

ZINC8 ENERGY SOLUTIONS INC.

Unit 1 – 8765 Ash Street
Vancouver, BC V6P 6T3

MANAGEMENT DISCUSSION AND ANALYSIS FOR THE YEAR ENDED DECEMBER 31, 2022

The following Management's Discussion and Analysis ("MD&A"), prepared as of April 27, 2023, should be read in conjunction with the audited consolidated financial statements ("financial statements") of Zinc8 Energy Solutions Inc. ("Zinc8" or the "Company") for the year ended December 31, 2022. The referenced financial statements have been prepared in accordance with International Financial Reporting Standards ("IFRS"). All financial amounts are stated in Canadian dollars unless stated otherwise.

Additional information relating to the Company and its operations is available under the Company's profile on SEDAR at www.sedar.com

FORWARD-LOOKING STATEMENTS

The Company's consolidated financial statements for the year ended December 31, 2022, and this accompanying MD&A contain statements that constitute "forward-looking statements" within the meaning of National Instrument 51-102 - *Continuous Disclosure Obligations* of the Canadian Securities Administrators.

It is important to note that, unless otherwise indicated, forward-looking statements in this MD&A describe the Company's expectations as of April 27, 2023.

Certain statements contained in this MD&A may constitute "forward-looking statements". Such term is defined in applicable securities laws. The forward-looking statements include, without limitation, statements with respect to the success of research and development activities; the Company's new and existing technology; the Company's ability to obtain necessary financing; the completion of the Transaction (as defined herein) and the listing of the Company's shares on the Canadian Securities Exchange; the Company's ability to meet its obligations as they become due; and other similar statements concerning anticipated future events, conditions or results that are not historical facts. These statements reflect management's current estimates, beliefs, intentions and expectations; they are not guarantees of future performance. The Company cautions that all forward-looking information is inherently uncertain and that actual performance may be affected by a number of material factors, many of which are beyond the Company's control. Such factors include, among others, risks relating to research and development; the Company's intellectual property applications being approved; the Company's ability to protect its proprietary rights from unauthorized use or disclosure; the ability of the Company to obtain additional financing; the Company's limited operating history; the need to comply with environmental and governmental regulations; fluctuations in currency exchange rates; operating hazards and risks; competition; and other risks and uncertainties. Although the Company has attempted to identify important factors that could cause actual actions, events or results to differ materially from those described in forward-looking information, there may be other factors that cause actions, events or results not to be as anticipated, estimated or intended. Accordingly, actual future events, conditions and results may differ materially from the estimates, beliefs, intentions and expectations expressed or implied in the forward-looking information. All statements are made as of the report date and, except as required by law, the Company is under no obligation to update or alter any forward-looking information.

DESCRIPTION OF BUSINESS

The Company was incorporated on December 8, 2011, pursuant to the BC Business Corporations Act and the Company's head office is located at #1 – 8765 Ash Street Vancouver, BC V6P 6T3. The Company is executing the development and commercialization of a dependable, low-cost zinc-air battery. The Company believes that this energy storage system will offer both environmental and economic benefits.

The Company's Zinc-Air Energy Storage System (the "Zinc-Air System") technology has been developed around the utilization of zinc as the anode fuel, which is expected to offer numerous advantages over other forms of metals due to its unique attributes, which include high energy density, abundant availability and low supply chain risk. The regenerative system does not require fuel replacement and offers scalable energy capacity through the simple introduction of additional fuel tanks.

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On December 19, 2017, there was a change of control event whereby MGX Minerals Inc. (“MGX”) acquired all of the outstanding common shares of the Company in exchange for common shares of MGX and cash considerations. On April 3, 2018, MGX announced it would pursue a reorganization, pursuant to which it would spin-out its interests in the Company, resulting in the Company becoming listed as a separate company on the Canadian Securities Exchange (“CSE”) (the “Transaction”). On July 15, 2019, the Company filed a Listing Statement outlining the full details of the Transaction. Additional information is also contained in news releases of Zinc8 dated July 9, 2019, and July 22, 2019 available on Sedar.com

OVERALL PERFORMANCE

The Company’s operations are not currently revenue generating and the Company will need to continue to rely on its ability to obtain the necessary financing through grants and other financings to complete the development of zinc-air flow batteries.

