

**QUANTUM NUMBERS CORP.**

**Management's Discussion and Analysis**

**December 31, 2020**

## QUANTUM NUMBERS CORP.

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The following management's discussion and analysis ("MD&A") of the financial condition and results of the operations of Quantum Numbers Corp. (the "Company") constitutes management's review of the factors that affected the Company's financial and operating performance for the year ended December 31, 2020 compared to the year ended December 31, 2019 prepared with information available as of April 22, 2021.

Further information regarding the Company and its operations are filed electronically on the System for Electronic Document Analysis and Retrieval ("SEDAR") in Canada and can be obtained from [www.sedar.com](http://www.sedar.com)

### **1.1 FORWARD LOOKING STATEMENTS**

The sections of this management discussion and analysis ("MD&A") on the Company's strategy and action plan, its intellectual properties, development and financial reporting reflecting management's current expectations contain "forward-looking statements." Such statements should be understood in context, particularly statements that reflect the Company's opinions, estimates and expectations about future events or results. Such forward-looking statements are subject to certain factors and involve some risks and uncertainties. There can be no assurance that such statements will prove to be accurate. Factors that could cause future results, activities and events to differ materially from those expressed or implied by such forward-looking statements include, but not limited to, possibility or not to obtain the patent, time required to obtain such patent, risks inherent in the hi-tech industry, and the time it will take for the industry to be ready to move to quantic solutions. These risks and uncertainties are described in this MD&A and also the annual information form filed on SEDAR.

### **1.2 INCORPORATION, NATURE OF OPERATIONS AND GOING CONCERN**

Quantum Numbers Corp. (the "Company" or "Quantum") was incorporated under the *Business Corporations Act* of Ontario on July 19, 2007.

The head office, principal address and records office of the Company are located at 3755 E Blvd Matte, suite 201, Brossard, Québec, J4Y 2P4. The Company is a developer of a new generation of cryptographic solutions pursuant to the acquisition of intellectual property.

The business of technology involves a high degree of risk and there can be no assurance that projects under research and development will proceed through to achieve commercialization. Risks related to the value of the Company's intangible assets, completing proof of concept studies, protecting intellectual property rights, the ability of the Company to raise alternative financing, and risks inherent to new technologies, such as risk of obsolescence, slow adoption and competing technological advances. Changes in future conditions could require material impairment of assets.

The Company's financial statements have been prepared in accordance with International Financial Reporting Standards ("IFRS") on a going concern basis, which contemplates that the Company will be able to realize its assets and discharge its liabilities in the normal course of business. Since its incorporation, the Company has accumulated a deficit of \$6,405,692 (December 31, 2019 - \$6,224,366) and during the year ended December 31, 2020, incurred a net loss and comprehensive loss of \$799,251 (December 31, 2019 - \$663,318) and incurred negative cash flows from operations of \$308,289 (December 31, 2019 - \$596,280). The Company does not currently have available resources and liquidity to fully execute its business plan over the next 12 months and is dependent on the Company's ability to raise additional finances to fund its operations. The above factors indicate a material uncertainty that may cast a significant doubt as to the Company's ability to continue as a going concern. Considering the recent non-brokered private placements of \$2,000,000 described in subsequent events, the Company believes that it has sufficient funds to meet its current obligations and continue as a going concern for the next twelve months.

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### **1.2 INCORPORATION, NATURE OF OPERATIONS AND GOING CONCERN (Continued)**

The financial statements have been prepared on a going-concern basis which contemplates that the Company will continue in operation in the foreseeable future and will be able to realize its assets and discharge its liabilities in the normal course of business. This assumption is based on the current net assets of the Company and management's current operating plans.

The financial statements do not reflect the adjustments to the carrying values of assets and liabilities, the reported amounts of expenses and the classification of statement of financial position items if the going concern assumption was deemed inappropriate. Management did not take these adjustments into account as it believes in the validity of the going concern assumption.

