



**Nano One Materials Corp.**  
**Management's Discussion & Analysis**  
**For the three months ended**  
**March 31, 2022**

## PREPARATION OF MANAGEMENT'S DISCUSSION & ANALYSIS

The following Management's Discussion & Analysis ("MD&A") of Nano One Materials Corp. ("Nano One" or the "Company") for the three months ended March 31, 2022, should be read in conjunction with the Company's condensed interim consolidated financial statements for the three months ended March 31, 2022, and the audited annual financial statements for the year ended December 31, 2021. The financial statements have been prepared in accordance with International Financial Reporting Standards ("IFRS") as issued by the International Accounting Standards Board ("IASB"). All monetary amounts in this MD&A are expressed in Canadian dollars, unless otherwise indicated.

The information contained herein is presented as at **May 12, 2022** (the "MD&A Date"), unless otherwise indicated.

Additional information relating to the Company, including the Annual Information Form ("AIF") dated March 28, 2022, is filed with Canadian securities regulatory authorities on SEDAR (the System for Electronic Document Analysis and Retrieval) ([www.sedar.com](http://www.sedar.com)) and on the Company's website at [www.nanoone.ca](http://www.nanoone.ca).

The Company's head office is located at Unit 101B, 8575 Government Street, Burnaby, British Columbia V3N 4V1 and its registered and records office is located at 2900 - 550 Burrard Street, Vancouver, British Columbia V6C 0A3.

For the purposes of preparing this MD&A, Management, in conjunction with the Board of Directors, considers the materiality of information. Information is considered material if: (i) such information results in, or would reasonably be expected to result in, a significant change in the market price or value of Nano One's common shares; or (ii) there is a substantial likelihood that a reasonable investor would consider it important in making an investment decision; or (iii) it would significantly alter the total mix of information available to investors. Management, in conjunction with the Board of Directors, evaluates materiality with reference to all relevant circumstances, including potential market sensitivity.

## DISCLOSURE CONTROLS AND PROCEDURES AND INTERNAL CONTROLS OVER FINANCIAL REPORTING

The Company's disclosure controls, and procedures ("DC&P") are designed to provide reasonable assurance that relevant information is gathered and reported to senior management, including the Chief Executive Officer and the Chief Financial Officer, on a timely basis so that appropriate decisions can be made regarding public disclosures. We have also designed internal controls over financial reporting to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with IFRS. During the three months ended March 31, 2022 and the year ended December 31, 2021, there were no changes in internal control over financial reporting that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

## FORWARD-LOOKING STATEMENTS

This MD&A contains certain "forward-looking information" and "forward-looking statements" (collectively, "forward-looking statements"), within the meaning of applicable Canadian securities laws, which are based upon the Company's current internal expectations, estimates, projections, assumptions, and beliefs. All information, other than statements of historical facts, included in this MD&A that addresses activities, events or developments that the Company expects or anticipates will or may occur in the future is forward-looking information. Such statements can be identified by the use of forward-looking terminology such as "expect", "likely", "may", "will", "should", "intend", or "anticipate", "potential", "proposed", "estimate" and other similar words, including negative and grammatical variations thereof, or statements that certain events or conditions "may" or "will" happen, or by discussions of strategy. Forward-looking statements include estimates, plans, expectations, opinions, forecasts, projections, targets, guidance, or other statements that are not statements of fact. Such forward-looking statements are made as of the date of this MD&A and, except as required by law, the Company is under no obligation to update or alter any forward-looking information.

Forward-looking statements in this MD&A may include, but are not limited to, statements with respect to: the use of the net proceeds from previous financings; the performance of the Company's business and operations; the intention to grow the business, operations and potential activities of the Company; regulatory changes; the competitive conditions of the industry and the Company's competitive position in the industry; the Company's business plans and strategies; the anticipated benefits of the Company's partnerships; the Company's licensing, supply chain and joint venture opportunities; the applicable laws, regulations and any amendments thereof; and any anticipated future gross revenues and profit margins of the Company's operations.

With respect to the forward-looking statements contained in this MD&A, the Company has made assumptions regarding, among other things: the use of the net proceeds of previous financings; operating and capital costs; anticipated partnerships; the Company's ability to access future financing opportunities; and the Company's ability to attract and retain qualified personnel or management. Although the Company believes that the expectations reflected in the forward-

looking statements are reasonable, there can be no assurance that such expectations will prove to be correct. The Company cannot guarantee future results, levels of activity, performance, or achievements. There are risks, uncertainties, and other factors, some of which are beyond the Company's control, which could cause actual results, performance or achievements of the Company, as applicable, to differ materially from any future results, performance or achievements expressed or implied by such forward-looking statements contained in this MD&A.

## **RISKS AND UNCERTAINTIES**

Risk is inherent in all business activities and cannot be entirely eliminated. An investment in Nano One's common shares involves risk. Investors should carefully consider the risks and uncertainties described below and, in the AIF, filed with Canadian securities regulators ([www.sedar.com](http://www.sedar.com)) which may not be a comprehensive list of risks and uncertainties as additional risks and uncertainties, including those unknown by the Company at this time, or are currently considered immaterial, may exist, and other risks may apply.

