



**NANO ONE MATERIALS CORP.**  
(formerly Dundarave Resources Inc.)

**MANAGEMENT DISCUSSION AND ANALYSIS**  
**FOR THE PERIOD ENDED JUNE 30, 2015**

## MANAGEMENT DISCUSSION AND ANALYSIS

This Management Discussion and Analysis (“MD&A”) provides a detailed analysis of the business of Nano One Materials Corp. (“Nano One” or the “Company”) for the six month period ended June 30, 2015, in comparison to corresponding periods. This MD&A should be read in conjunction with the unaudited condensed consolidated interim financial statements for the six months ended June 30, 2015 and 2014, and the related notes contained therein which have been prepared under International Financial Reporting Standards (“IFRS”). The following should also be read in conjunction with the audited consolidated financial statements, and the related notes contained therein, the related annual MD&A for the year ended December 31, 2014, and all other disclosure documents of the Company.

Additional information relevant to the Company’s activities can be found on SEDAR at [www.sedar.com](http://www.sedar.com) and the Company’s website at [www.nanoone.ca](http://www.nanoone.ca). All dollar amounts included therein and in the following MD&A are in Canadian dollars, the reporting and functional currency of the Company, except where noted. The MD&A contains information up to and including August 18, 2015 (the “Report Date”).

## FORWARD LOOKING STATEMENTS

Certain statements contained in this MD&A may constitute “forward-looking statements”. Such term is defined in applicable securities laws. The forward-looking information includes, without limitation, the success of research and development activities 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.

## OVERVIEW

The Company was incorporated on November 5, 1987. On March 5, 2015, Nano One completed a business combination with Perfect Lithium Corp. (“PLC”) whereby it acquired all the issued and outstanding shares of PLC in exchange for issuing Company shares to the former shareholders of PLC. As a result, the Company is now engaged in developing novel, scalable and low-cost processing technology for the production of high performance nano-structured materials. Nano One mission is to establish its patent-pending technology as a leading platform for the global production of a new generation of nanostructured composite materials. Nano One is building a portfolio of intellectual property and technology “know-how” for applications in markets that include energy storage, specialty ceramics, pharmaceutical, semiconductors, aerospace, dental, catalysts and communications. The technology simplifies the assembly of complex formulations of organic and inorganic ceramic powders and is suited to growth markets where the commercialization of advanced materials is inhibited by costly and entrenched industrial fabrication methods. Nano One’s first market is lithium-ion cathode materials in the energy storage sector, where its advantageous technology can bring sustainable differentiation and value to early adopters.

## OVERALL PERFORMANCE

### **Corporate Highlights:**

As at the Report Date, the Company:

- (a) completed a business combination with PLC. (the "Transaction"). Pursuant to the Transaction, the Company, through its wholly-owned subsidiary, 1019491 B.C. Ltd., acquired 100% of the issued and outstanding shares of PLC in exchange for 27,425,650 Post Consolidation Shares (as defined below). All outstanding warrants of PLC were exchanged for the Company's warrants to purchase Post Consolidation Shares with appropriate adjustments to the number and price of shares that may be acquired upon exercise thereof to reflect the Exchange Ratio. All stock options of the Company and PLC issued prior to the Agreement were cancelled upon closing of the Transaction. The Company granted 2,825,000 options to the new management of the Company upon completion of the Transaction. Immediately prior to the closing of the Transaction, the Company consolidated all of its issued and outstanding common shares on the basis of two (2) existing common shares for one (1) new common share (a "Post Consolidation Share") and one (1) share purchase warrant. Each warrant is exercisable until March 5, 2016 to acquire one Post-Consolidation Share at an exercise price of \$0.40 per whole Post-Consolidation Share and thereafter until March 5, 2017 to acquire one half of one Post-Consolidation Share at an exercise price of \$0.50 per whole Post-Consolidation Share. In connection with the Transaction, the Company completed a concurrent financing (the "Financing") of 12,000,000 units at \$0.25 per unit for gross proceeds of up to \$3,000,000. Each unit consists of one Post Consolidation Share and one-half of a share purchase warrant. Each whole warrant is exercisable into one Post Consolidation Share for a period of two (2) years at an exercise price of \$0.40 per share during the first year from the Closing Date and at an exercise price of \$0.50 per share during the second year from the Closing Date. The Company engaged Mackie Research Capital Corporation ("Mackie") to act as the lead agent to the Private Placement. As consideration, the Company paid to Mackie and several other agents a commission of 6.5% of the proceeds of the Financing in cash and 6.5% of the number of units sold in warrants. The Company engaged Mackie to act as an advisor and paid Mackie a work fee of \$20,000 and a finder's fee in the amount of 225,000 Post Consolidation Shares on closing of the Transaction.
- (b) entered into an agreement with NRC-IRAP whereby NRC-IRAP will fund a non-repayable contribution of up to \$250,000. IRAP requires that the proceeds from the grant be applied towards the optimization and design of a demonstrated pilot facility. Under the terms of the agreement, NRC-IRAP has agreed to reimburse the Company for 80% of salaries paid to Company employees and 50% of supported contractor fees involved in this pilot facility.
- (c) The Company and its wholly-owned subsidiary, PLC, amalgamated and continued under the name of Nano One Materials Corp.