In March 2020, the World Health Organization declared the COVID-19 epidemic a pandemic. The situation is continually evolving, and the measures put in place have numerous economic repercussions at the global, national, provincial and local levels. These measures, which include travel bans, solitary confinement or quarantine (voluntary or not), and social distancing, have caused significant disruption among businesses, globally and in Canada, due to the economic slowdown. Governments and central banks have responded by implementing monetary and fiscal measures to stabilize the world economy; however, the current challenging economic climate may cause adverse changes in cash flow, the level of working capital and the search for future financing, which could have a direct impact on the Company's future financial position. The Company has implemented measures to mitigate the impact of the pandemic on its future operations.

The Company intends to patent its technologies wherever it is required. In the meantime, to ensure sufficient cash flow until market readiness, the Company is also looking at M&A transactions to achieve its objectives.

### **1.3 SENIOR MANAGEMENT CHANGES**

On November 19, 2020, the Company announced the resignation of Pierre C Miron as Board Member and Secretary. Mr. Rousseau will combine the duty of CEO and CFO. Mr. Luc Paquet, Director, is taking over the position of Secretary. In addition, the temporary lay-off of Mr. Miron's position as CFO has been converted to a permanent lay-off.

On December 23, 2020, Mr. Francis Bellido was appointed as CEO of the Company and Mr. Marc Rousseau will remain CFO.

On January 27, 2021 and on March 12, 2021, Dr. Edward Laurence Moore and Scott Rickards were respectively appointed directors of the Company.

### **1.4 COMPANY OVERVIEW AND STRATEGY**

#### **ASSET ACQUISITION**

On August 3, 2016, the Company entered into an Intellectual Property Assignment Agreement (the "IP Agreement") with Societe de Commercialisation des Produits de la recherche appliquee SOCPRA Sciences et Genie SEC ("SOCPRA") and its inventors by issuing a total of 6,000,000 common shares of the Company at a fair value of \$0.05 per share, representing a total fair value of \$300,000. The Company also reimbursed \$13,838 to SOCPRA for the professional fees associated with the protection of the patent ("Acquisition").

## 1.4 COMPANY OVERVIEW AND STRATEGY (Continued)

### ASSET ACQUISITION (Continued)

Until the expiry of the last patent rights, the Company will pay to SOCPRA a royalty of 5% calculated on the net sales price of products sold by the Company. The royalty shall be calculated on a 12-month basis starting on the effective date and shall be paid by the Company to SOCPRA within 90 days following the expiry of each reference year. The Company may have an option to buy back the royalties in the future at terms and conditions to be agreed upon by both parties. Pursuant to the IP Agreement, if the Company did not find or develop a commercial application within three years, 50% of the intellectual property would be transferred back to SOCPRA. As the Company found a commercial application within three years, 50% of the intellectual property shall not be transferred.

The Acquisition was not considered to be a business combination and was accounted for as an asset acquisition. Total purchase price of \$300,000, finder's fees of \$30,000 and transaction costs of \$116,112, which includes the reimbursement of \$13,838 above, totalling \$446,112, were capitalized to intellectual property.

### INTELLECTUAL ACTIVITIES

Since Quantum Numbers Corp. changed its focus from mining to quantum hi-tech Intellectual Property, the primary management objective was to strengthen the Company in the following three sectors of activities:

#### **Technology**

In order to stay focused on our primary objective, which is to make our technology accessible as rapidly as possible to potential clients and partners, and secured regarding its effectiveness and ensuring that the Intellectual Property is well protected, we are closely working with l'École de Technologie Supérieure ("ETS") in order to maximize the potential and security of our technology. We are putting in place a program to develop complementary metal-oxide semiconductor ("CMOS") implementations with ETS to ensure a greater competitiveness. During the first quarter of 2020, we were awarded a subsidy from the Quantum Province of Quebec program to develop 3 different CMOS implementations.

In regards to our second technology "Method and System for creating a Random Bit Sample", this technology is a method that quantifies the randomness of our signal, a perfect complement to our first technology.

Towards the end of 2019, the Company decided that it would be beneficial to work on a CMOS version. The Company filed a grant form with a new Provincial Program. The grant was accepted and will cover between 40 and 60% of the eligible expenses up to \$250,000. The development project will start under the elm of Dr Ghyslain Gagnon in Q2 2021.

The Company's latest R&D breakthrough in August 2020 is the achievement of a successfully operational prototype that can reach 300 Mbps of random bits with only the digital components limiting the throughput. More recently, the Company also is exploring the development of a portable USB-type QRNG in the management opinion closer to commercialisation.