### *Global Pandemic (COVID-19)*

In March 2020, the World Health Organization declared the outbreak of COVID-19 a global pandemic. This contagious disease outbreak, which has continued to spread, and any related adverse public health developments, has adversely affected workforces, economies, and financial markets globally, potentially leading to an economic downturn. It is not possible for the Company to predict the duration or magnitude of the adverse results of the outbreak and its effects on the Company's business or results of operations or on the Company's industry partners who provide in-kind and/or financial contributions to the Company's government programs. Operations depend on continuing to safeguard all personnel. Overall, travel and other restrictions related to the COVID-19 pandemic have not had a significant impact on the Company's operations and research efforts including staffing levels. The shipment of purchased equipment at times has been partially delayed due to the pandemic, and travel by employees, contractors, and executives has been limited, however, the Company continues to advance partnerships and research efforts without significant constraint.

The Company's operational outlook assumes that operations will continue without any significant COVID-19 related interruptions. The Company has taken precautions to mitigate the risk of COVID-19 on operations. However, the COVID-19 pandemic and any future emergence and spread of similar pathogens could have a material adverse impact on our business, operations and operating results, financial condition, liquidity, and market for our equity securities.

## **DESCRIPTION OF THE BUSINESS**

The Company has developed, patented and scaled-up an innovative patented manufacturing technology (the "One-Pot Process") for the production of cathode active materials ("CAM") for lithium-ion battery applications in electric vehicles, energy storage systems, and consumer electronics. Nano One has proven its technology in the laboratory, built a demonstration pilot plant, and is partnering with key automotive OEMs and cathode manufacturers.

Nano One's technology is intended to improve the performance and cost of cathode materials, reduce complexity and excess waste in the supply chain, minimize carbon footprint and simplify production using environmentally sustainable processes. It is a manufacturing platform suited to many types of lithium-ion cathode materials, which may be used in automotive, grid storage and consumer electronic batteries, including standard, advanced, and next generation solid state batteries.

The Company's first addressable market is cathode materials for lithium-ion rechargeable batteries for electric vehicles, energy storage systems, and consumer electronics. There is growing demand in the lithium-ion battery market for more cost effective, higher performance, and environmentally sustainable energy storage solutions. Nano One's technology also has potential applications in other markets that require specialty mixed metal ceramic powders.

### ***One-Pot Process Technology***

Nano One's One-Pot Process is engineered to use non-sulfate forms of metal feedstock, with the intention of reducing total cost and carbon footprint of feedstock needs per kilogram of CAM, eliminating the need to convert metal to sulphate, thereby removing downstream sulphate waste equivalent to nearly two times the CAM product volume and it reduces water consumption, GHG emissions and added process costs. Furthermore, the process uses lithium feedstock in the form of carbonate rather than hydroxide, which is more costly, corrosive and harder-to-handle. The process is feedstock flexible which enables improved optionality of sourcing of raw materials. The process also forms innovative coated nanocrystal cathode powders that are designed to be more durable than conventional cathode powders.

The nanocrystal innovation addresses a fundamental battery trade-off between energy density and durability. Increased durability provides electric vehicle manufacturers greater flexibility in optimizing range, charging rates, safety, and cost. The

One-Pot Process combines all input components: lithium, metals, additives, and coatings in a single reaction to produce a precursor that, when dried and fired, forms quickly into a single nanocrystal cathode material simultaneously with its protective coating.

## ***Product Developments***

The Company's primary cathode formulations under development include:

- Lithium Nickel Manganese Cobaltate (NMC622, NMC811, and Ni>90% NMC);
- Lithium Nickel Manganese Oxide (LNMO, or High Voltage Spinel HVS); and
- Lithium Iron Phosphate (LFP).

Further details about the Company's process developments and product developments can be found in the AIF.

## ***M2CAM® Technology***

In February 2021, Nano One announced the launch of its Metal to Cathode Active Material ("M2CAM") technology which reduces cost, reduces waste, and reduces the carbon footprint in the lithium-ion battery supply chain. The Company commenced or continued discussions with large integrated miners to reduce environmental footprints and maximize upstream value in the global battery supply chain. Nano One's other collaborators include automotive OEMs with similar motivations to meet environmental targets by reducing waste, carbon emissions, logistics and costs. Patents are pending for M2CAM and preliminary test results are showing battery capacity up to 5% higher than cathode materials currently made from metal salts.

Nano One's patented One-Pot Process forms durable single crystal cathode powders and protective coatings simultaneously and the process has been adapted for M2CAM, enabling these materials to be made directly from metal powders. Metal powders are one-fifth of the weight of metal sulfates, avoiding the added costs, energy and environmental impact of converting to sulfate and shipping and handling of waste. The One-Pot Process is an aqueous process, using carbon neutral chemistry, that operates at room-temperature and atmospheric pressures, and it combines feedstock conversion, precursor formation, lithiation and coating steps into one reaction. This creates added value for metals and aligns Nano One with the environmental, sustainability and cost objectives of automotive companies, miners, investment communities and governmental infrastructure initiatives.

