Management Report

Quarter Ended December 31, 2019

5N PLUS

Enabling Performance

This Management's Discussion and Analysis ("MD&A") of the financial condition and results of operations is intended to assist readers in understanding 5N Plus Inc. (the "Company" or "5N Plus"), its business environment, strategies, performance and risk factors. This MD&A should be read in conjunction with the audited consolidated financial statements and the accompanying notes for the year ended December 31, 2019. This MD&A has been prepared in accordance with the requirements of the Canadian Securities Administrators.

Information contained herein includes any significant developments to February 25, 2020, the date on which the MD&A was approved by the Company's board of directors. Unless otherwise indicated, the terms "we", "us" "our" and "the group" as used herein refer to the Company together with its subsidiaries.

"Q4 2019" and "Q4 2018" refer to the three-month periods ended December 31, 2019 and 2018 respectively, and "FY 2019" and "FY 2018" refer to the years ended December 31, 2019 and 2018 respectively. All amounts in this MD&A are expressed in U.S. dollars, and all amounts in the tables are in thousands of U.S. dollars, unless otherwise indicated. All quarterly information disclosed in this MD&A is based on unaudited figures.

Non-IFRS Measures

This MD&A also includes certain figures that are not performance measures consistent with IFRS. These measures are defined at the end of this MD&A under the heading Non-IFRS Measures.

Notice Regarding Forward-Looking Statements

Certain statements in this MD&A may be forward-looking within the meaning of applicable securities laws. Forward-looking information and statements are based on the best estimates available to the Company at the time and involve known and unknown risks, uncertainties or other factors that may cause the Company's actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. Factors of uncertainty and risk that might result in such differences include the risks associated with our growth strategy, credit, liquidity, interest rate, litigation, inventory pricing, commodity pricing, currency fluctuation, fair value, source of supply, environmental regulations, competition, dependence on key personnel, business interruptions, changes to backlog, protection of intellectual property, international operations including China, international trade regulations, collective agreements and being a public issuer as well as systems, network infrastructure and data failure, interruption and breach. A description of the risks affecting the Company's business and activities appears under the heading "Risk and Uncertainties" of this MD&A dated February 25, 2020. Forward-looking statements can generally be identified by the use of terms such as "may", "should", "would", "believe", "expect", the negative of these terms, variations of them or any similar terms. No assurance can be given that any events anticipated by the forward-looking information in this MD&A will transpire or occur, or if any of them do so, what benefits that 5N Plus will derive therefrom. In particular, no assurance can be given as to the future financial performance of 5N Plus. The forward-looking information contained in this MD&A is made as of the date hereof and the Company has no obligation to publicly update such forward-looking information to reflect new information, subsequent or otherwise, unless required by applicable securities laws. The reader is warned against placing undue reliance on these forward-looking statements.

Management's Discussion and Analysis

Overview

5N Plus is a leading global producer of engineered materials and specialty chemicals with integrated recycling and refining assets to manage the sustainability of its business model. The Company is headquartered in Montreal, Québec, Canada and operates R&D, manufacturing and commercial centers in several locations in Europe, the Americas and Asia. 5N Plus deploys a range of proprietary and proven technologies to produce products which are used as enabling precursors by its customers in a number of advanced electronics, optoelectronics, pharmaceutical, health, renewable energy and industrial applications. Many of the materials produced by 5N Plus are critical for the functionality and performance of the products and systems produced by its customers, many of whom are leaders within their industry.

Reporting Segments

The Company has two reportable segments, namely Electronic Materials and Eco-Friendly Materials. Corresponding operations and activities are managed accordingly by the Company's key decision makers. Segmented operating, financial information and labelled key performance indicators are available and used to manage these business segments, review performance and allocate resources. Financial performance of any given segment is evaluated primarily in terms of revenues and Adjusted EBITDA[1,2] which is reconciled to consolidated numbers by taking into account corporate income and expenses.

The Electronic Materials segment operates in North America, Europe and Asia. The Electronic Materials segment manufactures and sells products which are used in a number of applications such as security, aerospace, sensing, imaging, renewable energy and various technical industries. Typical end markets include photovoltaics (terrestrial and spatial solar energy), advance electronics, optoelectronics, electronic packaging, medical imaging and thermoelectric. These are sold either in elemental or alloyed form as well as in the form of chemicals, compounds and wafers. Revenues and earnings associated with recycling services and activities provided to customers of the Electronic Materials segment are also included in the Electronic Materials segment.

The Eco-Friendly Materials segment is so labelled because it is mainly associated with bismuth, one of the very few heavy metals which has no detrimental effect on either human health or in the environment. The Eco-Friendly Materials segment operates in North America, Europe and Asia. The Eco-Friendly Materials segment manufactures and sells products which are used in a number of applications such as pharmaceutical, healthcare, animal feed additive, catalytic and extractive, as well as various industrial materials. Main products are sold either in elemental or alloyed form but mostly in the form of specialized chemicals. Revenues and earnings associated with recycling services and activities provided to customers of the Eco-Friendly Materials segment are also included in the Eco-Friendly Materials segment.

Corporate expenses associated with the head office and unallocated selling, general and administrative expenses (SG&A) together with financial expenses (revenues) have been regrouped under the heading Corporate.

Vision and Strategy

As a leading global materials technology company with employees and assets throughout the world, we are determined to enable and empower our people in a manner which inspires them to perform collectively at their best and optimize resource utilization to deliver competitive financial returns.

The Company unveiled its Strategic Plan 5N21 ("5N21") designed to enhance profitability while reducing earnings volatility on September 12, 2016. 5N21 focuses on three major pillars:

1. Extracting more value from core businesses and global assets;
2. Optimizing balance of contribution from upstream and downstream activities; and
3. Delivering quality growth from both existing growth initiatives and future M&A opportunities.

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[1] See Non-IFRS Measures

[2] On January 1, 2019, the Company applied IFRS 16 Leases retrospectively with no restatement of comparative information, including non-IFRS measures and tables, as allowed by the Standard. This positively impacted the current year's Adjusted EBITDA and EBITDA when comparing them to the prior year's amounts (see Accounting Policies and Changes section for more details).

Highlights of Q4 2019 & Fiscal Year 2019 – Demonstrating Resilience & Viability in a Perfect Storm

In a year, characterized by a very difficult environment in the metal markets, anticipated lower contributions from renewable energy sector, higher costs of consumables (excluding metals) and challenges associated with industrialization of the Company's growth initiatives, 5N Plus delivered an Adjusted EBITDA[1,2] of $22.0 million, adequately invested in the Company's future initiatives and closed the year with a strong balance sheet. Throughout the year, the market demand for products produced by 5N Plus remained strong and was supported by a growing backlog[1] driven by the diversity of markets 5N Plus serves.

When adjusted for the decline in metal notations, nearly all core businesses of 5N Plus outperformed in 2019 as compared to the previous year. The persistent decline in metal notations such as bismuth adversely impacted revenue and earnings two ways. Firstly, it affected the difference between sales price and inventory value, which is transitory in nature. With the implementation of 5N21, these impacts have been significantly reduced, though not eliminated. Secondly, by mid-year the supply of complex feed for the Company's refining activities became increasingly limited, as upstream suppliers ceased production or withheld their bismuth-containing by-products, while waiting for more favorable metal market conditions. This resulted in notably lower contributions from refining and recycling activities.

Under 5N21, the Company has been very successful in procuring consumable metals from complex feedstock. In fact, this activity has become a notable contributor to 5N Plus' performance. As metal notations remain low, contributions from this activity will remain under pressure. That being said, under current market conditions, competitive access to metals required by the Company remains robust and 5N Plus is well supplied. It is worth remembering that in the past, this combination of events would have resulted in disruptive damage to the Company. Today however, the impact is noteworthy but certainly not disruptive, enabling 5N Plus to remain keenly focused on delivering its strategic objectives.

For the fourth quarter and fiscal year of 2019, the Company reported the following:

- Adjusted EBITDA and EBITDA[1,2] reached $22.0 million and $19.1 million in 2019, compared to $32.4 million and $29.0 million in 2018. This performance reflects the adverse movements in the underlying metal notations, recent deterioration of the contributions from our upstream activities due to current metal market conditions, production challenges associated with the new business activities at the beginning of the year, along with the application of the most recent multi-year commercial contracts awarded in sector renewable energy, delivering higher volume of products at lower margins.

- The Adjusted EBITDA and EBITDA for the fourth quarter reached $4.5 million and $3.7 million in 2019 compared to $6.9 million and $5.6 million in 2018. The fourth quarter results were impacted by factors mentioned above along with the historical cyclicality associated with the fourth quarter.

- Net earnings for the year 2019 reached $1.8 million or $0.02 per share, compared to $14.0 million or $0.17 per share for the year 2018.

- Revenue in 2019 reached $196.0 million compared to $218.0 million in 2018, mostly impacted by adverse movements in the underlying metal notations as evident in lower revenue from the Eco-Friendly Materials segment which utilizes more of these metals as consumables in its products.

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- Return on Capital Employed[1] (ROCE) reached 8.2% in 2019, compared to 15.1% in 2018 reflecting the overall margin contraction mostly explained by the adverse movements in the underlying metal notations, while capital employed reduced by 4% when compared to 2018.

- Net debt[1] stood at $35.0 million as at December 31, 2019 from $22.2 million for the same period last year, impacted by additional working capital and to a lesser degree participation in the normal course issuer bid ("NCIB") plan.