#### **Patent**

As the Company must obtain its Patent to pass the introduction level with potential clients, it was then decided to work with the Company's Patent Agent to assess the patentability of our technology. The Company received the final report that indicates that it should continue the National Phase as planned. By doing the legwork and research at the stage of the patentability report, the Company was able to respond rapidly to the European Patent Office ("EPO") investigator. Furthermore, that research also allowed us to develop a second Patent that the Company filed. Please refer below for the status.

**1.4 COMPANY OVERVIEW AND STRATEGY (Continued)**

**INTELLECTUAL ACTIVITIES (Continued)**

**Status of patents**

**First Request Method for generating random numbers and associated random number generator**

<b><u>Country</u></b>	<b><u>Status</u></b>
United States	Patent granted. A partial Patent was granted on August 7, 2018. The second portion was granted on October 8, 2019.
Russia	Patent granted on January 16, 2019.
European Patent Office	EPO granted the Patent on February 2, 2020, and the dispute period for all the countries ended on November 2, 2020. We have not received any dispute as of today.
Australia	Patent granted in June 2020.
Thailand	The deadline to request an examination report is November 15, 2022.
Canada, Brazil, India, Indonesia, Republic of Korea, Vietnam, China	For all these countries, we requested the examination, and we are awaiting the examiner's response.

**Second Request Method and system for generating a random bit sample**

<b><u>Country</u></b>	<b><u>Status</u></b>
European Patent Office	EPO granted the Patent on October 23, 2019, and there has been no dispute from any countries which are members of the EPO.
United States	Patent granted.
All countries where our first patent was registered, with the addition of Japan	In early June 2020, we registered in all the countries where our first patent was registered, with the addition of Japan. We are still waiting for each examiner's responses.

### 1.4 COMPANY OVERVIEW AND STRATEGY (Continued)

#### INTELLECTUAL ACTIVITIES (Continued)

##### **Market**

For the past three years, the Company focused its resources in developing its key IP position to align a successful venture in the emerging Quantum Random Number Generator (“QRNG”) market. The National Institute of Standards and Technology Post Quantum Cryptography Standards Committee is still working on related protocols and we believe to have the right attributes to fulfill the future requirements for target markets.

Attendance to conferences in the IT security industry is key to assess our position and initiate early adopter agreements with target markets. For the moment, we are monitoring the situation related to COVID-19 and will resume as soon as key industry conferences state their position.

Since March 2018, we have not seen any transactions of significant value in our market. In summary, we work closely with the ETS with respect to the technology and adaptation to the needs of potential markets. After reaching key milestones, such as a successful CMOS implementation, we would be able to propose specific solutions to potential markets.

During the third and fourth quarter of this fiscal year, the Board of Directors further analyzed and identified the most prevalent industries where the Company’s distinct QRNG patented technology will be most needed and accepted with its high levels of security benefits. According to our latest research, we foresee a compelling industry fit with the Healthcare Industry.

QNC specifically intends to target the highly valued medical devices and Healthcare Services industries while ensuring its technology is also relevant and applicable to others, such as Datacenters, Blockchain technologies, Financial Services, Cloud-Based IT Security Infrastructure, Classified Government Networks and Communication Systems, Secure Device Keying (IOT, Automotive, Consumer Electronics) and Quantum Cryptography.

### 1.5 HIGHLIGHTS

The Company reported a net loss and comprehensive loss of \$799,251 in 2020 compared to a net loss and comprehensive loss of \$663,318 in 2019.

As at December 31, 2020, the Company had net working capital deficiency of \$386,111 compared to a net working capital of \$251,199 in 2019.

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### 1.6 SELECTED ANNUAL INFORMATION

	Year ended December 31		
	2020	2019	2018
	\$	\$	\$
Net loss and comprehensive loss for the year	(799,251)	(663,318)	(916,042)
Basic and diluted loss per share	(0.01)	(0.01)	(0.02)
Cash	20,090	287,631	909,500
Total assets	672,685	939,821	1,599,028
Total liabilities	450,902	46,787	62,750
Equity	221,783	893,034	1,536,278

#### **Analysis 2020 compared to 2019**

The total assets at December 31, 2020 of \$672,685 decreased by \$267,136 compared to \$939,821 as at December 31, 2019. This decrease is attributable mainly to a decrease in cash of \$267,541 primarily used to fund operating activities.