### **The Technology**

Nano One's innovative processing technology can be used to produce materials used in a wide range of markets. Nano One's first addressable market is cathode materials that are used to store and discharge energy in lithium-ion rechargeable batteries. There is growing demand in the lithium-ion battery market for more cost effective and higher performance energy storage solutions. Nano One is well positioned to address these needs with its patent-pending technology and sees growth potential for the technology in many other materials markets that include energy storage, dental, catalysts, specialty ceramics, pharmaceutical, semiconductors, agriculture, aerospace and communications.

Nano One has developed a new method of producing high performance cathode materials, which uses equipment and simple methods that are known to scale in a wide range of industrial applications. The

process can produce longer lasting composite materials using lower cost feedstock and simpler processing.

With regards to performance, Nano One materials have been assessed by Nano One, by Canada's National Research Council ("NRC") and by several key undisclosed materials producers. Specifically, NRC measured electrochemical performance of LNMC out to a thousand (1,000) cycles and results were similar to those measured by Nano One and another undisclosed group. NRC also tested a comparable LNMC reference material prepared by a leader in battery material science and found that Nano One material performed with approximately 20% greater capacity than the reference material. Both the Nano One and NRC results show reasonable energy capacity fading to 85% after 500 1-hour charge-discharge cycles.

With regards to raw material costs, Nano One's liquid phase reaction is tolerant of raw material impurities and irregularities, enabling the use of lower grade feedstock (98-99% purity) instead of battery grade (99.9%) for an estimated ~30% reduction in terms of dollars (\$) per kilogram (kg).

With regards to processing costs, Nano One believes it can reduce the number of manufacturing steps by 75% and reduce throughput from several days to less than a day, when compared with state of the art methodologies described in patents and literature, such as solid state, hydrothermal, co-precipitation, sol-gel, spray pyrolysis and deposition methods. The overall savings in process costs is projected to be ~40% in terms of dollars (\$) per kilogram (kg). Furthermore, improvements to the nanostructure are showing 200-300% longer lasting material that can charge faster or store more energy. Nano One believes the product of these improvements can deliver a 50% reduction in the cost of storing energy in terms of dollars (\$) per kilowatt-hour (kWh).

The process consists of three (3) stages, and the major innovations lie in the first (1<sup>st</sup>) stage where a special mode of combining reactants controls crystal nucleation and growth of particles. Nucleation is the self-assembly of molecules into an organized structure. The desired nano-scale or superfine structure is formed in the first (1<sup>st</sup>) stage of the production cycle and eliminates many steps common to the dominant industrial processes.

In the first (1<sup>st</sup>) stage, salts or other reactants are added to an aqueous (water-based) or other solution located within a proprietary liquid phase reactor system. Nucleation occurs upon the presentation of feedstock and takes place rapidly. The proprietary system allows for control of structural growth and reaction kinetics, with the source materials provided either from bulk or from a continuous flow preparation process. The process is suitable for operation at mild temperatures and atmospheric pressures.