## **BUSINESS OBJECTIVES**

In the near term (one to three years), Nano One intends to focus on:

- Developing, advancing and promoting its One-Pot, M2CAM and coated nano-crystal technologies through collaborative partnerships with OEMs, miners and cathode producers. The Company is aiming to disrupt the supply chain and make nickel-based cathode materials direct from metal powders and lithium carbonate. This will eliminate: (i) the conversion of metals to sulfates and lithium to hydroxide, (ii) the associated energy, GHG emissions, cost, and waste and (c) the unnecessary transport of water and sulfate.
- Prototyping and scaling up by expanding its demonstration pilot plant and laboratory facilities to serve technology development, partnership and licensing objectives.
- Developing, building and operating pilot, demonstration and commercial plants in collaboration with its strategic partners, and generating revenue through licensing and joint venture arrangements that are still in various stages of business development.
- Identifying and validating additional joint development partners throughout the supply chain.

## **RECENT CORPORATE DEVELOPMENTS**

In addition to information discussed throughout this MD&A, the Company announced the following developments during the three months ended March 31, 2022 and through to the MD&A Date (from newest to oldest):

### ***LFP Opportunity***

On March 24, 2022, the Company provided an update on the emerging LFP opportunity. LFP demand is being driven by automotive OEMs and other markets pushing for a localized and diversified battery supply chain in North America, Europe and India. Nano One has an innovative method of making LFP, using the One-Pot process, which is simpler, lower cost and it eliminates the need for the iron phosphate intermediate used in China, making it competitive and uniquely adaptable to North American and European-based supply chains. It also improves on the environmental footprint and could make

Québec and Canada world leaders in LFP and other types of cathode materials. Nano One is excited to be building a team of engineers and market specialists in British Columbia and tapping an experienced talent pool in Québec.

#### ***Funding to Advance M2CAM and Thermal Processing Initiatives***

On March 3, 2022, the Company announced that it will be receiving advisory services and funding of up to \$404,000 from the National Research Council of Canada Industrial Research Assistance Program ("NRC-IRAP") to support a research and development project to advance its M2CAM technology and thermal processing innovations. The project will further advance cost optimization of the One-Pot Process for the manufacture of CAM, specifically as it relates to use in metal feedstocks enabled by Nano One's M2CAM technology and innovations in the final stage of thermal processing.

#### ***Successful Completion of Phase One of Co-Development Agreement with Niobium Producer CBMM***

On February 15, 2022, the Company announced that it has successfully completed Phase One of its advanced lithium-ion battery cathode materials coating development agreement with CBMM, the world's leading supplier of niobium products and technology. Nano One has successfully demonstrated the use of CBMM's niobium to form a protective coating on Nano One's single nanocrystal NMC cathode active material. This coating is designed to enhance durability, and the success on this first milestone strengthens the supply chain relationship between CBMM and Nano One while providing yet another demonstration of the flexibility of Nano One's patented One-Pot process.

Phase One applied the niobium coating technology to NMC811 cathode active material and the next two phases will focus on the niobium coating of even higher nickel NMC. This will include scaling of the One-Pot coating technology to demonstrate commercial viability and validate the supply chain. Together, CBMM and Nano One are developing an integrated and differentiated supply chain for niobium coated single crystal cathode materials.

Nano One's patented One-Pot process adds a cost effective niobium coating on each individual nanocrystal to protect the cathode from deleterious side reactions than can otherwise cause rapid performance degradation. The One-Pot process enables this coating to be formed without adding process steps or costs, and the coating can significantly increase the durability of cathode materials in lithium-ion batteries. The niobium-coated single crystal cathode materials are applicable to both conventional liquid electrolyte cells and advanced solid state electrolyte cells.

#### ***Engineering Study Supports the Benefits of the One-Pot Process and M2CAM***

On January 24, 2022, the Company announced the successful completion of an industrial scale engineering study conducted by Hatch Ltd. (Hatch) a leading global engineering firm. This is another important step forward in Nano One's efforts to bring the latest innovations in cathode manufacturing technology through scale-up towards commercialization. The study supports that Nano One's patented One-Pot M2CAM process offers both environmental and potential economic benefits when compared to conventional cathode manufacturing processes.

The engineering study set out to compare the conventional sulfate process for manufacturing CAM with Nano One's One-Pot M2CAM process for nickel rich cathode materials. Conventional cathode manufacturing produces approximately 1.8 times more weight in sodium sulfate waste than it does in CAM product, whereas Nano One's process produces no waste. It is estimated the One-Pot M2CAM process also reduces water consumption by approximately 60% prior to recycling. Further, the Hatch work supports that the Nano One's process significantly reduces the number of process steps to get to a single crystal coated cathode active material helping reduce costs and create efficiencies. The report estimates competitive economics for Nano One and its One-Pot process over conventional cathode processes and identifies opportunities for further cost savings, despite One-Pot having over 20-years less industrial optimization. Work is already underway on further optimizations.

#### **Intellectual Property**

In February 2022, the Company obtained its 21<sup>st</sup> issued patent. As at the MD&A Date, the Company has been issued twenty-one (21) patents which were issued by various jurisdictions including Canada, China, Japan, Korea, Taiwan, and the United States. The patents have expiries ranging between thirteen (13) to nineteen (19) years from the patent issuance date. The Company also has over forty (40) pending patent applications throughout the world.