- As of December 31, 2019, backlog[1] reached 243 days of sales outstanding, higher than previous quarter and Q4 2018 which ended at 217 days. Bookings[1] in Q4 2019 reached 96 days compared to 102 days in Q3 2019 and 105 days in Q4 2018.

- As of December 31, 2019, 5N Plus had purchased and cancelled 1,696,733 of the Company's common shares under the NCIB plan.

- On February 18, 2019, 5N Plus confirmed that its U.S. based subsidiary, 5N Plus Semiconductors, had been awarded a multi-year program to supply opto-electronic semiconductor substrates to Albuquerque, New Mexico based SolAero Technologies. The substrates are intended for use in satellite solar arrays for a number of applications, including powering a constellation of several hundreds low-orbit broadband satellites being manufactured by Airbus OneWeb Satellites. This network of satellites will provide global, persistent, low latency internet access that promises to bridge the digital divide.

- On July 22, 2019, 5N Plus announced having significantly reduced production at its bismuth refining and recycling facilities. With bismuth notations continuing to decline and reaching levels not seen in decades, certain suppliers halted production or begun to stop marketing their residues. Consequently, the Company increased its commercial grade bismuth metal purchases. The market for bismuth metal remains well supplied and 5N Plus has competitive access.

- On July 24, 2019, 5N Plus announced that it had begun to execute a plan to invest over $10.0 million in process technologies aimed at substantially increasing capacity of the existing assets while enhancing capability along with providing notable environmental benefits in local communities. The investment package is expected to be focused on select sites in North America, Europe and China. The plan should be fully implemented by the third quarter of 2020 with certain investments to be fully commissioned prior to that date. The average payback for this tranche of investments is estimated at about three years.

Fiscal year 2019 is a clear testament to 5N Plus' resilience and agility under its strategic plan 5N21. Despite the punitive set of circumstances, the Company delivered 11% Adjusted EBITDA margin[1,2], invested in both new and core initiatives, and actively participated in an NCIB plan while delivering a strong balance sheet. Given the historically low metal notations, and assuming the underlying prices remain at these levels, the earnings outlook for the Company's upstream activities is challenging. On the other hand, the earnings outlook from both new and core activities is strong and encouraging, lending credence to the prospect for overall improved earnings in the year ahead.

[1] See Non-IFRS Measures

[2] On January 1, 2019, the Company applied IFRS 16 Leases retrospectively with no restatement of comparative information, including non-IFRS measures and tables, as allowed by the Standard. This positively impacted the current year's Adjusted EBITDA and EBITDA when comparing them to the prior year's amounts (see Accounting Policies and Changes section for more details).

Summary of Results

	Q4 2019	Q4 2018	**FY 2019**	FY 2018
	$	$	**$**	$
Revenue	**44,714**	47,710	**195,971**	217,995
Adjusted operating expenses[1,2] *	**(40,212)**	(40,798)	**(174,021)**	(185,645)
Adjusted EBITDA[1,2]	**4,502**	6,912	**21,950**	32,350
Impairment of inventory	**-**	-	**-**	-
Share-based compensation expense	**(455)**	(721)	**(2,583)**	(3,298)
Litigation and restructuring costs	**-**	(766)	**-**	(316)
Gain on disposal of property, plant and equipment (PPE)	**-**	-	**-**	510
Foreign exchange and derivative (loss) gain	**(365)**	164	**(316)**	(225)
EBITDA[1,2]	**3,682**	5,589	**19,051**	29,021
Interest on long-term debt, imputed interest and other interest expense	**789**	886	**4,079**	6,295
Depreciation and amortization	**2,887**	2,469	**11,139**	8,810
Earnings before income taxes	**6**	2,234	**3,833**	13,916
Income tax expense (recovery)				
Current	**186**	(2,955)	**2,187**	848
Deferred	**(326)**	1,143	**(139)**	(904)
	(140)	(1,812)	**2,048**	(56)
Net earnings	**146**	4,046	**1,785**	13,972
Basic earnings per share	**$-**	$0.05	**$0.02**	$0.17
Diluted earnings per share	**$-**	$0.05	**$0.02**	$0.17

**Excluding share-based compensation expense, litigation and restructuring costs, gain on disposal of property, plant and equipment, impairment of non-current assets and depreciation and amortization.*

Revenue by Segment and Gross Margin

	Q4 2019	Q4 2018	Change	**FY 2019**	FY 2018	Change
	$	$		**$**	$	
Electronic Materials	**20,517**	19,368	6%	**81,281**	81,014	-%
Eco-Friendly Materials	**24,197**	28,342	(15%)	**114,690**	136,981	(16%)
Total revenue	**44,714**	47,710	(6%)	**195,971**	217,995	(10%)
Cost of sales	**(37,221)**	(37,916)	(2%)	**(161,213)**	(169,061)	(5%)
Depreciation included in cost of sales	**2,457**	2,256	9%	**9,931**	7,962	25%
Gross margin[1]	**9,950**	12,050	(17%)	**44,689**	56,896	(21%)
Gross margin percentage[1]	**22.3%**	25.3%		**22.8%**	26.1%	

In Q4 2019, revenue decreased by 6% compared to the prior year fourth quarter. Gross margin[1] reached 22.3% in Q4 2019 compared to 25.3% in Q4 2018, tracking an average gross margin of 22.8%, or $44.7 million for this fiscal year compared to 26.1% or $56.9 million last year. Both revenue and gross margin were negatively impacted by adverse movements in the underlying metal notations, recent deterioration of the contributions from our upstream activities due to current metal market conditions along with the application of the most recent commercial terms from the multi-year contracts awarded in sector renewable energy, delivering higher volume of products at lower margins.

[1] See Non-IFRS Measures

[2] On January 1, 2019, the Company applied IFRS 16 *Leases* retrospectively with no restatement of comparative information, including non-IFRS measures and tables, as allowed by the Standard. This positively impacted the current year's Adjusted EBITDA and EBITDA when comparing them to the prior year's amounts (see Accounting Policies and Changes section for more details).

Operating earnings, EBITDA and Adjusted EBITDA

	Q4 2019	Q4 2018	Change	FY 2019	FY 2018	Change
	$	$		$	$	
Electronic Materials	**4,387**	7,142	(39%)	**19,581**	29,226	(33%)
Eco-Friendly Materials	**2,047**	1,115	84%	**10,993**	12,517	(12%)
Corporate	**(1,932)**	(1,345)	44%	**(8,624)**	(9,393)	(8%)
Adjusted EBITDA[1,2]	**4,502**	6,912	(35%)	**21,950**	32,350	(32%)
EBITDA[1,2]	**3,682**	5,589	(34%)	**19,051**	29,021	(34%)
Operating earnings	**1,160**	2,956	(61%)	**8,228**	20,436	(60%)

In Q4 2019, Adjusted EBITDA[1,2] was $4.5 million compared to $6.9 million in Q4 2018, negatively impacted by adverse movements in the underlying metal notations, recent deterioration of the contributions from our upstream activities due to the current metal market conditions, along with the application of the most recent commercial terms from the multi-year supply and services contracts renewal within the renewable energy sector. In FY 2019, Adjusted EBITDA decreased by $10.4 million, from $32.4 million in FY 2018 to $22.0 million, impacted by factors mentioned above, and production challenges associated with new business activities at the beginning of the year.

In Q4 2019, EBITDA[1,2] was $3.7 million compared to $5.6 million in Q4 2018. The decrease is mainly explained by the lower Adjusted EBITDA and a foreign exchange and derivatives loss in Q4 2019.

In FY 2019, EBITDA reached $19.1 million compared to $29.0 million in FY 2018. The decrease is mainly explained by the lower Adjusted EBITDA, mitigated by lower shared-based compensation expense reflecting the decline in the Company's share price during 2019 when compared to the increase in 2018. In addition, no significant non-recurrent item was recorded in 2019 while in 2018, the Company recorded non-recurrent items totalling $0.2 million recognized as income.

In Q4 2019, operating earnings reached $1.2 million compared to $3.0 million in Q4 2018 and $8.2 million in FY 2019 compared to $20.4 million in FY 2018.

Electronic Materials Segment

Adjusted EBITDA in Q4 2019 decreased by $2.8 million to $4.4 million representing an Adjusted EBITDA margin[1,2] of 21% compared to 37% in Q4 2018. Adjusted EBITDA decreased by $9.6 million to $19.6 million in FY 2019 representing an Adjusted EBITDA margin of 24% compared to 36% in FY 2018.

Eco-Friendly Materials Segment

Adjusted EBITDA increased by $0.9 million to $2.0 million representing an Adjusted EBITDA margin of 8% in Q4 2019 and 4% in Q4 2018. Adjusted EBITDA decreased by $1.5 million to $11.0 million representing an Adjusted EBITDA margin of 10% in FY 2019 compared to 9% in FY 2018.

[1] See Non-IFRS Measures

[2] On January 1, 2019, the Company applied IFRS 16 *Leases* retrospectively with no restatement of comparative information, including non-IFRS measures and tables, as allowed by the Standard. This positively impacted the current year's Adjusted EBITDA and EBITDA when comparing them to the prior year's amounts (see Accounting Policies and Changes section for more details).