This reactor stage avoids grinding, milling, classification, supercritical conditions, filtering, separation and many other steps that are used in existing industrial methods. Reactants need not be high purity, as less expensive technical grade (as opposed to battery grade) chemicals can be used to achieve a quality output. Nano One's system is less sensitive to impurities and irregularities than other known manufacturing methods and can accommodate, for example, carbonates, hydroxides, and acetates of lithium, cobalt, nickel and manganese graded at 98% and 99% purity. These materials are less costly and more widely available than battery grade feedstock (99.9% and purer) that is commonly used to prepare cathode materials. The reactor operates at mild temperatures and atmospheric pressures, and can be sealed for inert or other environments, allowing for a much safer and simpler laboratory environment. The reactor stage also avoids complexing agents, surfactants, templates, and emulsifiers that are categories of chemicals typically used to initiate nucleation and control growth of structures. Nano One avoids these chemicals and is therefore able to deliver the desired structure using simpler methods and pass them on to the second (2<sup>nd</sup>) stage of drying and the third (3<sup>rd</sup>) stage of firing in a furnace.

In the second (2<sup>nd</sup>) stage, the reactor liquids are passed to an industrial drying system such as a spraying, freezing, evaporating, microwaving or other system.

In the third (3<sup>rd</sup>) stage, dried powders are fired in a conventional furnace such as a rotary kiln, fluidized bed, plasma or other type of furnace. This final stage is known as calcination, where the dried materials are heated to 800-900°C in either an atmospheric or inert environment and are thermally decomposed into, for instance, lithium manganese oxide, steam, ammonia and/or carbon dioxide. The formation of the underlying nano-structure is completed during calcination and the resulting powder is ready for assembly into a battery cell or other application.

The underlying structure and morphology of the materials is preserved through a wide range of thermal processing steps, eliminating the need for long and repeated firings and indicative of a robust and long lasting material. The process produces materials with stable phase composition and high porosity, but which is configurable to meet a variety of density requirements.

The presence of nano-structures early in the process and prior to calcination simplifies processing and is advantageous for performance, throughput and scale-up. Characterization of the materials by electron microscope and x-ray characterizes the size, the composition and the kind of structure, providing evidence of a robust structure that withstands the rigours of drying and calcination and maintains the integrity of its advantageous structure through thousands of charge cycles.

This innovative approach can reduce the complexity and cost of materials production, through lower cost feedstock and fewer steps, while providing nanostructured materials with superior performance characteristics. The reactor, drying and calcination stages can be easily integrated to enable materials to flow from start to finish in a continuous manner and under controlled environmental conditions. In this way, Nano One's system can be configured for many different composite materials and Nano One believes the three (3) stage process can be rapidly scaled and configured for high volume production.

Typically, synthesis of nano-materials at the benchscale are performed in small quantities anywhere from milligrams to grams of material. Subsequent scale-up from these small quantities often leads to detrimental changes in thermodynamics (heat, temperature, energy, work) and reaction kinetics (reaction rates and chemical change). Nano One recognizes that synthesis of materials must begin at a larger scale where the properties of the system are much closer to production conditions. For this reason, Nano One designed a 6-liter bench scale reactor that is capable of producing up to 150 grams per hour (150 g/hr) or 3 kilograms per day (3 kg/day), with drying and firing stages easily scaled to match. At this scale, there is sufficient enough volume to emulate the thermodynamic and reaction kinetics expected in pilot and full-scale production.

### **The Proprietary Protection**

Five (5) patent applications were submitted to the United States Patent and Trademark Office in March 2013, covering processes, apparatus, applications and formulations. One (1) provisional patent application was filed in the United States in November 2013 and followed with one (1) non-provisional patent filed in the United States in March of 2014 for a total of seven (7) patents pending in the United States. These patents were also filed in five (5) applications under the Patent Cooperation Treaty for worldwide coverage and one (1) Taiwanese application. During the period ended June 30, 2015, the U.S. Patent and Trademark Office ("USPTO") issued a notice of allowance on two of the Company's patent applications.

The intellectual property was developed and is wholly owned by Nano One. Nano One 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 endeavors. Nano One seeks to limit disclosure of its intellectual property by requiring employees, consultants and partners with access to the technology to execute confidentiality agreements and non-competition agreements and by restricting access to PLC's intellectual property and technology.