Zinc-Air Technology

The Company’s zinc-air technology consists of three major components: the fuel tank where zinc particles and a potassium hydroxide (KOH) electrolyte are stored; the cell stack where the fuel is converted to electrical power; and the regenerator unit where the electrical power is converted back to fuel. In operation, electrical energy from a source is used to convert zinc oxide to zinc metal in the regenerator unit. The zinc “fuel” thus created is stored in the fuel tank until required. When stored energy is to be released, the zinc fuel is pumped into the cell stack where it reacts with atmospheric oxygen to produce electricity.

The system is designed to deliver power in the range of 20kW to 1MW and energy in the range of 160kWh to 8MWh. The system can be configured to support a wide range of discharge power, recharge power and duty cycle requirements.

The Company has engaged in the development of a zinc-air flow battery technology to participate in behind the meter (BTM), front of the meter (FTM), and microgrid markets. The system will provide various services such as peak shaving, bill management, peak demand reduction, backup power and demand response, energy arbitrage, and distribution & transmission deferral, etc. To date, Zinc8 has been awarded over 20 patents covering its energy storage technology.

COOPERATION AGREEMENT

The Company entered into a Cooperation agreement (the “Agreement”) dated December 24, 2019 with The Power Authority of the State of New York (the “Authority”) for the installation of a 100kW/1MWh Zinc-Air Battery Energy Storage System in New York State.

Under the Agreement with the Authority, the Authority agreed to collaborate with the Company and contribute to a research and development project through its participation in aspects of design and fabrication of a zinc air energy storage system, then demonstration of the system and the Company agreed to collaborate with the Authority to pursue the research and development project.

The Agreement is valid for an initial period of 10 years with automatic renewals of one year periods each unless either party provides written notification to the other. The Authority, within its sole discretion and for any reason, may terminate this Agreement at any time upon 30 days’ notice to the Company. Upon such termination, the parties will conduct a final payment schedule, which will include any and all final payments due to each side.

In May 2020, the Company and the Authority reached a mutual agreement to delay the timeline of the project due to COVID-19 restrictions. As such, the Company did not receive any payments after the First Contribution. A revised project timeline is pending further information.

The Authority agreed to contribute the monetary contributions to the Company at the following dates but not before actual qualified expenses and the Company’s project expenses have equaled or exceeded the minimum required expenditures as follows:

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- 1) First Contribution - \$835,000 USD to be received by January 26, 2020 (CAD\$ 1,109,632 received in 2020).
- 2) Second Contribution - \$0, USD to be received after June 27, 2020 and after meeting the following expenditure requirements:
 - (i) Minimum Required Qualified Expenses: \$355,000 USD
 - (ii) Minimum Required the Company's Project Expenses: \$0
- 3) Third Contribution - \$0, USD to be received after December 27, 2020 and after meeting the following expenditure requirements:
 - (i) Minimum Required Qualified Expenses: \$835,000 USD
 - (ii) Minimum Required the Company's Project Expenses: 80% of \$2,950,000 USD
- 4) Fourth Contribution - \$160,000 USD, to be paid after June 27, 2021 and after meeting the following expenditure requirements:
 - (i) Minimum Required Qualified Expenses: \$995,000 USD
 - (ii) Minimum Required the Company's Project Expenses: 80% of \$4,100,000 USD
- 5) Fifth Contribution - \$380,000 USD, to be paid after December 27, 2021 and after meeting the following expenditure requirements:
 - (i) Minimum Required Qualified Expenses: \$1,375,000 USD
 - (ii) Required the Company's Project Expenses: 80% of \$5,400,000 USD
- 6) Sixth Contribution - \$20,000 USD, to be paid after June 27, 2022 and after meeting the following expenditure requirements:
 - (i) Minimum Required Qualified Expenses: \$1,395,000 USD
 - (ii) Minimum Required the Company's Project Expenses: 80% of \$6,450,000 USD
- 7) Final Contribution – \$155,000 will be paid after meeting the following expenditure requirements:
 - (i) Minimum Required Qualified Expenses: \$1,550,000 USD
 - (ii) Minimum Required the Company's Project Expenses: 80% of \$6,450,000 USD

SELECTED ANNUAL INFORMATION

The following is a summary of certain selected audited financial information of the Company for the years ended December 31, 2022, 2021 and 2020.