The Company's intellectual property was developed and is wholly-owned by the Company. The Company has filed other patent applications and may file additional patents at a later date to further strengthen its intellectual property and technology going forward, although no assurances can be given that it will be successful in such endeavours. Additional information on the Company's intellectual property can be found in the Company's AIF.

## Government Assistance

The Company's primary active government assistance program is that with SDTC, as follows:

### Sustainable Development Technology Canada ("SDTC"):

In 2019, the Company executed a contribution agreement with SDTC for a non-repayable grant in respect of the Company's "Scaling Advanced Battery Materials" project. The SDTC Program #2 grant is for up to \$8,545,500 which includes BC-ICE contributions (discussed below). SDTC Program #2 is estimated to conclude in June 2024.

To the MD&A Date, approximately \$5,900,000 has been received under SDTC Program #2.

The funds from SDTC Program #2 are payable to the Company in five (5) instalments including the release of a final 10% hold-back to the Company upon satisfactory review and approval of the project by SDTC. The instalments from SDTC are to be paid to the Company at the beginning of each of the four (4) Milestones. Each instalment payment is subject to the Company meeting the specific project Milestones and having available cash resources to match each instalment from SDTC.

As of the MD&A Date, the Company is in Milestone 3 (which concluded effective March 31, 2022) and is completing its reporting deliverables for SDTC.

The Company receives funding from the Government of Canada for its research activities through various programs. During the three months ended March 31, 2022 and March 31, 2021 the following amounts were received or accrued, or repaid:

	March 31, 2022 \$	March 31, 2021 \$
<b>Grant cash proceeds received (repaid):</b>		
Sustainable Development Technology Canada (SDTC)	-	262,500
Industrial Research Assistance Program (NRC-IRAP)	68,296	(8,394)
	<b>68,296</b>	<b>254,106</b>

The cumulative amount of program funding received since January 1, 2014 from the Government of Canada are as follows:

	March 31, 2022 \$	December 31, 2021 \$
Sustainable Development Technology Canada (SDTC)	8,025,672	8,025,672
Automotive Supplier's Innovation Program (ASIP)	1,950,952	1,950,952
Industrial Research Assistance Program (NRC-IRAP)	896,634	828,338
Innovation Assistance Program (IAP) (from NRC-IRAP)	241,225	241,225
Scientific Research & Experimental Development (SR&ED)	98,661	98,661
Other Grants	80,059	80,059
	<b>11,293,203</b>	<b>11,224,907</b>

## OVERALL PERFORMANCE

Further to the “Recent Corporate Developments” as discussed above, the Company used cash and cash equivalents during the three months ended March 31, 2022, of approximately \$3,906,000.

The key sources and uses of cash and cash equivalents during the three months ended March 31, 2022, were as follows:

- Cash used in operating activities of approximately \$3,727,000 net of approximately \$68,000 in proceeds from NRC-IRAP;
- Investments in equipment and machinery, and issuance payments for patents of approximately \$238,000;
- Proceeds from the exercise of stock options and warrants of approximately \$60,000;
- Lease payments of approximately \$53,000; and
- Interest income of approximately \$52,000.

See “Cash flows for the three months ended March 31, 2022” below within Discussion of Operations for further details on cash flows for the period.

## DISCUSSION OF OPERATIONS

The Company reports operating results in a single operating segment being the development and scale-up of a patented process for the production of cathode active materials (CAM) for lithium-ion battery applications in electric vehicles, energy storage systems, and consumer electronics.

### Research expenses

Research expenses, net for the three months ended March 31, 2022 and March 31, 2021 were as follows (rounded):

	Three months ended		
	March 31, 2022 \$	March 31, 2021 \$	Change \$
Contractors	154,000	66,000	88,000
Labour	1,361,000	577,000	784,000
Safety and training	17,000	12,000	5,000
Supplies	184,000	135,000	49,000
Utilities	11,000	10,000	1,000
	<b>1,727,000</b>	<b>800,000</b>	<b>927,000</b>
Depreciation	193,000	64,000	129,000
Cost recoveries	(5,000)	(79,000)	74,000
Government assistance	(40,000)	(741,000)	701,000
<b>Research expenses, net</b>	<b>1,875,000</b>	<b>44,000</b>	<b>1,831,000</b>



In addition to the research expenses, net amount presented above, the Company incurred approximately \$66,000 during the three months ended March 31, 2022, within professional and consulting, for charges relating to patent filings and applications. Additionally, the Company incurred approximately \$259,000 on research and development equipment and pilot plant equipment in aggregate during the three months ended March 31, 2022.

Supplies costs primarily comprises chemical formulations which may be subject to fluctuations in commodity prices. Overall, the Company's exposure to fluctuations in commodity prices has not had a significant impact on operations given the relative value of volumes purchased, but is expected to have an increasing impact on operations as volumes and costs increase in 2023 and beyond.

Contractors costs primarily includes costs for engineering studies such as the work performed by Hatch as discussed above, third-party researchers, and amounts paid to environmental agencies that assist with chemical supply removal. The Company is compliant to the best of its knowledge with all local required environmental waste and disposal regulations.