Despite Nano One's efforts to protect its intellectual property and technology, unauthorized parties may attempt to copy aspects of its technology or to obtain and use information that Nano One regards as

proprietary. The laws of many countries do not protect proprietary rights to the same extent as the laws of the United States or Canada. Litigation may be necessary in the future to enforce Nano One's intellectual property rights, to protect Nano One's trade secrets, to determine the validity and scope of the proprietary rights of others or to defend against claims of infringement. Any such litigation could result in substantial costs and diversion of resources and could have a material adverse effect on Nano One's business, operating results and financial condition. There can be no assurance that Nano One's means of protecting its proprietary rights will be adequate or that competitors will not independently develop similar services or products. Any failure by Nano One to adequately protect its intellectual property could have a material adverse effect on its business, operating results and financial condition.

Patent	Country	Status	Number	Filing Date	Publication Date
Method for Making Powders for Specialized Applications	USA	Notice of Allowance Granted	13/839,374	03/15/2013	09/18/2014
	International PCT	Demand Filed	PCT/US2014/027056	03/14/2014	09/25/2014
Reactor Vessel	USA	Response to action in progress	13/839,110	03/15/2013	09/18/2014
	International PCT	Demand Filed	PCT/US2014/027094	03/14/2014	09/18/2014
Method for Making Lithium Metal Oxide Powders for Battery Applications	USA	Ready for Examination	13/842,278	03/15/2013	09/18/2014
	International PCT	Demand Filed	PCT/US2014/027125	03/15/2014	09/25/2014
Method for Making Layered Lithium Mixed Metal Oxide Powders for Battery Applications	USA	Response to action in progress	13/842,978	03/15/2014	09/18/2014
	International PCT	Demand Filed	PCT/IB2014/000810	03/14/2014	03/14/2014
	Taiwan	Response to action in progress	103109198	03/14/2014	03/14/2014
Method for Making Lithium Metal Oxide Powders for Battery Applications	USA	Notice of Allowance Granted	13/842,539	03/15/2013	09/18/2014
	International PCT	Demand Filed	PCT/US2014/027248	03/15/2014	09/25/2014
Method for Making Layered Lithium Mixed Metal Oxide Powders for Battery Applications	USA (provisional)	Expired & Combined in 14/215,657	61/902,915	11/12/2013	–
Method for Making Layered Lithium Mixed Metal Oxide Powders for Battery Applications	USA	Continuation-in-part Ready for Examination	14/215,657	03/17/2014	–

### Current Activities

Nano One is optimizing its process and its materials with the goal of demonstrating long lasting high energy density batteries in 2015 and scalable pilot production of its materials in 2016. Recent innovations to Nano One's process have been developed to augment manufacturing efficiencies. These achievements have led to improved structural properties of the materials with higher densities. Electrochemical analyses of the materials in batteries has been underway at Nano One's Burnaby facility since April and are showing favourable capacity and charging in larger format cells.

Nano One is currently focusing its efforts on a strategically important, next generation cathode material known as lithium manganese rich lithium nickel manganese cobalt oxide (LMR-NMC, see detail below). The current round of battery tests use large format pouch cells that hold approximately 100 mg of LMR-NMC, which are about 40 times larger than previous coin cell tests. These most recent cells have improved cell-to-cell consistency and the materials are showing commercially viable reversible capacity up to 240 mAh/g (milliamp-hours per gram), which is in line with industry targets. Longevity is measured cycle to cycle and Nano One has seen about 0.03% capacity fade per cycle when charging and discharging once per hour. This is up to 10 times longer lasting than benchmarks used by key players in the battery space.

Furthermore, Nano One has recently doubled the density of its battery materials with some samples reaching well over 2 g/cc (grams per cubic centimetre). Higher energy storage per cell is usually associated with higher density materials and could enable further improvements to capacity, efficiency, cost, weight and performance.

Nano One's bench-scale apparatus is considered very productive at about 100 grams per hour and will require a modest scale-up, in the neighborhood of tenfold, to demonstrate pilot production. With commercialization partner, BC Research and NORAM, working on plant design, Nano One is confident that its technology is scalable for piloting and full production.