	2022	2021	2020
	\$	\$	\$
Total revenues	-	-	-
Net (loss) income	(11,937,333)	(16,272,343)	(2,043,822)
Net loss per share (basic and diluted)	(0.08)	(0.11)	(0.03)
Intangible assets	-	-	4,950,134
Total assets	8,311,681	12,890,408	7,181,613
Long term liabilities	634,734	786,031	61,000
Working capital (deficit)	4,435,916	9,909,820	328,464

DISCUSSION OF OPERATIONS

Year ended December 31, 2022

The Company recorded net loss of \$11,937,333 (\$0.08 per share) for the year ended December 31, 2022 as compared to net loss of \$16,272,343 (\$0.11 per share) for the year ended December 31, 2021.

The change is due to the following:

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- Amortization expense increased to \$866,874 (2021 - \$465,607) as the Company incurred leasehold improvement expenditures and added multiple equipment leases.
- General and administrative expenses increased to \$504,185 (2021 - \$371,321) primarily related to the cost of the additional warehouse lease
- Management fees increased to \$971,524 (2021 - \$646,212) and include compensation to the CFO, CEO and the Board of Directors. Included in management fees were the grant of DSUs valued at \$287,000.
- Research and development increased to \$5,077,015 (2021 - \$4,544,567) as the Company continues to advance the Zinc-Air technology.
- Share-based compensation decreased to \$2,357,456 (2021 - \$4,211,461) as the Company granted more options in the period ended December 31, 2021.
- During the year ended December 31, 2021, the Company recorded an impairment of intangible assets of \$4,950,134.

Three months ended December 31, 2022

The Company recorded net loss of \$3,609,807 (\$0.02 per share) for the three months ended December 31, 2022 as compared to net loss of \$7,655,688 (\$0.01 per share) for the three months ended December 31, 2021.

The change is due to the following:

- Amortization expense increased to \$238,812 (2021 - \$162,528) as the Company incurred leasehold improvement expenditures and added multiple equipment leases.
- Professional fees increased to \$232,595 (2021 - \$120,707) as the Company completed quarterly reviews in 2022 and had increased legal fees.
- Share-based compensation increased to \$1,106,132 (2021 - \$481,159) due to the vesting of previously granted RSUs during the quarter ended December 31, 2022.
- During the three months ended December 31, 2021, the Company recorded an impairment of intangible assets of \$4,950,134.

RESEARCH AND DEVELOPMENT

In order to execute the Company's business strategy, Zinc8 focusses heavily on research and development. During the year ended December 31, 2022, the Company incurred \$5,077,015 (2021 - \$4,544,567) of research and development expense. A breakdown of research and development expenditures during the years ended December 31, 2022 and 2021 are as follows:

	December 31, 2022	December 31, 2021
	\$	\$
Materials	801,160	1,238,073
Operations	406,751	285,111
Personnel	3,911,348	3,282,258
Testing	124,106	49,674
Government grants	(166,350)	(310,548)
	5,077,015	4,544,567

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SUMMARY OF QUARTERLY RESULTS

The following table sets out financial information for the past eight quarters:

	Three Months Ended (\$)			
	December 31, 2022	September 30, 2022	June 30, 2022	March 31, 2022
Net and comprehensive income (loss)	(3,609,808)	(3,011,489)	(2,949,443)	(2,366,593)
Basic and diluted loss per share*	(0.02)	(0.02)	(0.02)	(0.02)
Total assets	8,311,681	8,096,497	8,725,462	10,506,782
Working capital	4,435,916	3,977,360	4,544,382	7,515,385

	Three Months Ended (\$)			
	December 31, 2021	September 30, 2021	June 30, 2021	March 31, 2021
Net and comprehensive income (loss)	(7,655,688)	(1,651,389)	(5,113,523)	(1,851,643)
Basic and diluted loss per share*	(0.05)	(0.01)	(0.04)	(0.01)
Total assets	12,890,408	20,424,952	21,212,639	22,340,197
Working capital	9,909,820	11,552,367	13,491,845	15,524,331

* No exercise or conversion is assumed during the periods in which a loss is incurred, as the effect is anti-dilutive.

The increase in loss for the quarter ended December 31, 2021, was primarily due to an impairment of intangible expense of \$4,950,134.

The increase in loss for the quarter ended June 30, 2021, was primarily related to \$3,719,100 in share-based compensation expense related to the grant of 7,250,000 options.

OUTSTANDING SHARE DATA

The Company has authorized unlimited common shares without par value.