#### For the three months ended March 31, 2022 and March 31, 2021

The following table summarizes the Company's results of operations and cash flows for the three months ended March 31, 2022 and March 31, 2021 (rounded):

	Three months ended		Change \$
	March 31, 2022 \$	March 31, 2021 \$	
Revenue	-	-	-
Loss from operating expenses	(4,364,000)	(4,452,000)	88,000
Loss and comprehensive loss	(4,312,000)	(4,544,000)	232,000
Cash used in operating activities	(3,727,000)	(1,663,000)	(2,064,000)
Cash used in investing activities	(186,000)	(351,000)	165,000
Cash provided by financing activities	7,000	4,447,000	(4,440,000)

Cash used in investing activities during the three months ended March 31, 2022, is attributable to the excess of cash outflows on equipment deposits and purchases, over interest income earned on high-interest savings accounts/funds.

Cash provided by financing activities during the three months ended March 31, 2022, is attributable to the exercise of options and warrants of approximately \$60,000, offset by facility lease payments of approximately \$53,000. The cash provided by financing activities in the comparative period reflected the proceeds from the exercise of a greater volume of options and warrants.

Certain components of operating expenses for the three months ended March 31, 2022 and March 31, 2021, were as follows (rounded):

	Three months ended		Increase (decrease) \$
	March 31, 2022 \$	March 31, 2021 \$	
General and administrative expenses	270,000	134,000	136,000
Investor relations and shareholder information	137,000	129,000	8,000
Professional and consulting, net	509,000	253,000	256,000
Salaries and benefits, net	874,000	695,000	179,000



- General and administrative expenses

The primary cause of the increase is higher insurance premiums for D&O insurance which are amortized over the term of the policy. Costs for transfer agent filing and exchange fees, and travel and conferences also increased.

- Investor relations and shareholder information:

There was an insignificant fluctuation in investor relations and shareholder information as the Company's programs and level of marketing efforts have remained fairly consistent to date from its programs initiated in 2021.

- Professional and consulting:

The increase is primarily attributable to increases in advisory services, and consultancy services relating to commercialization efforts including towards emerging automotive scale opportunities in the LFP space. Increases also incurred within legal fees, and patent filing fees as a result of greater operational activity overall. Human resources costs decreased as the Company no longer uses contractors for human resources services.

- Salaries and benefits:

Staffing levels continue to increase in both the Company's corporate and research departments. Salaries and benefits for the comparative period are reduced by allocations of SDTC government grants, whereas no such allocations were recognized against salaries and benefits for the current period. Moreover, the Company's annual short-term incentives which are paid in the first quarter of each year, were greater in the current period relative to the comparative period.

During the three months ended March 31, 2022, the Company welcomed 13 employees to its company-wide team. As of the date of this MD&A, the Company has 67 employees and/or contractors.

## **Cash flows for the three months ended March 31, 2022**

Cash used in operating activities was approximately \$3,727,000, largely driven by \$3,608,000 incurred on cash-based operating expenses plus approximately \$119,000 in changes in working capital items. This equates to an average monthly operating burn rate of approximately \$1,200,000 for the three months ended March 31, 2022 compared to an average monthly burn rate for the year ended December 31, 2021, of approximately \$600,000. Cash used in operating activities is presented net of government assistance proceeds of approximately \$68,000 received from NRC-IRAP during the period.

Cash used in investing activities was approximately \$186,000, driven by approximately \$238,000 in equipment and other deposits, purchases of property and equipment (primarily research equipment) and issuance payments for a newly issued patent (intangible assets). These were partially offset by interest income received on high-interest savings accounts/funds of approximately \$52,000.

Cash provided by financing activities was approximately \$7,000, comprising the basic rent portion of leased facilities of approximately \$53,000, partially offset by the exercise of stock options and warrants generating proceeds of approximately \$60,000.

## SUMMARY OF QUARTERLY RESULTS

The following table shows the results for the last eight fiscal quarters as prepared in accordance with IFRS and presented in Canadian dollars, the Company's functional currency:

Period Ending	Revenue \$	Loss and comprehensive loss \$	Basic and Diluted Loss Per Share \$
March 31, 2022	-	(4,312,314)	(0.05)
December 31, 2021	-	(2,462,276)	(0.03)
September 30, 2021	-	(1,767,249)	(0.02)
June 30, 2021	-	(2,549,411)	(0.03)
March 31, 2021	-	(4,544,172)	(0.05)
December 31, 2020	-	(2,103,524)	(0.02)
September 30, 2020	-	(1,504,365)	(0.02)
June 30, 2020	-	(541,673)	(0.01)

There are no significant seasonal variations in quarterly results as the Company is not subject to significant seasonality in its research and corporate activities. The Company is exposed to currency risk as it incurs certain transactions in United States dollar, and occasional transactions in the Euro, and the British Pound. However, the Company has assessed that the impact of a 10% fluctuation in foreign exchange rates relative to the Canadian dollar would be insignificant to the Company's financial position and results of operations.

