Photon Control Inc.

Management's Discussion and Analysis

For the three months and year ended December 31, 2019

(in Canadian dollars, amounts in thousands except number of shares and per share amounts)

DATED March 18, 2020

MANAGEMENT'S DISCUSSION AND ANALYSIS

For the three months and year ended December 31, 2019

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MANAGEMENT'S DISCUSSION AND ANALYSIS

This Management's Discussion and Analysis ("MD&A") provides information for the three months and year ended December 31, 2019, and up to and including March 18, 2020. This MD&A is prepared in accordance with National Instrument 51-102F1, and should be read in conjunction with Photon Control Inc.'s (the "Company" or "Photon Control") consolidated financial statements for the fiscal year ended December 31, 2019 and accompanying notes. These documents, along with additional information about the Company, including the Annual Information Form ("AIF"), are available at www.photoncontrol.com and www.sedar.com.

This MD&A contains certain forward-looking statements and assumptions. See "Cautionary Note Regarding Forward Looking Statements" section of this MD&A for more information.

The financial data contained in this report and in the consolidated financial statements of the Company for the year ended December 31, 2019 and the accompanying notes have been prepared in accordance with International Financial Reporting Standards ("IFRS") and are stated in Canadian dollars, unless otherwise noted.

In addition to the results reported in accordance with IFRS, the Company uses various non-GAAP financial measures, which are not recognized under IFRS, as supplemental indicators of the Company's operating performance and financial position. These non-GAAP financial measures are provided to enhance the user's understanding of the Company's historical and current financial performance and its prospects for the future. Management believes that these measures provide useful information in that they exclude amounts that are not indicative of the Company's core operating results and ongoing operations and provide a more consistent basis for comparison between quarters and years. Details of such non-GAAP financial measures and how they are derived are provided in conjunction with the discussion of the financial information reported.

Since non-GAAP financial measures do not have any standardized meanings prescribed by IFRS, other companies may calculate these non-IFRS measures differently and our non-GAAP financial measures may not be comparable to similar titled measures of other companies. Accordingly, investors are cautioned not to place undue reliance on them and are also urged to read all IFRS accounting disclosures presented in the audited consolidated financial statements and accompanying notes for the years ended December 31, 2019 and 2018.

OVERVIEW

Photon Control designs, manufactures and distributes a wide range of optical sensors and systems to measure temperature and position. These products are used by the world's largest Wafer Fabrication Equipment ("WFE") manufacturers and end users in the semiconductor and solid-state industries. Photon Control's high quality products provide industry-leading accuracy, speed and quality in the most extreme conditions and are backed by a team of experts providing a variety of on-site and remote services including custom design, installation, training and support. The Company is headquartered in an ISO 9001:2015 manufacturing facility in Vancouver, British Columbia ("BC"), Canada, has a sales and engineering office in San Jose, California, and a sales distribution network across Asia. Photon Control is listed on the Toronto Stock Exchange (the "TSX"), trading under the symbol "PHO".

COMPANY HIGHLIGHTS

The following significant corporate and financial events have taken place during the year ended December 31, 2019, and up to and including March 18, 2020:

- On January 4, 2019, the Company commenced a normal course issuer bid ("NCIB") to acquire up to 5,490,000 common shares in the capital of the Company ("Common Shares"), which expired on January 3, 2020. Under the NCIB, the Company purchased for cancellation a total of 5,490,000 Common Shares at a volume weighted average price of $1.29 through the facilities of the Toronto Stock Exchange and other Canadian marketplaces.
- On January 10, 2019, the Company announced a distribution agreement with Japan Laser Corporation ("JLC"), a leading distributor of lasers and other optical equipment in Japan. JLC will distribute Photon Control's fiber optic temperature and position sensors used for advanced process monitoring by the world's largest wafer fabrication equipment manufacturers.
- On January 31, 2019, the Company announced the opening of a new office in San Jose, California. The office will facilitate continued growth in the Company's engineering, sales and marketing teams, and further strengthen Photon Control's partnerships with some of its largest customers.
- On April 12, 2019, the Company announced the appointment of Nigel Hunton as its President, Chief Executive Officer ("CEO") and as a director effective May 2, 2019.
- On August 15, 2019, the Company announced that one of its Materials Engineers was scheduled to speak at Copper 2019, as part of the Annual Conference of Metallurgists, which demonstrates Photon Control's culture of innovation, collaboration and thought leadership.
- On October 16, 2019, the Company announced that Photon Control was named as a finalist of Business in Vancouver's 2019 British Columbia Export Awards in the Advancing Technology and Innovation category. The BC Export Awards are the province's most prestigious awards paying tribute to the success and innovative approaches of BC export companies.
- On December 16, 2019, the Company announced an expansion of its addressable market with a new product launched by Union Medical Co. Ltd. ("Union Medical"), a major Korean manufacturer producing laser, electrosurgical and other aesthetic equipment. The Company's optical sensors and systems have been designed into Union Medical's high-frequency hyperthermia cancer treatment medical device, Neo Thermos, which is used to treat tumors without affecting normal cells. Photon

Control's temperature sensor systems are used to monitor the patient's temperature during the treatment, and its fiber optic technology is immune to the radio frequency generated from the device.