All share information is reported as of April 27, 2023, in the following table:

Type of Security	Number
Issued and outstanding common shares	181,294,151
Stock options with a weighted average exercise price of \$0.44	12,075,814
Warrants with a weighted average exercise price of \$0.30	14,145,200
RSUs	5,691,224
Total	213,206,389

TRANSACTIONS WITH RELATED PARTIES

Key management includes the CFO, CEO, VP of Engineering and the Board of Directors. Compensation paid to key management for the years ended December 31, 2022 and 2021 was as follows:

	2022 \$	2021 \$
Management fees ¹	955,000	594,000
Payroll expense ²	450,000	245,333
Share-based compensation	2,045,605	2,562,218
	3,450,605	3,401,551

¹Includes fees paid to CEO Ron MacDonald and Directors: Charn Deol, Sean Charland and Dave Hodge

²Includes fees paid to VP of Engineering Tristan Sloan, the CFO Sorin Spinu and CTO Simon Fan

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Zimtu Capital Corp., a company related by common directors (David Hodge) charged marketing fees of \$nil (2021 - \$50,000) and rent of \$13,000 (2021 - \$9,000) during the year ended December 31, 2022.

As at December 31, 2022, the Company had \$1,130 (2021 - \$nil) owing to Zimtu Capital Corp., included in accounts payable and accrued liabilities.

All related party transactions are in the normal course of operations and have been measured at the agreed to amounts, which is the amount of consideration established and agreed to by the related parties.

LIQUIDITY AND CAPITAL RESOURCES

As at December 31, 2022, the Company had working capital of \$4,435,916 (December 31, 2021 – \$9,909,820), has not generated any revenue from operations and has an accumulated deficit of \$46,033,203 (December 31, 2021 - \$34,095,870).

To date the Company has been funded through government grants and shareholder funding for research and development. As at December 31, 2022, the Company had sufficient funds to cover working capital expenditures for the next 12 months. However, the Company will need additional funding to continue the development of its zinc-air technology. In order to execute the Company's business strategy the Company will need to continue capital development through research and development. The Company expects to fund its future capital requirements through additional government grants and shareholder funding. The circumstances that could affect such sources of financing include those set out under "*Risk Factors*" in the accompanying Circular. See also the "*Financial Instruments*" section of this MD&A.

FINANCING ACTIVITIES AND CAPITAL EXPENDITURES

During the year ended December 31, 2022, the Company issued:

- On December 22, 2022, the Company completed a non-brokered private placement issuing 14,123,500 units ("Unit") at a price of \$0.20 per Unit for gross proceeds of \$2,824,700. Each Unit consists of one common share of the Company and one share-purchase warrant exercisable at \$0.30 until December 22, 2023, and then at \$0.40 until December 22, 2024. The Company also issued 21,700 broker warrants, under the same terms as the warrants in the Unit, as part of the private placement. The broker warrants were fair valued at \$1,140 using the Black-Scholes Option Pricing Model under the following assumptions: Risk free rate – 3.83%; expected volatility – 83%; forfeiture rate – nil; dividend rate – nil; expected life – 2 years. The Company also incurred cash issuances costs of \$6,740.
- 5,050,000 common shares related to the exercise of restricted share units resulting in a reallocation of \$1,018,750 from contributed surplus to share capital.
- 322,419 common shares related to the exercise of DSU's, the DSU's were fair valued at \$61,260.
- 6,062,688 common shares related to the exercise of warrants for gross proceeds of \$1,818,806. Pursuant to the exercise of the warrants the Company reallocated \$35,010 of contributed surplus to share capital.
- 136,081 common shares related to the exercise of stock options for gross proceeds of \$28,577. Pursuant to the exercise of the options the Company reallocated \$27,405 of contributed surplus to share capital.

On February 24, 2021, the Company closed a private placement offering of 28,750,000 common shares at a price of \$0.54 per share for gross proceeds of \$15,525,000. The Company incurred cash issue costs of \$1,014,230 and issue 1,725,000 compensation warrants with each compensation warrant exercisable at a price of \$0.54 per warrant until February 24, 2023. The Company fair valued the warrants at \$889,594 using the Black-Scholes option pricing model based on the following assumptions: risk free rate – 0.23%; expected dividend - nil; expected life – 2 years; expected volatility – 138%.