Variations in loss and comprehensive loss for certain of the above periods were affected primarily by the following factors:

- The quarter ended March 31, 2022, was characterized by a significant increase in the volume and cost of research activities (excess of \$1,000,000 increase over the previous three months ended December 31, 2021) as well as increases in substantially all other cash-based components of operating expenses.
- The quarter ended December 31, 2021, saw an increase in professional fees and consulting fees. Additionally, there were additional fees incurred on engineering studies, and a reduction in amounts recognized as government assistance which are offset to reduce research expenses, net.
- The quarters ended June 30, 2021 and September 30, 2021, were reflective of a general increase in activities in all departments and projects for the Company including increased investor relations programs, increased research expenditures, and increased salaries and benefits.
- The quarter ended March 31, 2021, included greater than normal share-based payment expense (non-cash) of approximately \$3,070,000 in relation to the grant of stock options of which certain stock options granted to directors and officers vested immediately.
- The quarter ended June 30, 2020, included significant Government assistance recoveries in relation to COVID-19 pandemic relief which were included directly in profit or loss as opposed to being deferred (liability).

### Use of Proceeds from Financings

The Company completed the following three equity financings between February 2020 and April 2021, for aggregate net proceeds of \$50,411,757:

- On February 21, 2020 (the "First Financing"), the Company completed a non-brokered private placement for gross proceeds of approximately \$11,000,000. The net proceeds of the placement after deducting finders' fees, legal, filing and other fees were \$10,381,392;
- On October 29, 2020, the Company completed a short form prospectus financing for gross proceeds of approximately \$14,000,000. The net proceeds of the financing after deducting finders' fees, legal, filing and other fees were \$13,118,991; and
- On April 1, 2021, the Company completed a Short Form Prospectus financing for gross proceeds of approximately \$29,000,000. The net proceeds of the financing after deducting the cash underwriters' commission and expenses, legal, filing and other fees were \$26,911,374.

For the period from closing of the First Financing (February 21, 2020) to March 31, 2022, the Company has used the net proceeds of the financings as shown below. These amounts are presented on a gross basis and do not include government grant proceeds.

Principal Purposes	Use of Proceeds \$
Research activities	7,851,520
Capital equipment purchases and leasehold improvements on laboratory facilities	3,122,867
Pilot plant expansion	537,026
Intellectual property acquisition	488,833
Business development and strategic alternatives	829,116
Working capital	8,599,396
<b>Proceeds used</b>	<b>21,428,758</b>
Remaining	28,982,999
<b>Net proceeds of the financings</b>	<b>50,411,757</b>

#### TRANSACTIONS BETWEEN RELATED PARTIES

Key management personnel are the persons responsible for the planning, directing, and controlling the activities of the Company and includes both executive and non-executive directors, and entities controlled by such persons. The Company considers all directors and officers of the Company to be key management personnel.

The following transactions were carried out with key management (gross before applicable government assistance recoveries):

	Transactions three months ended March 31, 2022 \$	Transactions three months ended March 31, 2021 \$	Balances outstanding March 31, 2022 \$
Bedrock Capital	37,500	37,500	-
DBM CPA	40,650	33,000	14,700
Directors' fees	57,729	13,500	-
Management and directors' fees	135,879	84,000	14,700
Officers (salaries and benefits; and research expenses)	571,890	561,715	-
Directors and officers (share-based payments)	474,946	2,933,297	-
Patent Filing Specialists (professional and consulting)	63,953	43,678	-
	<b>1,246,668</b>	<b>3,622,690</b>	<b>14,700</b>

(a) Management and directors' fees:

- Includes the services of Bedrock Capital Corp. ("Bedrock Capital") a company controlled by Paul Matysek the Chairman and a Company Director;
- Includes the services of Donaldson Brohman Martin, CPA Inc. ("DBM CPA"), a firm in which Dan Martino, CFO is a principal; and
- Includes fees paid to the Company's directors for their positions as non-executive directors and/or board committee members or chairpersons.

(b) Professional and consulting:

- Includes the services of Patent Filing Specialists Inc. ("Patent Filing Specialists"), a company controlled by Joseph Guy, a Company Director. Transactions are included within both intangible assets and professional fees.

(c) Salaries and benefits (including allocations to research expenses (recoveries):

- Includes salaries and short-term variable cash-based compensation incentives paid (amounts rounded) to Dan Blondal, CEO (\$248,000), Stephen Campbell, CTO (\$109,000), Alex Holmes, COO (\$173,000), and Pamela Kinsman, Corporate Secretary and Director of Sustainability and Corporate Affairs (\$42,000).

In accordance with an executive employment agreement the Company has in place with Dan Blondal, in case of termination by the Company without cause, he is entitled to six (6) weeks' base pay (or notice) for every year of service to a maximum of twenty-four (24) months. He would not be entitled to further bonus payments after termination. In the case of resignation after a Change of Control and for 'Good Reason', Dan Blondal is entitled to twenty-four (24) months' base salary.

(d) Share-based payments:

- Includes amounts recognized on vesting of stock options and Equity Incentives granted to directors and officers.
- During the three months ended March 31, 2022, the Company granted 189,423 RSUs to various directors and officers.

## LIQUIDITY AND CAPITAL RESOURCES

As at March 31, 2022, the Company had working capital of approximately \$49,000,000.