Through collaboration with 4D LABS at Simon Fraser University, Nano One is using a number of analytical tools to characterize the structural properties, chemical composition, porosity, surface area and mass of Nano One's materials. Electron microscopy is showing unique structures with beneficial shape, size and distribution. X-ray analysis of the LMR-NMC material shows a high degree of crystallinity and layered structures that support efficient transport of lithium-ions in and out of the structure.

Nano One's battery testing program began with half-cells, where it is useful to evaluate cathode materials against pure lithium anodes. Nano One has identified a number of battery materials to take to the next level of evaluation in full-cells, where the cathode is paired with a graphite anode, as it is in commercial batteries. Nano One will evaluate these materials in battery tests and anticipates that third party testing will follow, with known battery industry players.

## **FUTURE PLANS**

Beyond the current period year, Nano One will continue to focus on the validation of four (4) key areas of uncertainty: (i) performance; (ii) novelty; (iii) scalability; and (iv) cost. Nano One plans to have substantially de-risked these uncertainties by December 31, 2015.

Performance will be evaluated in full scale battery testing starting in the first half of 2015 and continuing through 2016 with modifications to existing materials and synthesis of new materials. Third parties require a minimum of one kilogram (1 kg) of cathode materials for these tests and PLC is preparing to modify existing apparatus to address immediate needs and to build a pilot line to address needs for larger volumes of test materials.

Novelty will be validated through the assessment of the published patent applications and through demonstration of production in the laboratory and piloting facility.

To address scalability and costs, the detailed design of a pilot facility will be complete by the end of 2015. Activities in 2016 will include pilot installation, commissioning and optimization, with demonstration of pilot production towards the latter half of the year to provide materials for third party evaluation in 2017. These activities are expected to lead to discussions regarding partnership, licensing and commercialization.

## SUMMARY OF QUARTERLY RESULTS

The following table sets out selected quarterly financial information derived from the Company's unaudited condensed consolidated interim financial statements, for each of the eight recently completed quarters, which have been prepared in accordance with IFRS. This requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Significant areas requiring the use of management estimates relate to the deferral and valuation of exploration expenditures. Actual results could differ from these estimates.

Period	Interest and other items \$	General admin \$	Share-based payment \$	Loss for the period \$	Net loss per share, basic and fully diluted \$
June 30, 2015	1,861	(300,889)	(25,295)	(324,323)	(0.01)
March 31, 2015	(2,556,452)	(268,268)	(375,243)	(3,199,963)	(0.10)
December 31, 2014	-	(219,221)	-	(219,221)	(0.008)
September 30, 2014	316	(169,678)	-	(169,362)	(0.006)
June 30, 2014	1,751	(265,885)	-	(264,134)	(0.01)
March 31, 2014	-	(283,355)	-	(283,355)	(0.01)
December 31, 2013	1,227	(219,557)	-	(218,330)	(0.008)
September 30, 2013	-	(235,541)	-	(235,541)	(0.01)

## RESULTS OF OPERATIONS

### Six Months Ended June 30, 2015 Compared To Six Months Ended June 30, 2014

Loss and comprehensive loss for the period ended June 30, 2015 increased by \$2,976,795. The change was primarily due to the following:

- General and administrative costs of \$569,155 (2014 - \$549,240) increasing as follows:
  - NRC-IRAP grant of \$105,944 was claimed by the Company during the period ending June 30, 2015 and was a reduction to research and development costs; and
  - Consulting, office and general, professional fees and salary and benefits increased by \$29,050, \$14,860, \$34,144 and \$50,162, respectively, due to the work related to the reverse takeover with the Company and PLC.
- The transaction costs relating to the RTO plus the aggregate of the fair value of the consideration paid and the net liabilities acquired has been recognized as listing expenses of \$2,556,808, in the consolidated statement of loss and comprehensive loss.