Net Earnings and Adjusted Net Earnings

	Q4 2019	Q4 2018	FY 2019	FY 2018
	$	$	**$**	$
Net earnings	**146**	4,046	**1,785**	13,972
Basic earnings per share	**$-**	$0.05	**$0.02**	$0.17
Reconciling items:				
Share-based compensation expense	**455**	721	**2,583**	3,298
Accelerated imputed interest	**-**	-	**267**	1,490
Litigation and restructuring costs	**-**	766	**-**	316
Gain on disposal of PPE	**-**	-	**-**	(510)
Income tax recovery on taxable items above	**(121)**	(126)	**(760)**	(1,082)
Adjusted net earnings [1]	**480**	5,407	**3,875**	17,484
Basic adjusted net earnings per share[1]	**$0.01**	$0.06	**$0.05**	$0.21

Net earnings were $0.1 million in Q4 2019 compared to $4.0 million or $0.05 per share in Q4 2018. Adjusted net earnings[1] increased by $0.3 million and were $0.5 million in Q4 2019, compared to $5.4 million in Q4 2018. Excluding the income tax recovery, the main item reconciling the Adjusted net earnings in Q4 2019 is the share-based compensation expense.

In FY 2019, net earnings were $1.8 million or $0.02 per share compared to $14.0 million or $0.17 per share in FY 2018. Adjusted net earnings were $3.9 million in FY 2019, compared to $17.5 million in FY 2018. Excluding the income tax recovery, the main items reconciling the Adjusted net earnings in FY 2019 are the share-based compensation expense and the accelerated imputed interest recognized as an expense following the early redemption of the CA$26.0 million convertible debentures in March 2019.

Bookings and Backlog

	BACKLOG[1]			BOOKINGS[1]		
	Q4 2019	Q3 2019	Q4 2018	**Q4 2019**	Q3 2019	Q4 2018
	$	$	$	**$**	$	$
Electronic Materials	**68,888**	69,380	61,771	**20,025**	27,181	18,964
Eco-Friendly Materials	**50,009**	47,387	51,493	**26,819**	28,196	36,005
Total	**118,897**	116,767	113,264	**46,844**	55,377	54,969

	BACKLOG[1]			BOOKINGS[1]		
*(number of days based on annualized revenues) **	**Q4 2019**	Q3 2019	Q4 2018	**Q4 2019**	Q3 2019	Q4 2018
Electronic Materials	**306**	293	291	**89**	115	89
Eco-Friendly Materials	**189**	155	166	**101**	92	116
Weighted average	**243**	215	217	**96**	102	105

** Backlog and bookings are also presented in number of days to normalize the impact of commodity prices.*

Q4 2019 vs Q3 2019

Backlog[1] as at December 31, 2019 reached a level of 243 days of annualized revenue, an increase of 28 days or 13% over the backlog ended September 30, 2019.

Backlog as at December 31, 2019 for the Electronic Materials segment represented 306 days of annualized segment revenue, an increase of 13 days or 4% over the backlog ended September 30, 2019. The backlog for the Eco-Friendly Materials segment represented 189 days of annualized segment revenue, an increase of 34 days or 22% over the backlog ended September 30, 2019.

[1] See Non-IFRS Measures

Bookings[1] for the Electronic Materials segment decreased by 26 days, from 115 days in Q3 2019 to 89 days in Q4 2019. Bookings for the Eco-Friendly Materials segment increased by 9 days, from 92 days in Q3 2019 to 101 days in Q4 2019.

Q4 2019 vs Q4 2018

Backlog[1] as at December 31, 2019 for the Electronic Materials segment increased by 15 days and by 23 days for the Eco-Friendly Materials segment compared to December 31, 2018, reaching 243 days on a consolidated basis compared to 217 days.

Bookings were stable for the Electronic Materials segment and decreased by 15 days for the Eco-Friendly Materials segment compared to the previous year quarter.

Expenses

	Q4 2019	Q4 2018	**FY 2019**	FY 2018
	$	$	**$**	$
Depreciation and amortization	**2,887**	2,469	**11,139**	8,810
SG&A	**4,945**	4,713	**21,179**	23,940
Share-based compensation expense	**455**	721	**2,583**	3,298
Litigation and restructuring costs	**-**	766	**-**	316
Financial expense	**1,154**	722	**4,395**	6,520
Income taxes (recovery) expense	**(140)**	(1,812)	**2,048**	(56)
Total expenses	**9,301**	7,579	**41,344**	42,828

Depreciation and Amortization

Depreciation and amortization expenses in Q4 2019 and FY 2019 amounted to $2.9 million and $11.1 million respectively, compared to $2.5 million and $8.8 million for the same periods of 2018. The expenses in Q4 2019 and FY 2019 included the depreciation of right of use assets of $0.4 million and $1.5 million respectively, following the adoption of the new standard, IFRS 16 – Leases, as at January 1, 2019.

SG&A

In Q4 2019 and FY 2019, SG&A expenses were $4.9 million and $21.2 million respectively compared to $4.7 million and $23.9 million for the same periods of 2018. In 2019, the expenses were positively impacted by favorable exchange rates across most local currency denominated expenses when compared to 2018, lower expenses following restructuring initiatives in 2018, as well as lower short-term incentives.

Share-Based Compensation Expense

Share-based compensation expense in Q4 2019 and FY 2019 amounted to $0.5 million and $2.6 million respectively, compared to $0.7 million and $3.3 million for the same periods of 2018. These lower expenses mainly due to the decrease in the Company's share price at the end of 2019 when compared to December 31, 2018.

Litigation and Restructuring Costs

No expenses or income from litigation and restructuring activity were recognized in FY 2019.

In Q4 2018, the Company recorded litigation and restructuring costs of $0.8 million related to severance costs associated with workforce optimization initiatives implemented throughout the year, in line with 5N21. In addition, in Q3 2018, the Company sold its participation in the joint venture, Zhuhai Gallium Industry Co. for an amount of $0.4 million and recognized a loss of $0.3 million which was partially mitigated by an amount received of $0.2 million following the liquidation of its other joint venture, Ingal Stade GmbH which had closed its manufacturing activities in 2016. In Q1 2018, the Company recorded an income from litigation and restructuring of $0.6 million representing a non-recurring income relating to an amount receivable from an inactive legal entity for which no receivable had been recorded given the uncertainty.

[1] See Non-IFRS Measures

Financial Expense

Financial expense in Q4 2019 amounted to $1.2 million compared to $0.7 million in Q4 2018. The increase of $0.4 million is mainly due to a loss in foreign exchange and derivative recorded in Q4 2019 while the Company recorded a gain of foreign exchange in derivatives in Q4 2018. In FY 2019, financial expense amounted to $4.4 million compared to $6.5 million in FY 2018. The decrease of $2.1 million is mainly due to less accelerated imputed interest recognized as a non-cash expense following the early redemption of the CA$26.0 million convertible debentures in March 2019 compared to those following the early redemption of CA$40.0 million convertible debentures in June 2018. The financial expense in Q4 2019 and FY 2019 included the imputed interest related to lease liabilities of $0.1 million and $0.3 million respectively, following the adoption of the new standard, IFRS 16 – Leases, as at January 1, 2019.

Income Taxes

The Company reported earnings before income taxes of $nil million in Q4 2019 and $3.8 million in FY 2019. Income tax recovery in Q4 2019 was $0.1 million compared to $1.8 million in Q4 2018. In FY 2019, income tax expense was $2.0 million compared to income tax recovery of $0.1 million in FY 2018. Both periods were impacted by deferred tax assets applicable in certain jurisdictions.

Liquidity and Capital Resources

	Q4 2019	Q4 2018	**FY 2019**	FY 2018
	$	$	**$**	$
Funds from operations[1]	**3,343**	8,641	**15,724**	28,643
Net changes in non-cash working capital items	**1,817**	(5,374)	**(13,043)**	(26,448)
Operating activities	**5,160**	3,267	**2,681**	2,195
Investing activities	**(3,076)**	(3,085)	**(10,182)**	(9,754)
Financing activities	**(417)**	(26)	**794**	693
Effect of foreign exchange rate changes on cash and cash equivalents	**216**	(231)	**48**	(434)
Net increase (decrease) in cash and cash equivalents	**1,883**	(75)	**(6,659)**	(7,300)

Cash generated by operating activities amounted to $5.2 million in Q4 2019 compared to $3.3 million in Q4 2018. In FY 2019, cash generated by operating activities amounted to $2.7 million compared to $2.2 million in FY 2018.

The decrease in funds from operations[1] when compared to 2018 is mainly explained by the lower Adjusted EBITDA[1,2]. The negative change in non-cash working capital in FY 2019 is mainly due to a decrease in trade and accrued liabilities of $15.6 million, a decrease in net position of income tax payable of $4.9 million combined with an increase of $5.5 million in accounts receivable mitigated by a decrease of inventory of $13.5 million.

In Q4 2019, cash used in investing activities totaled $3.1 million similar to Q4 2018, mainly attributed to additions to PPE. In FY 2019, cash used by investing activities totaled $10.2 million compared to $9.8 million in FY 2018.