The Company considers its capital structure to consist of its components of shareholders' equity. When managing capital, the Company's objective is to ensure that it continues as a going concern, to ensure it has sufficient capital to deploy on new and existing projects (including the requirement for matching funds relating to SDTC programs), as well as generating returns on excess funds while maintaining liquidity/accessibility to such funds. In order to facilitate the management of its capital requirements, the Company prepares annual expenditure budgets that are updated as necessary depending on various factors, including successful capital deployment, growth of its workforce, and general capital market or industry conditions. The Board of Directors relies on the expertise of the Company's management to sustain future development of the business. Management reviews and adjusts its capital structure on an ongoing basis.

The Company is not subject to any externally imposed capital requirements. There were no changes to the Company's approach to capital management during the three months ended March 31, 2022.

The Company currently has no source of revenues, though it receives funding from government programs, and certain research cost recoveries from strategic partners. Additionally, the Company has historically relied upon equity financing to fund its activities. In order to fund ongoing research activities and pay for operating expenses, the Company will spend its existing working capital and may complete additional equity financings to facilitate the management of its capital requirements.

Additionally, the Company may seek to invest excess capital in guaranteed investment certificates ("GICs") bearing fixed rates of interest that are either redeemable (cash equivalents) or non-redeemable (short-term investments) and have terms not exceeding 24 months. The Company will also hold excess capital in high-interest savings accounts ("HISAs") and/or HISA funds which bear interest at variable rates (cash equivalents).

As at March 31, 2022 and December 31, 2021, the Company had excess capital invested in a HISA and a HISA fund which facilitates the diversification of treasury amongst high-credit quality Canadian chartered banks. These amounts are accessible on demand. Additionally, the Company did not have any GIC or other short-term investment holdings.

Interest income earned during the three months ended March 31, 2022 and the primary source earned during the year ended December 31, 2021, was from the HISA fund.

The Company's primary source of capital and liquidity from 2020 onwards has been from three financings over the course of fourteen months from February 2020 to April 2021, which generated gross proceeds of approximately \$54,000,000 (net, \$50,400,000) as well as proceeds received from exercises of stock options and warrants, and government assistance programs which amounted to \$5,715,000 since 2020. The three financings completed from 2020 onwards are summarized as follows:

- In February 2020, gross proceeds of approximately \$11,000,000 was raised through a non-brokered private placement;
- In October 2020, gross proceeds of approximately \$14,000,000 was raised through a Short Form Prospectus financing; and
- In April 2021, gross proceeds of approximately \$29,000,000 was raised through a Short Form Prospectus financing.

In order to facilitate the management of its capital requirements, the Company prepares annual expenditure budgets that are updated as necessary depending on various factors, including successful capital deployment, and strategic growth plans. The Board of Directors relies on the expertise of the Company's management to sustain future development of the business.

The Company is not subject to any externally imposed capital requirements and there were no changes to the Company's approach to capital management during the three months ended March 31, 2022. The Company does not have specific capital or operating expenditure commitments on any of its projects aside from the provisions of SDTC Program #2 that require the Company to have matching funds to the grant amounts and to incur the required expenditures to complete the various Milestones. The Company will use its existing working capital to incur the required SDTC Program #2 expenditures.

### Contractual obligations

The following table summarizes the Company's contractual maturities for its financial liabilities:

As at March 31, 2022	Carrying amount \$	Contractual cash flows \$	Under 1 year \$	1-3 years \$	3-5 years \$	More than 5 years \$
Accounts payable and accrued liabilities	658,750	658,750	658,750	-	-	-
Accounts payable to related parties	14,700	14,700	14,700	-	-	-
Lease liabilities	764,584	938,014	204,657	355,342	212,836	165,179
<b>Total</b>	<b>1,438,034</b>	<b>1,611,464</b>	<b>878,107</b>	<b>355,342</b>	<b>212,836</b>	<b>165,179</b>

### OUTSTANDING SHARE AND EQUITY DATA

The authorized share capital of the Company consists of unlimited common shares without par value. All issued common shares are fully paid. As at the MD&A Date, the Company's common share data was as follows:

As at the MD&A Date		
	#	Weighted average exercise price \$
Common shares issued and outstanding	95,579,373	n/a
Stock options outstanding	6,487,357	2.77
Warrants outstanding	4,018,618	2.38
RSUs/DSUs outstanding	382,554	n/a
<b>Fully diluted</b>	<b>106,467,902</b>	

During the three months ended March 31, 2022, the Company granted 189,423 RSUs to officers and directors of the Company which vest in three annual installments (one-third (63,141) on February 4, 2023; one-third (63,141) on February 4, 2024; and the final one-third (63,141) on February 4, 2025).

The value of the Equity Incentives granted was based on the fair value of the of the Company's common shares on the date of grant. Accordingly, the Equity Incentives were granted at a fair value of \$2.88 each for a total value of \$545,538 which is being recognized within share-based payment expense as the Equity Incentives vest.

## ACCOUNTING MATTERS

The preparation of financial statements in conformity with IFRS requires management to make estimates, judgments and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and reported amounts of income and expenses during each reporting period. Estimates and assumptions are continuously evaluated and are based on management's experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances. However, actual outcomes can differ from these estimates. The Company's significant accounting policies are detailed in Note 2 to the financial statements for the year ended December 31, 2021.