### Three Months Ended June 30, 2015 Compared To Three Months Ended June 30, 2014

Loss and comprehensive loss for the period ended June 30, 2015 increased by \$60,299. The change was primarily due to the following:

- General and administrative costs of \$300,889 (2014 - \$265,885) increasing as follows:
  - NRC-IRAP grant of \$12,466 was claimed by the Company during the period ending June 30, 2015 and was a reduction to research and development costs;
  - Rent increased by \$15,000 in relations to the corporate office.
  - Consulting, office and general, and salary and benefits increased by \$25,050, \$8,939, and \$11,034, respectively, due to the increase in Company activity resulting in hiring additional staff and consultants; and

- o Shareholder communication and investor relations increased by \$32,927 due to the Company providing updates and creating awareness to shareholders.

**LIQUIDITY**

The Company started 2015 with a working capital of \$56,543, and as at June 30, 2015, the Company had working capital of \$2,062,530. The increase in the working capital of \$2,005,987 was primarily due to:

- completion of a private placement for net proceeds of \$2,769,078;
- total of \$105,944 claimed by the Company in relations to the NRC-IRAP grant;
- finders' fee paid in connection with the RTO of \$195,000; and
- general and administrative costs of \$569,155.

Recent developments in the capital markets have restricted access to debt and equity financing for many companies. As the Company has no significant income, cash balances will continue to decline as the Company utilizes these funds to conduct its operations, unless replenished by capital fundraising.

	June 30, 2015	December 31, 2014
Working capital	\$ 2,062,530	\$ 56,543
Deficit	(6,434,434)	(2,949,590)

**CAPITAL RESOURCES**

The Company has not yet realized profitable operations and it has relied on non-operational sources of financing to fund operations. The ability of the Company to achieve its objectives, meet its ongoing obligations and recover its investments in pending patents and other assets will depend on management's ability to successfully execute its business plan, achieve profitable operations and obtain additional financing, if or when required. There is no assurance that these initiatives will be successful.

Nano One is forecasting royalties to be generated on its intellectual property starting as early as February 2018. Royalty income will be tied to the market uptake of the technology and Nano One is conservatively predicting 3.6% of the cathode material market to be benefiting from its innovative manufacturing technology by March 2019, with that market share predicted to rise to approximately 8% by the end of fiscal year ended 2019. A market share of 3.6% could translate into \$1.5 million in monthly royalty revenues, at a 7% royalty rate, with that number increasing to \$3.3 million per month by the end of fiscal year ended 2019.

In addition to royalty revenue, Nano One forecasts to earn supplementary revenues by performing contract research and by selling cathode materials produced in its research and pilot facilities. This additional revenue could be generated as early as January 2017, and is forecasted to amount to \$340,000 in annual revenue in fiscal year ended 2017, \$1.05 million in fiscal year ended 2018 and \$1.2 million in fiscal year ended 2019.

**RELATED PARTY DISCLOSURES**

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 related parties:

**(a) Purchases of services**

	June 30, 2015 \$	June 30, 2014 \$
Ellis Street Consulting, an entity controlled by John Lando, an executive director, for consulting fees	30,000	30,000
Bedrock Capital Corp., an entity controlled by Paul Matysek, an executive director, for consulting fees	15,000	-
	45,000	30,000

**(b) Key management compensation**

Key management includes directors (executive and non-executive), the Secretary, Chief Financial Officer and President. The compensation paid or payable to key management for employee services is shown below:

	June 30, 2015 \$	June 30, 2014 \$
Salary and benefits to an officer	40,500	-
Salary and benefits to an executive director	65,000	50,000
	105,500	50,000

**OUTSTANDING SHARE DATA**

The authorized share capital of the Company is unlimited common shares, without par value. As at the Report Date, there were 44,793,599 (December 31, 2014 – 27,425,640) common shares outstanding.

As at the Report Date, the following stock options were outstanding:

Number of Options	Exercise Price	Expiry Date
2,825,000	\$0.25	March 5, 2020
100,00	\$0.23	June 10, 2020
2,925,000		

As at the Report Date, the following warrants were outstanding:

	Exercise price \$	Expiry date
5,142,949	0.40*	March 5, 2017
6,780,000	0.40**	March 5, 2017
22,400	0.3125	November 27, 2015
1,253,334	0.35	February 26, 2016
<u>13,198,683</u>		

\*Exercise price is \$0.40 per share until March 5, 2016 and thereafter into one-half of one common share at an exercise price of \$0.50 per share

\*\*Exercise price is \$0.40 per share until March 5, 2016 and thereafter at an exercise price of \$0.50 per share

## MANAGEMENT OF CAPITAL

The Company's objective when managing capital is to safeguard its ability to continue as a going concern in order to provide returns for shareholders and benefits for other stakeholders and to maintain optimal capital structure to reduce to the cost of capital. The Company's capital is composed of equity in the statement of financial position.

