considerations applied to them that would enable them to be categorized as mineral reserves and there is no certainty the estimates presented in the PEA will be realized.

About EMP Metals

EMP Metals is a Canadian-based lithium exploration and development company focused on large scale resources using direct lithium extraction ("DLE"). EMP Metals, in partnership with [ROK Resources Inc.](#), currently holds 196,000 net (79,300 hectares) acres of Subsurface Dispositions and strategic wellbores in

Southern Saskatchewan. For more information, please go to the Company's website at www.empmetals.com

Abbreviations

Li₂CO₃ Lithium Carbonate

H₂O Water

Na Sodium

Ca Calcium

Cl Chlorine

SO₄ Sulphate

Fe Iron

Al Aluminum

Cu Copper

Ni Nickel

Wt% Weight Percentage

Wppm Weight Parts per Million

Mg/l Milligrams per Litre

EDITDA Earnings Before Interest, Taxes, and Depreciation

M³ Cubic Meter

Forward-Looking Statements

Information set forth in this news release contains forward-looking statements that are based on assumptions as of the date of this news release. These statements reflect management's current estimates, beliefs, intentions and expectations. They are not guarantees of future performance. EMP Metals cautions that all forward-looking statements are inherently uncertain, and that actual performance may be affected by a number of material factors, many of which are beyond EMP Metals' control. Such factors include, among other things: risks and uncertainties relating to EMP Metals' limited operating history, ability to obtain sufficient financing to carry out its exploration and development objectives on its mineral properties, obtaining the necessary permits to carry out its activities and the need to comply with environmental and governmental regulations. Accordingly, actual and future events, conditions and results may differ materially from the estimates, beliefs, intentions and expectations expressed or implied in the forward-looking information. Except as required under applicable securities legislation, EMP Metals undertakes no obligation to publicly update or revise forward-looking information.

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SOURCE [EMP Metals Corp.](#)

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