### Key sources of estimation uncertainty

The preparation of financial statements in conformity with IFRS requires management to make estimates, judgments and assumptions that affect the reported amounts of assets and liabilities as at the date of the financial statements and reported amounts of income (loss) and expenses during each reporting period. Estimates and assumptions are continuously evaluated and are based on management's experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances. However, actual outcomes can differ from these estimates.

#### *Fair value of stock options and compensatory warrants*

Determining the fair value of compensatory warrants (finders' warrants) and stock options requires estimates related to the choice of a pricing model, the estimation of stock price volatility, the fair value of the Company's common shares, the expected forfeiture rate and the expected term of the underlying instruments. Any changes in the estimates or inputs utilized to determine fair value could have a significant impact on the Company's future operating results or on other components of shareholders' equity.

The fair value of stock options granted, or compensatory warrants issued by the Company is determined by using the Black-Scholes option pricing model. The fair value is particularly impacted by the Company's stock price volatility which is determined by way of a historical look-back of weekly closing stock prices over a period of time equivalent to the term provided on stock options and compensatory warrants when granted or issued.

#### *Property and equipment*

The estimated useful lives of property and equipment are reviewed by management and adjusted if necessary. To estimate property and equipment's useful life, management may use its past experience, review engineering estimates and industry practices for similar items of property and equipment and/or apply statistical methods to assist in its determination of useful life.

The estimated useful life of the Company's pilot plant within property and equipment is subject to specific estimation uncertainty as to the duration of use. The use of the pilot plant has historically been driven by securing government assistance to conduct research activities that utilize the pilot plant. Accordingly, the Company has historically depreciated the pilot plant over the term of the government assistance program. Future determinations of the expected life of the pilot plant may differ from historical experience.

There have been no changes to the depreciation methods used by the Company during the three months ended March 31, 2022. The Company's pilot plant is being depreciated over the term of the existing SDTC Program #2 which is expected to conclude in June 2024.

## Critical judgments in applying accounting policies

### *Income taxes*

Tax provisions are based on enacted or substantively enacted laws. Changes in those laws could affect amounts recognized in profit or loss both in the period of change, which would include any impact on cumulative provisions, and in future periods. Deferred tax assets (if any) are recognized only to the extent it is considered probable that those assets will be recoverable. This involves an assessment of when those deferred tax assets are likely to reverse and a judgment as to whether or not there will be sufficient taxable profits available to offset the tax assets when they do reverse. This requires assumptions regarding future profitability and is therefore inherently uncertain. To the extent assumptions regarding future profitability change, there can be an increase or decrease in the amounts recognized in respect of deferred tax assets as well as the amounts recognized in profit or loss in the period in which the change occurs.

The Company has determined that the likelihood and timing of future profitability for which to use its unrecognized deferred tax assets is uncertain at this time, therefore, the Company's deferred tax assets continue to be unrecognized.

### *Research expenses*

The determination of whether expenditures on research and development activities meet the criteria for capitalization as internally generated intangible assets is subject to estimation and uncertainty.

The Company has determined that its activities continue to be classified as research in nature, as opposed to development. This results in research costs being expensed to profit or loss within the financial statements.

## Changes in accounting policies and future accounting standards

During the three months ended March 31, 2022, and during the year ended December 31, 2021, there were no changes to the Company's significant accounting policies, nor any new accounting policies adopted.

Certain pronouncements have been issued by the IASB or IFRIC that are effective for accounting periods beginning on or after January 1, 2022. The Company has reviewed these updates and determined that none are applicable or consequential to the Company.

## Financial instruments – classification and fair value

### Classification of financial instruments

<b>Financial assets:</b>	<b>Classification:</b>
Cash and cash equivalents	FVTPL
Receivables	Amortized cost
Deposits	Amortized cost
<b>Financial liabilities:</b>	<b>Classification:</b>
Accounts payable and accrued liabilities	Amortized cost
Accounts payable to related parties	Amortized cost
Lease liabilities	Amortized cost

The Company's financial instruments can be exposed to certain financial risks including liquidity risk, credit risk, interest rate risk, price risk, and currency risk. Details of these risks and related assessments as well as the fair value measurements of the Company's financial instruments are included in the Company's financial statements for three months ended March 31, 2022, within Note 11.

## OFF-BALANCE SHEET ARRANGEMENTS

Nano One does not utilize off-balance sheet arrangements.

## PROPOSED TRANSACTIONS

There are no proposed transactions as the MD&A Date.



**MANAGEMENT'S RESPONSIBILITY FOR FINANCIAL STATEMENTS**

Information provided in this MD&A and the financial statements is the responsibility of management. In the preparation of the financial statements, estimates are sometimes necessary to make a determination of the carrying value for certain assets or liabilities. Management believes such estimates have been based on careful judgments and have been properly reflected in the financial statements. Management maintains a system of internal controls to provide reasonable assurances that the Company's assets are safeguarded and to facilitate the preparation of relevant and timely information.

**APPROVAL**

The Board of Directors of the Company has approved the disclosure contained in this MD&A.