In Q4 2019, cash used in financing activities amounted to $0.4 million compared to $nil million in Q4 2018. The decrease is mainly due to principal elements of lease payments following the adoption of the new standard, IFRS 16 – Leases, on January 1, 2019. In FY 2019, cash generated from financing activities amounted $0.8 million compared to $0.7 million in FY 2018. The increase is associated with the new five-year unsecured subordinated term loan of $25.0 million announced in Q1 2019 for which only $19.3 million were used to redeem the Company's outstanding convertible unsecured subordinated debentures of CA$26.0 million, while in Q2 2018, the Company completed a drawdown on its senior credit facility of $30 million for which $29.7 million were used to partially redeem the debentures of CA$40 million. Since the beginning of 2019, the Company has repurchased and cancelled 1,696,733 common shares under the NCIB plan for an amount of $4.0 million and paid principal elements of lease payments of $1.6 million following the adoption of the new standard, IFRS 16 – Leases, as at January 1, 2019.

[1] See Non-IRFS Measures

[2] On January 1, 2019, the Company applied IFRS 16 *Leases* retrospectively with no restatement of comparative information, including non-IFRS measures and tables, as allowed by the Standard. This positively impacted the current year's Adjusted EBITDA and EBITDA when comparing them to the prior year's amounts (see Accounting Policies and Changes section for more details).

Working Capital

	As at December 31, 2019	As at December 31, 2018
	$	$
Inventories	**83,367**	96,889
Other current assets	**61,346**	62,396
Current liabilities	**(37,016)**	(65,924)
Working capital[1]	**107,697**	93,361
Working capital current ratio[1]	**3.91**	2.42

The increase in working capital[1] compared to December 31, 2018 was mainly attributable to lower current liabilities following the early redemption of the CA$26.0 million convertible debentures in March 2019, reclassified as short-term during 2018, which were replaced by a five-year unsecured subordinated term loan, as well as less payable following lower inventories when compared to December 31, 2018. The decrease in inventories is mainly due to lower refining and recycling activities announced in Q2 2019 combined with the adverse movements in the underlying metal notations.

Net Debt

	As at December 31, 2019	As at December 31, 2018
	$	$
Bank indebtedness	**-**	-
Long-term debt including current portion	**55,107**	30,175
Convertible debentures	**-**	18,571
Cross-currency swap	**-**	197
Total Debt[1]	**55,107**	48,943
Cash and cash equivalents	**(20,065)**	(26,724)
Net Debt[1]	**35,042**	22,219

Total debt[1], including the cross-currency swap, increased by $6.2 million to $55.1 million as at December 31, 2019 compared to $48.9 million as at December 31, 2018, mainly due to the replacement of the convertible debentures by a five-year unsecured subordinated term loan at a higher face value.

Net debt[1], after considering cash and cash equivalents, increased by $12.8 million, from $22.2 million as at December 31, 2018 to $35.0 million as at December 31, 2019, mostly impacted by non-cash working capital requirements.

On March 28, 2019, the Company redeemed all its outstanding 5.75% convertible unsecured subordinated debentures maturing on June 30, 2019 for an aggregate principal amount of CA$26.0 million. On March 22, 2019, the Company completed the withdrawal of the second tranche of its new term loan in the amount of $20.0 million to redeem the outstanding debentures. As at December 31, 2019, there were no outstanding convertible debentures.

Consequently, the Company de-designated the remaining nominal amount of the associated cross-currency swap of CA$26.0 million and reclassified the net loss of $0.1 million, representing the accumulated net changes in cash flow hedges, from accumulated other comprehensive loss to realized loss on de-designation within the consolidated statement of earnings.

Following the redemption of the CA$26.0 million convertible debentures, an accelerated imputed interest of $0.3 million was recognized as an expense in the consolidated statement of earnings.

[1] See Non-IFRS Measures

Available Short-Term Capital Resources

	As at December 31, 2019	As at December 31, 2018
	$	$
Cash and cash equivalents	**20,065**	26,724
Available bank indebtedness	**1,431**	1,454
Available revolving credit facility	**49,000**	49,000
Available short-term capital resources	**70,496**	77,178

In April 2018, the Company signed a senior secured multi-currency revolving credit facility of $79.0 million maturing in April 2022. At any time, the Company has the option to request that the credit facility be expanded through the exercise of an additional $30.0 million accordion feature, subject to review and approval by the lenders. This revolving credit facility can be drawn in US dollars, Canadian dollars or Hong Kong dollars (up to $4.0 million). Drawings bear interest at either the Canadian prime rate, US base rate, Hong Kong base rate or LIBOR, plus a margin based on the Company's senior net debt to consolidated EBITDA ratio. Under the terms of its credit facility, the Company is required to satisfy certain restrictive covenants as to financial ratios. As at December 31, 2019, the Company has met all covenants.

On February 2019, the Company signed a five-year unsecured subordinated term loan with Investissement Québec. The loan was disbursed in two tranches: the first tranche of $5.0 million on February 6, 2019 and the second tranche of $20.0 million on March 22, 2019. The two tranches of the term loan bear interest equivalent to the 5-year US dollar swap rate plus a margin of 4.19%, which equals to 6.82% and 6.64% respectively. Under the terms of the loan, the Company is required to satisfy certain restrictive covenants as to financial ratios. As at December 31, 2019, the Company has met all covenants.

Share Information

	As at February 25, 2020	As at December 31, 2019
Issued and outstanding shares	**83,401,558**	83,401,558
Stock options potentially issuable	**928,291**	932,041

On February 27, 2019, the TSX approved the Company's NCIB plan under which, the Company has the right to purchase for cancellation, from March 1, 2019 to February 29, 2020, a maximum of 3,515,926 common shares. In FY 2019, the Company repurchased and cancelled 1,696,733 common shares at an average price of $2.35 (CA$3.16) for a total amount of $4.0 million applied against the equity.

Restricted Share Unit and Performance Share Unit Plan

On November 4, 2015, the Company adopted a new Restricted Share Unit and Performance Share Unit ("PSU") Plan (the "New RSU & PSU Plan"). The New RSU & PSU Plan enables the Company to award eligible participants: (i) phantom RSUs that vest no later than three years following the grant date; and (ii) phantom PSUs that vest after certain periods of time, not exceeding three years, and subject to the achievement of certain performance criteria as determined by the Board of Directors. Such plan provides for the settlement of RSUs and PSUs through either cash or the issuance of common shares of the Company from treasury, for an amount equivalent to the volume weighted average of the trading price of the common shares of the Company on the TSX for the five trading days immediately preceding the applicable RSU vesting determination date or PSU vesting determination date.

In FY 2019, the Company granted 248,543 New RSUs (2018 – 393,897), 1,157,099 New RSUs were paid (2018 – 28,361) and 81,042 New RSUs were forfeited (2018 – 67,370). As at December 31, 2019, 864,428 New RSUs were outstanding (2018 – 1,854,026).

In FY 2019, the Company granted 430,000 PSUs (2018 – nil) and 166,667 PSUs were paid (2018 – nil). As at December 31, 2019, 763,333 PSUs were outstanding (2018 – 500,000).

Stock Option Plan

On April 11, 2011, the Company adopted a new stock option plan under which a maximum number of options granted cannot exceed 5,000,000. Options granted under the Stock Option Plan may be exercised during a period not exceeding ten years from the date of grant. The stock options outstanding as at December 31, 2019 may be exercised during a period not exceeding six years from their date of grant. Options vest at a rate of 25% (100% for directors) per year, beginning one year following the grant date of the options. Any unexercised options will expire one month after the date beneficiary ceases to be an employee, director or officer and one year for retired directors.

The following table presents information concerning all outstanding stock options:

	2019		2018	
	Number of options	**Weighted average exercise price**	Number of options	Weighted average exercise price
		CA$		CA$
Outstanding, beginning of year	**1,490,541**	**2.32**	2,224,747	2.20
Granted	**123,016**	**3.43**	143,335	2.71
Exercised	**(488,500)**	**1.98**	(708,750)	1.92
Forfeited	**(193,016)**	**2.61**	(137,704)	2.54
Expired	**-**	**-**	(31,087)	3.61
Outstanding, end of year	**932,041**	**2.58**	1,490,541	2.32
Exercisable, end of year	**632,360**	**2.65**	726,750	2.75

Off-Balance Sheet Arrangements

The Company has certain off-balance sheet arrangements, consisting of contractual obligations in the normal course of business since most of the leases are recognized on the consolidated statement of financial position following the adoption of the new standard, IFRS 16 – Leases, as at January 1, 2019.

The Company is exposed to currency risk on sales in Euro and other currencies and therefore periodically enters into foreign currency forward contracts to protect itself against currency fluctuation. The reader will find more details related to these contracts in Notes 16 and 24 of the audited consolidated financial statements for the year ended December 31, 2019.

The following table reflects the contractual maturity of the Company's financial liabilities as at December 31, 2019:

	Carrying amount	1 year	2 years	3 years	4 years	Over 5 years	Total
	$	$	$	$	$	$	$
Trade and accrued liabilities	32,066	32,066	-	-	-	-	32,066
Long-term debt	55,107	2,790	2,683	32,008	25,418	-	62,899
Lease liabilities	6,236	1,539	1,248	567	410	4,202	7,966
Total	93,409	36,395	3,931	32,575	25,828	4,202	102,931

Commitments

As at December 31, 2019 and December 31, 2018, in the normal course of business, the Company contracted letters of credit for an amount of $0.4 million.

Contingencies

In the normal course of operations, the Company is exposed to events that could give rise to contingent liabilities or assets. As at the date of issue of the consolidated financial statements, the Company was not aware of any significant events that would have a material effect on its consolidated financial statements.