The Company is not subject to externally imposed capital requirements. In managing capital structure, the company manages its capital through regular reports to the Board of Directors, as well as management review of monthly or quarterly financial information. The Company issues new equity financing as needed and available. Additional information relating to capital management is given in the nature and continuance of operations in the condensed consolidated interim financial statements.

## FINANCIAL INSTRUMENTS

The Company is exposed to various financial instrument risks and assesses the impact and likelihood of this exposure. These risks include liquidity, credit, currency, interest rate, and price risks. Where material, these risks are reviewed and monitored by the Board of Directors.

### Liquidity Risk

Liquidity risk is the risk that the Company will not be able to meet its obligations associated with its financial liabilities. The Company has historically relied upon equity financings to satisfy its capital requirements and will continue to depend heavily upon equity capital and possible loans to finance its activities. The Company manages liquidity risk through its capital management as outlined above. Accounts payable and accrued liabilities are due within one year.

### Credit Risk

Credit risk is the risk of potential loss to the Company if the counterparty to a financial instrument fails to meet its contractual obligations. The Company's credit risk is primarily attributable to its liquid financial assets including cash and receivables. The Company limits exposure to credit risk on liquid financial assets through maintaining its cash with high-credit quality financial institutions.

The majority of the Company's cash is held with major Canadian based financial institutions.

### **Currency Risk**

The Company operates in Canada and the United States, and is therefore exposed to foreign exchange risk arising from transactions denominated in a foreign currency.

The operating results and the financial position of the Company are reported in Canadian dollars. The fluctuations of the operating currencies in relation to the Canadian dollar will, consequently, have an impact upon the reporting results of the Company and may also affect the value of the Company's assets and liabilities.

The Company's cash, accounts payable and accrued liabilities are exposed to the financial risk related to the fluctuation of foreign exchange rates. Most significantly, the Company is exposed to potential currency fluctuations between the US and Canadian dollars as research and development expenses transacted in US dollars represented approximately Nil% (2014 – 51%) of the Company's operating results.

The Company has not entered into any agreements or purchased any instruments to hedge possible currency risks at this time.

### **Interest Rate Risk**

Interest rate risk is the risk that the fair value of future cash flows of a financial instrument will fluctuate due to changes in market interest rates. Current cash is generally not exposed to interest rate risk because of their short-term maturity.

### **Price Risk**

The Company is exposed to price risk with respect to equity prices. Equity price risk is defined as the potential adverse impact on the Company's earnings due to movements in individual equity prices. The Company closely monitors the individual equity movements to determine the appropriate course of action to be taken by the Company.

Based on management's knowledge and experience of the financial markets, management does not believe that the Company's current financial instruments will be affected by interest rate risk, currency risk and credit risk.

### **Fair Value**

The Company classifies its fair value measurements in accordance with the three-level fair value hierarchy as follows:

- Level 1 – Unadjusted quoted prices in active markets for identical assets or liabilities;
- Level 2 – Inputs other than quoted prices that are observable for the asset or liability either directly or indirectly; and
- Level 3 – Inputs that are not based on observable market data.

The fair values of cash is based on level 1 of the fair value hierarchy.

### Financial Assets

The estimated fair value of financial assets is equal to their carrying values due to the short-term nature of these instruments. The Company's financial assets were held in the following currencies:

Stated in Canadian Dollars			
June 30, 2015			
Carrying Value	Canadian Dollar	US Dollar	Total
Cash	2,047,869	12,999	2,060,868
Receivables	31,222	-	31,222

### Financial Liabilities

The estimated fair value of financial liabilities is equal to their carrying values due to the short-term nature of these instruments. The Company's financial liabilities were held in the following currencies:

Stated in Canadian Dollars			
June 30, 2015			
Carrying Value	Canadian Dollar	US Dollar	Total
Accounts payable and accrued liabilities	42,899	-	42,899

### RISK AND UNCERTAINTIES

Risk is inherent in all business activities and cannot be entirely eliminated. Our goal is to enable the Company's business processes and opportunities by ensuring that the risks arising from our business activities, the markets and political environments in which we operate is mitigated. The risks and uncertainties described in the MD&A for the year ended December 31, 2014 are considered by management to be the most important in the context of the Company's business and are substantially unchanged as of the Report Date. Those risks and uncertainties are not inclusive of all the risks and uncertainties the Company may be subject to and other risks may apply.