The increase in total liabilities is mainly due to an increase in consulting fees, development costs, management fees, professional fees and legal and audit fees and lack of available cash.

The decrease in equity is mainly due to the net loss and comprehensive loss.

#### **Analysis 2019 compared to 2018**

The total assets at December 31, 2019 of \$939,821 decreased by \$659,207 compared to \$1,599,028 as at December 31, 2018. This decrease is attributable mainly to:

- A decrease in cash of \$621,869 primarily used to fund operating activities.
- A decrease in taxes receivable of \$45,167 offset by the increase in intellectual property of \$20,396.

### 1.7 OPERATING ACTIVITIES

The 2020 net loss and comprehensive loss increased to \$799,251 from a net loss and comprehensive loss of \$663,318 in 2019 mainly due to an increase in consulting fees for an amount of \$183,200, in share-based payments for an amount of \$95,426, in management fees for an amount of \$30,600 and in development costs for an amount of \$24,259 offset by a decrease of salaries for an amount of \$131,275 and travel for an amount of \$85,795.

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### 1.8 INTELLECTUAL PROPERTY

The carrying amount can be analyzed as follows:

	Balance as at December 31 2018		Balance as at December 31 2019		Balance as at December 31 2020	
	<u>2018</u>	<u>Additions</u>	<u>2019</u>	<u>Additions</u>	<u>2020</u>	
	\$	\$	\$	\$	\$	\$
<b>Cost</b>						
Acquisition of SOCPRA license (Note 4)	446,112		446,112	-	446,112	
Development costs	174,377	25,590	199,967	21,000	220,967	
	<u>620,489</u>	<u>25,590</u>	<u>646,079</u>	<u>21,000</u>	<u>667,079</u>	
<b>Accumulated amortization</b>						
Amortization	-	5,194	5,194	22,305	27,499	
	<u>-</u>	<u>5,194</u>	<u>5,194</u>	<u>22,305</u>	<u>27,499</u>	
<b>Carrying amount</b>	<u>620,489</u>	<u>20,396</u>	<u>640,885</u>	<u>22,305</u>	<u>639,580</u>	

The carrying amount of the intellectual property is \$639,580. An annual impairment test was triggered in the year due to the fact the development costs are not yet available for use. The recoverable amount of the asset was estimated based on its fair value less costs of disposal. Fair value less costs of disposal have been determined based on a comparable transaction and other factors.

The recoverable amount was estimated to be higher than the carrying amount of the asset and no impairment was required.

In October of 2019, when available for use, the Company has commenced amortizing the license on a twenty-year basis. No amortization was taken on the development costs as these assets are not yet available for use.

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### 1.9 SELECTED FINANCIAL INFORMATION AND OPERATING RESULTS

	December 31	
	2020	2019
	\$	\$
<b>Expenses</b>		
Salaries	197,363	328,638
Consulting fees	186,400	3,200
Share-based payments	115,500	20,074
Development costs	108,293	84,034
Legal and audit fees	57,635	42,052
Management fees	30,600	-
Professional fees	28,752	28,537
Filing and listing fees	26,187	18,058
Amortization	22,305	5,194
Insurance	14,500	13,740
Office	10,767	23,716
Travel	8,085	93,880
Other expenses, net of other income	(7,136)	2,195
<b>Net loss and comprehensive loss for the year</b>	<b>799,251</b>	<b>663,318</b>
<b>Basic and diluted loss per share</b>	<b>0.01</b>	<b>0.01</b>
<b>Weighted average number of common shares outstanding</b>	<b>60,527,838</b>	<b>60,527,838</b>

### 1.10 SUMMARY OF QUARTERLY RESULTS

The following table sets forth selected quarterly financial information for each of the eight most recently completed quarters.