Governance

As required by Multilateral Instrument 52-109 of the Canadian Securities Administrators («MI 52-109 »), 5N Plus has filed certificates signed by the Chief Executive Officer and the Chief Financial Officer that, among other things, attest to the design of the disclosure controls and procedures and the design and effectiveness of internal controls over financial reporting.

Disclosure Controls and Procedures

The Chief Executive Officer and the Chief Financial Officer have designed disclosure controls and procedures, or have caused them to be designed under their supervision, in order to provide reasonable assurance that:

- material information relating to the Company has been made known to them; and
- information required to be disclosed in the Company's filings is recorded, processed, summarized and reported within the time periods specified in securities legislation.

An evaluation was carried out, under the supervision of the Chief Executive Officer and Chief Financial Officer, of the effectiveness of the Company's disclosure controls and procedures. Based on this evaluation, the Chief Executive Officer and the Chief Financial Officer concluded that the disclosure controls and procedures are effective.

Internal Control over Financial Reporting

The Chief Executive Officer and the Chief Financial Officer have also designed internal controls over financial reporting (ICFR) or have caused them to be designed under their supervision, in order to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with IFRS.

Based on their evaluation carried out to assess the effectiveness of the Company's ICFR, the Chief Executive Officer and the Chief Financial Officer have concluded that the ICFR were designed and operated effectively using the Internal Control – Integrated Framework (2013 Framework) issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO 2013 Framework").

Changes in Internal Control over Financial Reporting

No changes were made to our ICFR during the fiscal year ended December 31, 2019 that have materially affected, or are reasonably likely to materially affect, our internal controls over financial reporting.

Accounting Policies and Changes

The Company established its accounting policies and methods used in the preparation of its audited consolidated financial statements for the fiscal year 2019 in accordance with IFRS. The Company's significant accounting policies are described in Note 2 of the audited consolidated financial statements for the year ended December 31, 2019.

Adoption of new accounting standards

IFRS 16 - *Leases*

On January 1, 2019, the Company adopted the new accounting standard IFRS 16 using the modified retrospective approach.

Adjustments recognized on adoption of IFRS 16

On adoption of IFRS 16, the Company recognized lease liabilities in relation to leases which had previously been classified as operating leases under the principles of IAS 17 Leases. These liabilities were measured at the present value of the remaining lease payments, discounted using the Company's incremental borrowing rate as at January 1, 2019 of 4.45%.

	January 1, 2019
	$
Operating lease commitments disclosed as at December 31, 2018	4,294
Effect of discounting those lease commitments	(260)
Effect of electing to account for short-term and low value leases off balance sheet	(80)
Adjustment as a result of a different treatment of extension options	3,198
Lease liability recognized as at January 1, 2019	7,152
Of which are:	
Current lease liabilities	1,554
Non-current lease liabilities	5,598

The associated right-of-use assets were measured at the amount equal to the lease liability and they relate to the following types of assets:

	December 31, 2019	January 1, 2019
	$	$
Land and buildings	**5,239**	6,342
Production equipment	**468**	454
Office equipment and rolling stock	**343**	356
Total right-of-use assets	**6,050**	7,152

As noted above, the change in accounting policy resulted in the increase of right-of-use assets and lease liabilities by $7.2 million in the balance sheet on January 1, 2019.

The impact of adoption of IFRS 16 *Leases* on the three-month period and year ended December 31, 2019 is as follows:

	Q4 2019	FY 2019
	$	$
Increase in Adjusted EBITDA[1]/ EBITDA[1]	**475**	1,900
Increase in Financial expense	**70**	296
Increase in depreciation and amortization expense	**392**	1,470

Practical expedients applied

In applying IFRS 16 for the first time, the Company has used the following practical expedients permitted by the standard:

- the use of a single discount rate to a portfolio of leases with reasonably similar characteristics;
- the accounting for operating leases with a remaining lease term of less than 12 months as at January 1, 2019 as short-term leases; and
- the use of hindsight in determining the lease term where the contract contains options to extend or terminate the lease.

The Company has also elected not to reassess whether a contract is or contains a lease at the date of initial application. Instead, for contracts entered into before the transition date, the Company relied on its assessment made applying IAS 17 and IFRIC 4 *Determining whether an Arrangement contains a Lease*.

[1] See Non-IFRS Measures

The Company's leasing activities and how these are accounted for
The Company leases various production and warehouse locations, production equipment and furniture, office equipment and rolling stock. Rental contracts are typically made for fixed periods of 2 to 5 years but may have extension options as described below. Lease terms are negotiated on an individual basis and contain a wide range of different terms and conditions. The lease agreements do not impose any covenants, but leased assets may not be used as security for borrowing purposes.

Until the 2018 financial year, leases of property, plant and equipment were classified as either finance or operating leases. Payments made under operating leases (net of any incentives received from the lessor) were charged to profit or loss on a straight-line basis over the period of the lease.

From January 1, 2019, leases are recognized as a right-of-use asset and a corresponding liability at the date at which the leased asset is available for use by the Company. Each lease payment is allocated between the liability and finance cost. The finance cost is charged to profit or loss over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period. The right-of-use asset is depreciated over the shorter of the asset's useful life and the lease term on a straight-line basis.

Assets and liabilities arising from a lease are initially measured on a present value basis. Lease liabilities include the net present value of the following lease payments:

- fixed payments (including in-substance fixed payments), less any lease incentives receivable;
- variable lease payments that are based on an index or a rate;
- amounts expected to be payable by the lessee under residual value guarantees;
- the exercise price of a purchase option if the lessee is reasonably certain to exercise that option; and
- payments of penalties for terminating the lease, if the lease term reflects the lessee exercising that option.

The lease payments are discounted using the interest rate implicit in the lease. If that rate cannot be determined, the lessee's incremental borrowing rate is used, being the rate that the lessee would have to pay to borrow the funds necessary to obtain an asset of similar value in a similar economic environment with similar terms and conditions.

Right-of-use assets are measured at cost comprising the following:

- the amount of the initial measurement of lease liability;
- any lease payments made at or before the commencement date less any lease incentives received;
- any initial direct costs; and
- restoration costs.

Payments associated with short-term leases and leases of low-value assets are recognized on a straight-line basis as an expense in profit or loss. Short-term leases are leases with a lease term of 12 months or less. Low-value assets comprise IT-equipment and small items of office furniture.

Extension options
Extension options are included in a number of property and equipment leases across the Company. These terms are used to maximise operational flexibility in terms of managing contracts. The majority of extension options held are exercisable only by the Company and not by the respective lessor.

IFRIC 23 – *Uncertainty over Income Tax Treatments*
On January 1, 2019, the Company also adopted the new accounting standard IFRIC 23.

The interpretation provides guidance on the accounting for current and deferred tax liabilities and assets in circumstances in which there is uncertainty over income tax treatments. The Company has concluded that there is no significant impact resulting from the application of this new standard on its consolidated financial statements.

Significant Management Estimation and Judgment in Applying Accounting Policies

The following are significant management judgments used in applying the accounting policies of the Company that have the most significant effect on the consolidated financial statements.

Estimation uncertainty

When preparing the consolidated financial statements, management undertakes a number of judgments, estimates and assumptions about recognition and measurement of assets, liabilities, revenues and expenses. Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimates are revised and in any future periods affected.

Information about the significant judgments, estimates and assumptions that have the most significant effect on the recognition and measurement of assets, liabilities, revenues and expenses are discussed below.

Impairment of non-financial assets

Non-financial assets are reviewed for an indication of impairment at each statement of financial position date upon the occurrence of events or changes in circumstances indicating that the carrying value of the assets may not be recoverable which requires significant judgement.

An impairment loss is recognized for the amount by which an asset's or cash-generating unit's carrying amount exceeds its recoverable amount, which is the higher of fair value less cost of disposal and value in use.

An intangible asset and related equipment that are not yet available for their intended use are tested for impairment at least annually, which also requires significant judgement. To determine the recoverable amount (fair value less cost to dispose of these assets), management estimates expected future cash flows from the asset and determines a suitable interest rate in order to calculate the present value of those cash flows. In the process of measuring expected future cash flows, management makes assumptions about future operating results using the estimated forecasted prices obtained from various market sources including publicly available metals information as at December 31, 2019. These key assumptions relate to future events and circumstances. The actual results will vary and may cause adjustments to the Company's intangible and tangible assets in future periods.

By their nature, assets not yet available for intended use have a higher estimation uncertainty, as they depend on future market development and the Company's ability to commercialize and manufacture new products to realize forecasted earnings. For example, new manufacturing processes may not be scalable to industrial level within expected timeframe and new products might not receive sufficient market penetration. Management believes that the following assumptions are the most susceptible to change and impact the valuation of these assets in time: a) expected significant growth of the market for different metal products (demand), b) selling prices which have an impact on revenues and metal margins (pricing), and c) the discount rate associated with new processes and products (after considering a premium over the Company's weighted average cost of capital (WACC) to reflect the additional uncertainty).

In most cases, determining the applicable discount rate involves estimating the appropriate adjustment to market risk and to asset specific risk factors. Assets not yet available for intended use have a higher estimation uncertainty, since they depend on future market information and the Company's ability to finish the project and realize the budgeted earnings. Management believes that the following assumptions are the most susceptible to change and therefore could impact the valuation of the assets in the next year: metal prices which have an impact on revenues and metal margins and the discount rate.