During the year ended December 31, 2021, 17,667,564 warrants were exercised for gross proceeds of \$2,773,917. The Company transferred \$35,405 from contributed surplus to share capital related to the exercise of warrants.

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On June 7, 2021 the Company issued 116,279 common shares as part of a debt settlement agreement, the shares were fair valued at \$60,465.

During the year ended December 31, 2021, 462,219 options were exercised for gross proceeds of \$100,758. The Company transferred \$97,926 from contributed surplus to share capital related to the exercise of the options.

During the year ended December 31, 2022, the Company incurred \$1,109,702 (December 31, 2021 - \$665,888) of equipment acquisition costs.

OFF-BALANCE SHEET ARRANGEMENTS

The Company does not utilize off-balance sheet transactions.

PROPOSED TRANSACTIONS

The Company has no proposed transactions that will materially affect the performance of the Company.

ACCOUNTING POLICIES

The Company uses the same accounting policies and methods of computation as in the consolidated financial statements for the year ended December 31, 2022.

FINANCIAL INSTRUMENTS

Fair Values

The Company has classified fair value measurements of its financial instruments using a fair value hierarchy that reflects the significance of inputs used in making the measurements as follows:

- Level 1: Valuation based on quoted prices (unadjusted) in active markets for identical assets or liabilities;
- Level 2: Valuation based on directly or indirectly observable inputs in active markets for similar assets or liabilities, other than Level 1 prices, such as quoted interest or currency exchange rates; and
- Level 3: Valuation based on significant inputs that are not derived from observable market data, such as discounted cash flow methodologies based on internal cash flow forecasts.

As at December 31, 2022, the fair values of cash, restricted cash, amounts receivable, accounts payable and accrued liabilities, and deferred share unit liability approximate their carrying value due to the short-term maturity of these instruments. Lease liabilities are measured at amortized costs using effective interest rate. Cash, restricted cash and deferred share unit liability is carried at level 1 fair value measurement.

Liquidity Risk

Liquidity risk is the risk that the Company will not be able to meet its financial obligations as they fall due. The Company currently settles its financial obligations out of cash. The ability to do this relies on the Company raising equity financing in a timely manner and by maintaining sufficient cash in excess of anticipated needs. As at December 31, 2022, the Company had working capital of \$4,435,916.

Credit Risk

Credit risk is the risk of financial loss to the Company if a customer or counterparty to a financial instrument fails to meet its contractual obligations. The Company's cash is largely held in large Canadian financial institutions. The Company does not have any asset-backed commercial paper. The Company's receivables consist of GST receivable due from the Federal Government of Canada. The Company has not experienced any significant credit losses and believes it is not exposed to any significant credit risk.

Interest Rate Risk

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Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates. Financial assets and liabilities with variable interest rates expose the Company to cash flow interest rate risk. The Company does not hold any financial liabilities with variable interest rates. The Company does maintain bank accounts which earn interest at variable rates but it does not believe it is currently subject to any significant interest rate risk.

Foreign Currency Exchange Rate Risk

The Company's functional and reporting currency is the Canadian dollar and major purchases are transacted in Canadian dollars. As a result, the Company's exposure to foreign currency risk is minimal.

RISKS AND UNCERTAINTIES

Risk is inherent in all business activities and cannot be entirely eliminated. The Company's goal is to mitigate the risks arising from business activities, the markets and political environments in order to sustain and develop the Company's operations. The risks and uncertainties described in the accompanying Circular under "*Risk Factors*" are considered by management to be the most important in the context of the Company's business. Such risks and uncertainties are not inclusive of all risks and uncertainties the Company may be subject to and other risks may apply.

FINANCIAL AND DISCLOSURE CONTROLS AND PROCEDURES

In connection with National Instrument 52-109 (Certification of Disclosure in Issuer's Annual and Interim Filings) ("NI 52-109"), the Chief Executive Officer and Chief Financial Officer of the Company have filed a Venture Issuer Basic Certificate with respect to the financial information contained in the consolidated financial statements for the year ended December 31, 2022, and this accompanying MD&A (together the "Annual Filings").

In contrast to the full certificate under NI 52-109, the Venture Issuer Basic Certificate does not include representations relating to the establishment and maintenance of disclosure controls and procedures and internal control over financial reporting, as defined in NI 52-109. For further information the reader should refer to the Venture Issuer Basic Certificates filed by the Company with the Annual Filings on SEDAR at www.sedar.com.