### CHANGES IN ACCOUNTING POLICIES AND CRITICAL ACCOUNTING ESTIMATES

#### Critical judgments and sources of estimation uncertainty

The preparation of the condensed consolidated interim financial statements requires management to make certain estimates, judgments and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statement and reported amounts of expenses during the reporting period. Actual outcomes could differ from these estimates. The condensed consolidated interim financial statements include estimates which, by their nature, are uncertain. The impact of such estimates are pervasive throughout the condensed consolidated interim financial statement, and may require accounting adjustments based on future occurrences. Revisions to accounting estimates are recognized in the period in which the estimate is revised and future periods if the revision affects both current and future periods. These estimates are based on historical experience, current and future economic conditions and other factors, including expectations of future events that are believed to be reasonable under the circumstances.

#### *Critical accounting estimates*

Significant assumptions about the future and other sources of estimation uncertainty that management has made at the financial position reporting date, that could result in a material adjustment to the carrying

amounts of assets and liabilities, in the event that actual results differ from assumptions made, relate to, but are not limited to, the following:

1. whether or not an impairment has occurred in its equipment;
2. the inputs used in the accounting for share-based payments expense in the statements of comprehensive loss; and
3. the inputs used in the accounting for finders' warrants in share capital and equity reserves.

*Critical accounting judgments*

The following are key assumptions concerning the future and other key sources of estimation uncertainty that have significant risk of resulting in a material adjustment to the carrying amounts of assets and liabilities within the next financial year.

1. going concern of operations;
2. determining the provisions for income taxes and the recognition of deferred income taxes; and

**STANDARDS AND AMENDMENTS NOT YET EFFECTIVE**

The following standard has been issued but is not yet effective:

IFRS 9 Financial Instruments is part of the IASB's wider project to replace IAS 39 Financial Instruments: Recognition and Measurement. IFRS 9 retains but simplifies the mixed measurement model and establishes two primary measurement categories for financial assets: amortized cost and fair value. The basis of classification depends on the entity's business model and the contractual cash flow characteristics of the financial asset. The standard is effective for annual periods beginning on or after January 1, 2018.

There are no other standards or IFRIC interpretations that are not yet effective that would be expected to have a material impact on the Company.

**INTERNAL CONTROLS OVER FINANCIAL REPORTING**

Management has 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. The design of the Company's internal control over financial reporting was assessed as of the date of this Management Discussion and Analysis.

Based on this assessment, it was determined that certain weaknesses existed in internal controls over financial reporting. As indicative of many small companies, the lack of segregation of duties and effective risk assessment were identified as areas where weaknesses existed. The existence of these weaknesses is to be compensated for by senior management monitoring, which exists. Management will continue to monitor very closely all financial activities of the Company and increase the level of supervision in key areas. It is important to note that this issue would also require the Company to hire additional staff in order to provide greater segregation of duties. Since there is insufficient work at this time to warrant the additional costs, management has chosen to disclose the potential risk in its filings and proceed with increased staffing only when the budgets and work load will enable the action. The Company has attempted to mitigate these weaknesses, through a combination of extensive and detailed review by management of the financial reports, the integrity and reputation of senior accounting personnel, and candid discussion of those risks with the audit committee.

**MANAGEMENT'S RESPONSIBILITY FOR FINANCIAL STATEMENTS**

Information provided in this report, including the financial statements, is the responsibility of management. In the preparation of these statements, estimates are sometimes necessary to make a determination of

future value for certain assets or liabilities. Management believes such estimates have been based on careful judgments and have been properly reflected in the accompanying 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. A copy of this MD&A will be provided to anyone who requests it.