Inventories

Inventories are carried at the lower of cost and net realizable value, with cost determined using the average cost method. In estimating net realizable values, management takes into account the most reliable evidence available at the time the estimates are made. The Company's core business is subject to changes in foreign policies and internationally accepted metal prices which may cause future selling prices to change rapidly. The Company evaluates its inventories using a group of similar items basis and considers expected future prices as well as events that have occurred between the consolidated statement of financial position date and the date of the completion of the consolidated financial statements. Net realizable value for inventory to satisfy a specific sales contract is measured at the contract price.

Income taxes

The Company is subject to income taxes in numerous jurisdictions. Significant judgment is required in determining the worldwide provision for income taxes. There are many transactions and calculations for which the ultimate tax determination is uncertain. The Company recognizes liabilities for anticipated tax audit issues based on estimates of whether additional taxes will be due. Where the final tax outcome of these matters is different from the amounts that were initially recorded, such differences will impact the current and deferred income tax assets and liabilities in the period in which such determination is made.

The Company has deferred income tax assets that are subject to periodic recoverability assessments. Realization of the Company's deferred income tax assets is largely dependent on its achievement of projected future taxable income and the continued applicability of ongoing tax planning strategies. The Company's judgments regarding future profitability may change due to future market conditions, changes in tax legislation and other factors that could adversely affect the ongoing value of the deferred income tax assets. These changes, if any, may require a material adjustment of these deferred income tax asset balances through an adjustment to the carrying value thereon in the future. This adjustment would reduce the deferred income tax asset to the amount that is considered to be more likely than not to be realized and would be recorded in the period such a determination was to be made. Refer to note 15 of the 2019 consolidated financial statements of the Company.

Related Party Transactions

The Company's related parties are its joint ventures, directors and executive members. Transactions with these related parties are described in Note 23 in the 2019 consolidated financial statements of the Company.

Financial Instruments and Risk Management

Fair Value of financial instruments

A detailed description of the methods and assumptions used to measure the fair value of the Company financial instruments and their fair value are discussed in Note 16 – Fair Value of Financial Instruments in the 2019 consolidated financial statements of the Company.

The fair value of the derivative financial instruments was as follows:

	2019	2018
	$	$
Cross-currency swap	-	(197)
Equity swap agreement	**4,862**	5,835

Financial Risk Management

For a detailed description of the nature and extent of risks arising from financial instruments, and their related risk management, refer to Note 24 of the 2019 consolidated financial statements of the Company.

Interest Rate

Interest rate risk refers to the risk that future cash flows will fluctuate as a result of changes in market interest rates. The Company's policy is to limit its exposure to interest rate risk fluctuation by ensuring that a reasonable portion of its long-term debt, made of subordinated debts at fixed rate. The Company is exposed to interest rate fluctuations on its revolving credit facility, which bears a floating interest rate. A 1% increase/decrease in interest rates would have an impact of approximately $0.3 million on the Company's net earnings on a twelve-month horizon based on the balance outstanding on December 31, 2019.

Foreign Currency

The Company's sales are primarily denominated in U.S. dollars whereas a portion of its operating costs are realized in local currencies, such as Euros and Canadian dollars. Even though the purchases of raw materials are denominated in U.S. dollars, which reduce to some extent exchange rate fluctuations, we are subject to currency translation risk which can negatively impact our results. Management has implemented a policy for managing foreign exchange risk against the relevant functional currency.

On December 7, 2015, the Company entered into cross-currency swap to hedge cash flows under the CA$66.0 convertible debentures, applying hedge accounting principles to the transaction. Following early redemptions of the convertible debenture on June 28, 2018 and March 28, 2019, the Company de-designated CA$40.0 million and CA$26.0 million respectively of the nominal amount of the associated cross currency swap.

In addition, the Company will occasionally enter into foreign exchange forward contracts to sell US dollars in exchange for Canadian dollars and Euros. These contracts would hedge a portion of ongoing foreign exchange risk on the Company's cash flows since much of its non-US dollar expenses are incurred in Canadian dollars and Euros. The Company may also enter into foreign exchange contracts to sell Euros for US dollars. As at December 31, 2019, the Company has no foreign exchange contracts outstanding.

The following table summarizes in US dollar equivalents the Company's major currency exposures as at December 31, 2019:

	CA$	EUR	GBP	RMB	MYR	Other
	$	$	$	$	$	$
Cash and cash equivalents	605	3,122	1,136	724	161	59
Accounts receivable	1,007	6,558	-	1,315	3	251
Other current assets	4,862	-	-	-	-	-
Trade and accrued liabilities	(9,202)	(7,496)	(65)	(62)	(242)	(411)
Long-term debt	(107)	-	-	-	-	-
Lease liabilities	(756)	(746)	-	-	(25)	(93)
Net financial assets (liabilities)	(3,591)	1,438	1,071	1,977	(103)	(194)

The following table shows the impact on earnings before income tax of a five-percentage point strengthening or weakening of foreign currencies against the US dollar as at December 31, 2019 for the Company's financial instruments denominated in non-functional currencies:

	CA$	EUR	GBP	RMB	MRY	Other
	$	$	$	$	$	$
5% Strengthening	(180)	72	54	99	(5)	(10)
5% Weakening	180	(72)	(54)	(99)	5	10

Credit

Credit risk refers to the possibility that a customer or counterparty will fail to fulfill its obligations under a contract and, as a result, create a financial loss for the Company. The Company has a credit policy that defines standard credit practice. This policy dictates that all new customer accounts be reviewed prior to approval and establishes the maximum amount of credit exposure per customer. The creditworthiness and financial well-being of the customer are monitored on an ongoing basis.

The Company applies the IFRS 9 simplified approach to measuring expected credit losses using a lifetime expected credit loss allowance for trade receivables. The expected loss rates are based on the Company's historical credit losses experienced over the three-year period prior to the period end. The historical loss rates are then adjusted for current and forward-looking information on macroeconomic factors affecting the Company's customers.

As at December 31, 2019 and 2018, the Company had a loss allowance of $0.1 million. The loss allowance is included in selling, general and administrative expenses in the consolidated statement of earnings and is net of any recoveries that were provided for in prior periods.

Liquidity

Liquidity risk is the risk that the Company will not be able to meet its financial obligations as they come due. The Company manages liquidity risk through the management of its capital structure. It also manages liquidity risk by continually monitoring actual and projected cash flows, taking into account the Company's sales and receipts and matching the maturity profile of financial assets and financial liabilities. The Board of Directors reviews and approves the Company's annual operating and capital budgets as well as any material transactions out of the ordinary course of business, including proposals on acquisitions and other major investments. Under the terms of its credit facility, the Company is required to satisfy certain restrictive covenants. In order to comply with these covenants, the Company will need to execute on its EBITDA and cash flow estimates. Management believes that the assumptions used by the Company in preparing its estimates are reasonable. However, risk remains. Successful achievement of these estimates results is dependent on stability in the price of metals and other raw materials, the reduction of debt due to the optimization of the Company's working capital and the continued viability and support of the Company's banks.

Risk and Uncertainties

We are subject to a number of risk factors which may limit our ability to execute our strategy and achieve our long-term growth objectives. Management analyses these risks and implements strategies in order to minimize their impact on the Company's performance.

Risks Associated with our Growth Strategy

5N Plus' strategic plan is designed to enhance profitability while reducing earnings volatility and is founded on three pillars of growth: first, optimizing balance of contribution from upstream and downstream activities; second, extracting more value from core businesses and global asset; and third, delivering quality growth from both existing growth initiatives and future M&A opportunities. There is a risk that some of the expected benefits will fail to materialize or may not occur within the time periods anticipated by management. The realization of such benefits may be affected by a number of factors, many of which are beyond our control.

International Operations

We operate in a number of countries, including China, Laos and Malaysia, and, as such, face risks associated with international business activities. We could be significantly affected by such risks, which include the integration of international operations, challenges associated with dealing with numerous legal and tax systems, the potential for volatile economic and labor conditions, political instability, foreign exchange, expropriation, changes in taxes, and other regulatory costs. Although we operate primarily in countries with relatively stable economic and political climates, there can be no assurance that our business will not be adversely affected by the risks inherent in international operations.

The following conditions or events could disrupt our supply chain, interrupt production at our facilities or those of our suppliers or customers, increase our cost of sales and other operating expenses, result in material asset losses, or require additional capital expenditures to be incurred:

- fires, pandemics, extraordinary weather conditions, or natural disasters, such as hurricanes, tornadoes, floods, tsunamis, typhoons, and earthquakes;
- political instability, social and labor unrest, war, or terrorism;
- disruptions in port activities, shipping and freight forwarding services; and
- interruptions in the availability of basic services and infrastructure, including power and water shortages.

Our insurance programs do not cover every potential loss associated with our operations, including potential damage to assets, lost profits, and liability that could result from the aforementioned conditions or events. In addition, our insurance may not fully cover the consequences resulting from a loss event, due to insurance limits, sub-limits, or policy exclusions. Any occurrence not fully covered by insurance could have a negative effect on our business.

Risks Related to China

The legal system in mainland China is a civil law system based on written statutes. Unlike common law systems, it is a system in which decided legal cases have little precedential value. The legal system in mainland China evolves rapidly, and the interpretations of many laws, regulations and rules may contain inconsistencies and their interpretation and enforcement involve uncertainties. These uncertainties could limit the legal protections available to us. In addition, the Company cannot predict the effect of future developments in the mainland Chinese legal system, including the promulgation of new laws, changes to existing laws or the interpretation or enforcement thereof, or the pre-emption of local regulations by national laws. Such unpredictability towards the Company's contractual, property (including intellectual property) and procedural rights could adversely affect the Company's business and impede its ability to continue operations. Furthermore, any litigation in mainland China may be protracted and result in substantial costs and diversion of resources and management attention.