<u>Three-month period ended</u>	<u>Net loss and comprehensive</u>	<u>Basic and diluted loss</u>
	<u>loss for the period</u>	<u>per share</u>
	\$	\$
December 31, 2020	(389,272)	(0.006)
September 30, 2020	(132,789)	(0.002)
June 30, 2020	(119,342)	(0.002)
March 31, 2020	(157,848)	(0.003)
December 31, 2019	(161,265)	(0.003)
September 30, 2019	(140,307)	(0.002)
June 30, 2019	(176,690)	(0.003)
March 31, 2019	(185,056)	(0.003)
December 31, 2018	(215,707)	(0.004)
September 30, 2018	(204,071)	(0.003)
June 30, 2018	(222,794)	(0.003)
March 31, 2018	(273,470)	(0.005)

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### 1.10 SUMMARY OF QUARTERLY RESULTS (Continued)

The net loss and comprehensive loss for the period ended December 31, 2020 increased by \$256,483 compared to the period ended September 30, 2020. The increase resulted mainly from the increase in consulting fees and share-based payments offset by a decrease in development costs.

### 1.11 LIQUIDITY

As of December 31, 2020, the Company had a net working capital deficiency of \$386,111 compared to a net working capital of \$251,199 in 2019. On January 15, 2021, the Company completed a non-brokered private placement by issuing a total of 40,000,000 units at a price of \$0.05 per unit, for a total gross proceed of \$2,000,000.

### 1.12 CASH FLOWS

The Company's operating activities used \$320,789 in 2020 compared to \$596,280 in 2019. The decrease in cash flows used resulted mainly from an increase in net changes in non-cash working capital items.

The Company's investing activities generated \$748 in 2020 compared \$25,589 used in 2019. The increase in cash flows generated resulted mainly from a decrease in intellectual property acquisition.

The Company's financing activities generated \$52,500 in 2020 compared to \$nil in 2019. The increase in cash flows is due to an increase in proceeds from loan payable and proceeds from units to be issued.

### 1.13 FOURTH QUARTER

During the three-month period ended December 31, 2020, the Company recorded a net loss and comprehensive loss of \$389,272 compared to \$161,265 for the same period in 2019, which represents an increase of \$228,007. The variance is mainly due to an increase in consulting fees for an amount of \$185,000 and share-based payments for an amount of \$115,500 offset by a decrease in salaries for an amount of \$57,815 and development costs for an amount of \$14,114.

### 1.14 STOCK OPTIONS

The Company's share options are as follows for the reporting periods presented:

	<u>2020</u>		<u>2019</u>	
	<u>Number of options</u>	<u>Weighted average exercise price</u>	<u>Number of options</u>	<u>Weighted average exercise price</u>
		\$		\$
Balance outstanding, beginning of year	4,250,000	0.20	4,480,000	0.20
Granted	4,650,000	0.05	150,000	0.15
Expired	<u>(2,250,000)</u>	<u>(0.28)</u>	<u>(380,000)</u>	<u>(0.12)</u>
Balance outstanding, end of year	<u>6,650,000</u>	0.07	<u>4,250,000</u>	0.20
Balance exercisable, end of year	<u>6,650,000</u>	0.07	<u>4,250,000</u>	0.20

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### 1.14 STOCK OPTIONS (Continued)

The Company's share options are as follows for the reporting periods presented:

The weighted average remaining contractual life for options outstanding at December 31, 2020 is 2.18 (2019 - 4.68) years.

During the year, the Company recognized a share-based compensation expense for an amount of \$115,500 (2019 - \$20,074).

Outstanding and exercisable options are as follows:

Expiry date	Exercise price	2020		2019	
		Number	Exercisable	Number	Exercisable
	\$				
November 22, 2021	0.10	500,000	500,000	700,000	700,000
April 1, 2022	0.15	150,000	150,000	150,000	150,000
December 9, 2022	0.12	900,000	900,000	1,400,000	1,400,000
November 22, 2023	0.10	200,000	200,000	-	-
December 18, 2023	0.05	3,900,000	3,900,000	2,000,000	2,000,000
December 22, 2023	0.065	750,000	750,000	-	-
December 9, 2024	0.12	250,000	250,000	-	-
		<u>6,650,000</u>	<u>6,650,000</u>	<u>4,250,000</u>	<u>4,250,000</u>

### 1.15 SUBSEQUENT EVENTS

On January 15, 2021, the Company completed a non-brokered private placement by issuing a total of 40,000,000 units at a price of \$0.05 per unit, for a total gross proceed of \$2,000,000. Each unit consisted of one common share and one warrant. Each warrant entitles its holder to acquire one common share of the Company at a price of \$0.15 for a period of 12 months following the closing of the private placement. The securities issued in the private placement are subject to a four-month hold period expiring on May 16, 2021. Finder's fees of \$27,200 were paid in connection with the private placement.