The mainland Chinese government exercises significant control over mainland China's economic growth through strategically allocating resources, controlling the payment of foreign currency-denominated obligations, setting monetary policy and providing preferential treatment to particular industries or companies. Any growth in the Chinese economy may not continue and any slowdown may have a negative effect on our business. Any adverse changes in economic conditions in mainland China, in the policies of the mainland Chinese government, or in the laws and regulations in mainland China, could have a material adverse effect on the overall economic growth of mainland China. Such developments could adversely affect the Company's businesses, lead to reduction in demand for its products and adversely affect the Company's competitive position.

International Trade Regulations

We do business in a number of countries from various locations, as such, face risks associated with changes to International trade regulations and policies. Such risks include, but are not limited to, barriers to or restrictions on free trade, changes in taxes, tariffs and other regulatory costs. The current global political environment, including but not limited to the stated positions of the U.S. administration towards China, and the United Kingdom leaving the European Union on January, 31, 2020, appear to favour increasing restrictions on trade. Such restrictions could have a negative effect on our business if they were to limit our ability to export our products to markets in which we currently do business or to import raw materials from our current suppliers. Conversely, it is possible that they could have a favourable effect on our business if they were to inhibit competition in markets in which we do business without having an adverse effect on our operations.

Although we operate primarily in countries with proximity to our customers and suppliers and with relatively stable economic and political climates, there can be no assurance that our business will not be adversely affected by the risks inherent to the changing international political landscape and its impact on global trade.

Environmental Regulations

Our operations involve the use, handling, generation, processing, storage, transportation, recycling and disposal of hazardous materials and are subject to extensive environmental laws and regulations at the national, provincial, local and international level. These environmental laws and regulations include those governing the discharge of pollutants into the air and water, the use, management and disposal of hazardous materials and wastes, the clean-up of contaminated sites and occupational health and safety. Failure to comply with such laws, regulations and permits can have serious consequences, including damage to our reputation; stopping us from pursuing operations at one of our facilities; being subject to substantial fines, penalties, criminal proceedings, third party property damage or personal injury claims, clean-up costs or other costs; increasing the costs of development or production and litigation or regulatory action against us, and materially adversely affecting our business, results of operations or financial condition. Future changes in applicable environmental and health and safety laws and regulations could substantially increase costs and burdens to achieve compliance or otherwise have an adverse impact on our business, results of operations or financial condition.

We have incurred and will continue to incur capital expenditures in order to comply with environmental laws and regulations. While we believe that we are currently in compliance with applicable environmental requirements, future developments such as more aggressive enforcement policies, the implementation of new, more stringent laws and regulations, or the discovery of currently unknown environmental conditions may require expenditures that could have a material adverse effect on our business, results of operations and financial condition.

Competition

We are a leading producer of engineered materials, and specialty chemicals with a limited number of competitors, few of which are as fully integrated as we are or have a similar range of products. Accordingly, they have limitation to provide the same comprehensive set of services and products as we do. However, there can be no guarantee that this situation will continue in the future and competition could arise from new low-cost metal refiners or from certain of our customers who could decide to backward integrate. Greater competition could have an adverse effect on our revenues and operating margins if our competitors gain market share and we are unable to compensate for the volume lost to our competition.

Commodity Price

The price we pay for, and availability of, various inputs fluctuates due to numerous factors beyond our control, including economic conditions, currency exchange rates, global demand for metal products, trade sanctions, tariffs, labor costs, competition, over capacity of producers and price surcharges. Fluctuations in availability and cost of inputs may materially affect our business, financial condition, results of operations and cash flows. These fluctuations can be unpredictable and can occur over short periods of time. To the extent that we are not able to pass on any increases, our business, financial condition, results of operations and cash flows may be materially adversely affected.

Sources of Supply

We may not be able to secure the critical raw material feedstock on which we depend for our operations. We currently procure our raw materials from a number of suppliers with whom we have had long-term commercial relationships. The loss of any one of these suppliers or a reduction in the level of deliveries to us may reduce our production capacity and impact our deliveries to customers. This would in turn negatively impact our sales, net margins and may lead to liabilities with respect to some of our supply contracts.

Protection of Intellectual Property

Protection of our proprietary processes, methods and other technologies is important to our business. We rely almost exclusively on a combination of trade secrets and employee confidentiality agreements to safeguard our intellectual property. We have deliberately chosen to limit our patent position to avoid disclosing valuable information. Failure to protect and monitor the use of our existing intellectual property rights could result in the loss of valuable technologies and processes. There can be no assurance that our confidentiality agreements will provide meaningful protection for our intellectual property rights or other proprietary information in the event of any unauthorized use or disclosure or that we will be able to meaningfully protect our trade secrets.

Inventory Price

We monitor the risks associated with the value of our inventories in relation to the market price of such inventories. Because of the highly illiquid nature of many of our inventories, we rely on a combination of standard risk measurement techniques, such as value at risk as well as a more empirical assessment of the market conditions. Decisions on appropriate physical stock levels are taken by considering both the value at risk calculations and the market conditions.

Business Interruptions

We may incur losses resulting from business interruptions. In many instances, especially those related to our long-term contracts, we have contractual obligations to deliver product in a timely manner. Any disruption in our activities which leads to a business interruption could harm our customers' confidence level and lead to the cancellation of our contracts and legal recourse against us. Although we believe that we have taken the necessary precautions to avoid business interruptions and carry business interruption insurance, we could still experience interruptions which would adversely impact our financial results.

Changes to Backlog

The Company cannot guarantee that the revenues projected in its backlog will be realized. In addition, contract delays, suspensions, terminations, cancellations, reductions in scope or other adjustments may occur from time to time due to considerations beyond the Company's control and may have an impact on the value of reported backlog with a corresponding adverse impact on future revenues and profitability.

Dependence on Key Personnel

We rely on the expertise and know-how of its personnel to conduct our operations. The loss of any member of our senior management team could have a material adverse effect on us. Our future success also depends on our ability to retain and attract our key employees, train, retain and successfully integrate new talent into our management and technical teams. Recruiting and retaining talented personnel, particularly those with expertise in the specialty metals industry and refining technology is vital to our success and may prove difficult. We cannot provide assurance that we will be able to attract and retain qualified personnel when needed.

Collective Agreements

A portion of our workforce is unionized, and we are party to collective agreements that are due to expire at various times in the future. If we are unable to renew these collective agreements on similar terms as they become subject to renegotiation from time to time, this could result in work stoppages or other labour disturbances, such as strikes, walkouts or lockouts, potentially affecting our performance.

Litigation Risks

We may be subject to a variety of civil or other legal proceedings, with or without merit.

Systems, Network Infrastructure and Data Failure, Interruption and Breach

Our operations rely on information systems, communications technology, business and other technology applications, including global and regional networks, complex server infrastructure and operating systems, in order to operate properly. If we are unable to continually maintain our software and hardware, effectively upgrade our systems and network infrastructure, and take other steps to improve the efficiency and protect our systems, the Company's operation systems could be interrupted or delayed. The same applies if our network, communication and operations systems are damaged or interrupted by natural disasters, telecommunications failures, acts of war or terrorism, computer viruses, physical or electronic security breaches, or similar events or disruptions. The Company also faces the threat of unauthorized system access, computer hackers, malicious code and organized cyber-attacks.

Risks Associated with Public Issuer Status

Our shares are publicly traded and, as such, we are subject to all of the obligations imposed on "reporting issuers" under applicable securities laws in Canada and all of the obligations applicable to a listed company under stock exchange rules. Another risk associated with a public issuer status is the disclosure of key Company information as compared to privately owned competitors.

Non-IFRS Measures

In this Management's Report, the Company's management uses certain measures which are not in accordance with IFRS. Non-IFRS measures are useful supplemental information but may not have a standardized meaning according to IFRS.

Backlog represents the expected orders we have received but have not yet executed and that are expected to translate into sales within the next twelve months expressed in number of days. Bookings represent orders received during the period considered, expressed in days, and is calculated by adding revenues to the increase or decrease in backlog for the period considered divided by annualized year revenues. We use backlog to provide an indication of expected future revenues in days, and bookings to determine our ability to sustain and increase our revenues.

EBITDA means net earnings before interest expenses, income taxes, depreciation and amortization. We use EBITDA because we believe it is a meaningful measure of the operating performance of our ongoing business without the effects of certain expenses. The definition of this non-IFRS measure used by the Company may differ from that used by other companies.

EBITDA margin is defined as EBITDA divided by revenues.

Adjusted EBITDA means EBITDA as defined above before impairment of inventories, share-based compensation expense, impairment of non-current assets, litigation and restructuring costs (income), gain on disposal of property, plant and equipment, change in fair value of debenture conversion option, foreign exchange and derivatives loss (gain). We use adjusted EBITDA because we believe it is a meaningful measure of the operating performance of our ongoing business without the effects of certain expenses. The definition of this non-IFRS measure used by the Company may differ from that used by other companies.

Adjusted EBITDA margin is defined as Adjusted EBITDA divided by revenues.