In the months of January, February and March 2021, 3,500,000 stock options were granted to three directors at a price of \$0.14 per option for a period of three years and two consultants exercised 1,400,000 options at a price of \$0.05 per option for a total amount of \$70,000.

### 1.16 OFF-BALANCE SHEET ARRANGEMENTS

The Company does not have any off-balance sheet arrangements.

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### 1.17 FINANCIAL INSTRUMENTS

All financial instruments are recognized when the Company becomes a party to the contractual provisions of the financial instrument and are initially measured at fair value plus transaction costs, except for financial assets and financial liabilities carried at fair value through profit or loss, which are measured initially at fair value. Financial assets are derecognized when the contractual right to the cash flows from the financial assets expire, or when the financial asset and all substantial risks and rewards are transferred.

Please refer to Note 13 of the financial statements for an extended description of the Company's financial instruments and their fair values.

### 1.18 FINANCIAL RISK MANAGEMENT

In the normal course of operations, the Company is exposed to various financial risks. The Company does not enter into financial instrument agreements, including derivative financial instruments, for speculative purposes. Please refer to Note 13 of the financial statements for an extended description of the Company's main financial risks.

### 1.19 MANAGEMENT OF CAPITAL

The capital structure of the Company consists of equity attributable to common shareholders, comprising issued share capital, reserves and deficit. The Company's objectives when managing capital are to: (i) preserve capital; (ii) obtain the best available net return; and (iii) maintain liquidity.

The Company manages the capital structure and makes adjustments to it in light of changes in economic conditions and the risk characteristics of the underlying assets. To maintain or adjust the capital structure, the Company may attempt to issue new shares. There were no changes to the Company's approach to capital management during the year ended December 31, 2020.

The Company is not subject to externally imposed capital requirements.

### 1.20 RELATED PARTY TRANSACTIONS

The Company's related parties include companies under common control and joint key management, as described below.

Unless otherwise stated, none of the transactions incorporate special terms and conditions and no guarantees were given or received. Outstanding balances are usually settled in cash.

#### TRANSACTIONS WITH KEY MANAGEMENT

The key management of the Company are the members of senior management and the Board. The remuneration for the year of key management includes the following expenses:

	<u>2020</u>	<u>2019</u>
	\$	\$
Consulting fees	30,600	3,200
Salaries	166,154	314,400
Termination benefits	24,369	-
Share-based payments	55,500	5,074
	<u>276,623</u>	<u>322,674</u>

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### 1.20 RELATED PARTY TRANSACTIONS (Continued)

An amount of \$34,880 (2019 - \$nil) is due to directors for unpaid consulting fees and is included in accounts payable and accrued liabilities.

An amount of \$58,523 (2019 - \$2,400) is due to directors for unpaid salaries and is included in accounts payable and accrued liabilities.

An amount of \$6 (2019 - \$2,392) is due to directors for reimbursement of expenses incurred during the year ended December 31, 2020 and is included in accounts payable and accrued liabilities.

### 1.21 CRITICAL ACCOUNTING ESTIMATES

The critical accounting estimates are described in Note 2 of the audited financial statements.

### 1.22 CHANGES IN SIGNIFICANT ACCOUNTING POLICIES

The accounting policies used are those described in the Company's audited financial statements in Note 3 for the year ended December 31, 2020, and have been applied throughout the period unless otherwise stated.

### 1.23 OTHER

Disclosure of Outstanding Securities as at April 22, 2021.

Outstanding common shares: **101,927,838**  
Outstanding options: **8,750,000**  
Outstanding share purchase warrants: **nil**

(s) Francis Bellido Chief Executive Officer

(s) Marc Rousseau, Chief Financial Officer

Montreal (Quebec), April 22, 2021