Adjusted operating expenses means operating charges before shared-based compensation expense, impairment of non-current assets, litigation and restructuring costs (income), gain on disposal on property, plant and equipment and depreciation and amortization. We use adjusted operating expenses to calculate the Adjusted EBITDA. We believe it is a meaningful measure of the operating performance of our ongoing business. The definition of this non-IFRS measure used by the Company may differ from that used by other companies.

Adjusted net earnings means the net earnings before the effect of charge of impairment related to inventory, PPE and intangible assets, share-based compensation expense, litigation and restructuring costs (income), gain on disposal of property, plant and equipment, change in fair value of debenture conversion option net of the related income tax. We use adjusted net earnings because we believe it is a meaningful measure of the operating performance of our ongoing business without the effects of unusual inventory write-downs and property plant and equipment, intangible asset impairment charges, share-based compensation expense, litigation and restructuring costs (income), gain on disposal of property, plant and equipment and change in fair value of debenture conversion option. The definition of this non-IFRS measure used by the Company may differ from that used by other companies.

Basic adjusted net earnings per share means adjusted net earnings divided by the weighted average number of outstanding shares. We use basic adjusted net earnings per share because we believe it is a meaningful measure of the operating performance of our ongoing business without the effects of unusual inventory write-downs and property plant and equipment and intangible asset impairment charges, share-based compensation expense, litigation and restructuring costs (income), gain on disposal of property, plant and equipment and change in fair value of debenture conversion option per share. The definition of this non-IFRS measure used by the Company may differ from that used by other companies.

Funds (used in) from operations means the amount of cash generated from operating activities before changes in non-cash working capital balances related to operations. This amount appears directly in the consolidated statements of cash flows of the Company. We consider funds (used in) from operations to be a key measure as it demonstrates the Company's ability to generate cash necessary for future growth and debt repayment.

Gross margin is a measure we use to monitor the sales contribution after paying cost of sales excluding depreciation and impairment inventory charge. We also expressed this measure in percentage of revenues by dividing the gross margin value by the total revenue.

Net debt is calculated as total debt (comprising long-term debt, convertible debentures and cross-currency swap in the consolidated statement of financial position) less cash and cash equivalents. Any newly introduced IFRS 16 reporting measures in reference to lease liabilities are excluded from the calculation. We use this measure as an indicator of our overall financial position.

Return on Capital Employed (ROCE) is a non-IFRS financial measure, calculated by dividing the annualized Adjusted EBIT by capital employed at the end of the period. Adjusted EBIT is calculated as the Adjusted EBITDA less depreciation of PPE and amortization of intangible assets (adjusted for accelerated depreciation charge, if any). Capital employed is the sum of the accounts receivable, the inventory, the PPE, the goodwill and intangibles less trade and accrued liabilities (adjusted for exceptional items). We use ROCE to measure the return on capital employed, whether the financing is through equity or debt. In our view, this measure provides useful information to determine if capital invested in the Company yields competitive returns. The usefulness of ROCE is limited by the fact that it is a ratio and not providing information as to the absolute amount of our net income, debt or equity. It also excludes certain items from the calculation and other companies may use a similar measure but calculate it differently.

Working capital is a measure of liquid assets that is calculated by taking current assets and subtracting current liabilities. Given that the Company is currently indebted, we use it as an indicator of our financial efficiency and aim to maintain it at the lowest possible level.

Working capital ratio is calculated by dividing current assets by current liabilities.

Management’s Discussion and Analysis

Additional Information

Our common shares trade on the Toronto Stock Exchange (TSX) under the ticker symbol VNP. Additional information relating to the Company, including the Company’s annual information form is available under the Company’s profile on SEDAR at www.sedar.com.

Selected Quarterly Financial Information

(in thousands of United States dollars except per share amounts)	**Dec. 31, 2019**	Sept. 30, 2019	June 30, 2019	March. 31, 2019	Dec. 31, 2018	Sept. 30, 2018	June 30, 2018	March 31, 2018
	$	$	$	$	$	$	$	$
Revenue	**44,714**	49,554	50,290	51,413	47,710	53,379	58,359	58,547
EBITDA[1,2]	**3,682**	5,860	5,321	4,188	5,589	7,772	7,860	7,800
Adjusted EBITDA[1,2]	**4,502**	5,974	5,862	5,612	6,912	8,581	8,972	7,885
Net earnings (loss) attributable to equity holders of 5N Plus	**146**	1,030	1,758	(1,149)	4,046	3,457	3,417	3,051
Basic earnings (loss) per share attributable to equity holders of 5N Plus	**$-**	$0.01	$0.02	($0.01)	$0.05	$0.04	$0.04	$0.04
Net earnings (loss)	**146**	1,030	1,758	(1,149)	4,046	3,458	3,420	3,048
Basic earnings (loss) per share	**$-**	$0.01	$0.02	($0.01)	$0.05	$0.04	$0.04	$0.04
Diluted earnings (loss) per share	**$-**	$0.01	$0.02	($0.01)	$0.05	$0.04	$0.04	$0.04
Adjusted net earnings[1] (loss)	**480**	1,460	2,055	(120)	5,407	3,919	5,344	2,814
Basic adjusted net earnings per share[1]	**$0.01**	$0.02	$0.02	$-	$0.06	$0.05	$0.06	$0.03
Funds from operations[1]	**3,343**	4,570	4,866	2,945	8,641	6,582	7,194	6,226
Backlog[1]	**243 days**	215 days	201 days	202 days	217 days	181 days	170 days	172 days

Selected Yearly Financial Information

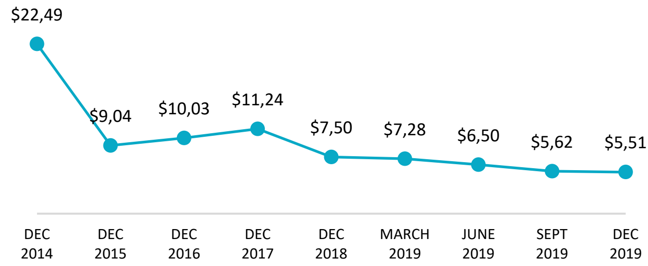
As at and for the years ended December 31 (in thousands of United States dollars except per share amounts)	**2019**	2018	2017
	$	$	$
Revenue	**195,971**	217,995	219,916
EBITDA	**19,051**	29,021	26,863
Adjusted EBITDA	**21,950**	32,350	29,587
Net earnings attributable to equity holders of 5N Plus	**1,785**	13,971	12,023
Basic earnings per share attributable to equity holders of 5N Plus	**$0.02**	$0.17	$0.14
Net earnings	**1,785**	13,972	12,013
Basic earnings per share	**$0.02**	$0.17	$0.14
Diluted earnings per share	**$0.02**	$0.17	$0.14
Adjusted net earnings	**3,875**	17,484	13,889
Basic adjusted net earnings per share	**$0.05**	$0.21	$0.17
Funds from operations	**15,724**	28,643	26,336
Backlog	**243 days**	217 days	187 days
Balance Sheet			
Total assets	**229,942**	237,057	244,932
Total non-current liabilities	**75,629**	51,430	70,851
Net debt[1]	**35,042**	22,219	11,413
Shareholders’ equity	**117,297**	119,703	105,446

[1] See Non-IFRS Measures

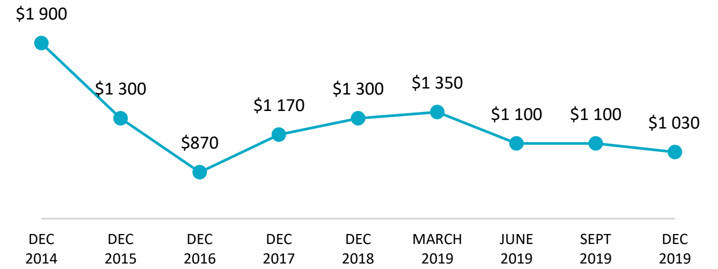
[2] On January 1, 2019, the Company applied IFRS 16 *Leases* retrospectively with no restatement of comparative information, including non-IFRS measures and tables, as allowed by the Standard. This positively impacted the current year’s Adjusted EBITDA and EBITDA when comparing them to the prior year’s amounts (see Accounting Policies and Changes section for more details).

Metal Prices
(in U.S. dollars per kilo)

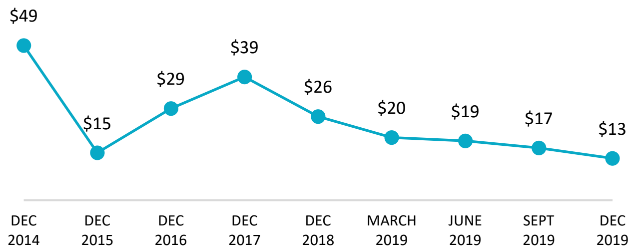
Bismuth



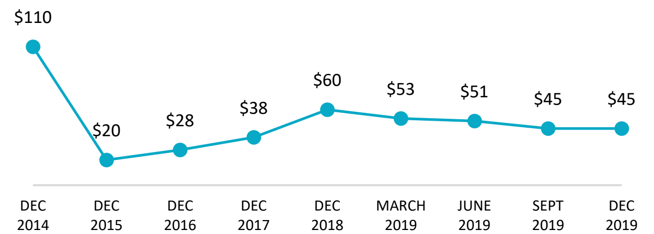
Germanium



Selenium



Tellurium



Source : Low Metal Bulletin