- On January 14, 2020, the Company announced it successfully completed a surveillance audit of its quality management system to maintain its ISO 9001:2015 certification.

PRODUCTS AND INDUSTRIES

Semiconductor Industry: Temperature and Position Sensors

The semiconductor capital equipment industry offers several significant and growing applications for our technology and is the primary source of revenue for our business. The Company designs and produces precision temperature and position sensors used by semiconductor WFE manufacturers in our ISO-certified manufacturing facility. The manufacturing of silicon wafers for semiconductors involves a multitude of complex processes; monitoring and maintaining the correct wafer position and wafer temperature during these processes is critical to achieving the product yield and productivity required for high-volume manufacturing. The measurement accuracies required of such sensors are becoming more challenging as semiconductor devices scale to atomic level dimensions and become more three-dimensional ("3D") in nature. Furthermore, these sensors must maintain their accuracy in harsh environments encountered in critical semiconductor equipment, such as the strong radio frequency electromagnetic fields encountered in plasma etch and plasma-assisted deposition systems. Photon Control's fiber optic sensors are immune to radio frequency interference and are thus able to deliver the high accuracies required for state-of-the-art process control.

The need for scaling semiconductor devices to atomic level dimensions has also created a need for more measurement points inside the chamber. Temperature and position anomalies have a greater impact on yield at these atomic level dimensions and must be measured and controlled more precisely, which increases the value and use of fiber optic sensors. In addition, as semiconductor equipment has gone from 28 nm node to sub-10 nm nodes, the number of measurement points and etch steps has increased more than four-fold. Similarly, the proliferation of 3D and advanced logic chip designs have become more common and comprise an increasingly significant percentage of total chips manufactured. These factors have driven and are expected to continue to drive demand for the Company's products.

SALES, MARKETING AND DISTRIBUTION

Photon Control sells its products globally with sales to original equipment manufacturers ("OEMs") primarily in the United States who in turn sell their products to semiconductor manufacturers in the United States, Asia and Europe. We also sell through a network of distributors in Asia who sells our products to OEMs in their home markets.

MARKET LANDSCAPE

In addition to the increasing number of measurement points, there are several other market and technology trends that we expect will contribute to the fiber optic sensor market in semiconductor manufacturing:

- Semiconductors have revolutionized all aspects of our economy and lives – among the technologies fueled by semiconductors today and in the future are smartphones, 5G mobile, the cloud, autonomous driving, and artificial intelligence. As a critical building block of these technologies, semiconductors will continue to enable innovation and transform industries, and hence, chip makers are expected to increase production to meet this growing market.
- The need for more storage capacity and computing power also continues to drive the scaling of semiconductor devices to smaller dimensions and to be more "3D". These advanced technologies are more complex which require more process steps, equipment and sensors.
- The scaling of semiconductor devices requires patterning of semiconductor materials at atomic level dimensions. This is achieved by a process called "multi-patterning" which requires extra plasma etch and deposition steps compared to standard patterning, and these equipment segments have been outpacing the overall WFE market. The Company's fiber optic sensors are used mostly in plasma etch and deposition equipment.
- The semiconductor capital equipment market has historically experienced certain cycles of growth and contraction due to variations in product supply and demand, changing customer requirements and rapid technological change. The Company has identified a number of non-semiconductor market segments as potential targets for its fiber optic sensing products to diversify its revenue stream in the future.

PRODUCTION AND SERVICES

Photon Control uses a variety of assembly and test techniques in the production of its temperature and position sensors, both in-house and outsourced to contract manufacturers. Methods include, but are not limited to, manual, fixtured and semi-automated component assembly using both mechanical and adhesive technologies, fabrication of machined and molded parts, printed circuit board assembly, and component assembly and test within an IPC Class 6 cleanroom environment. Additional testing methods range from in-circuit and functional to extreme environment temperature and position accuracy verification. Quality and specification inspection, using various gauge and material analysis equipment, is used in support of production. Services include design, analysis, reliability testing, repair, rework and upgrade support.

SPECIALIZED SKILL AND KNOWLEDGE

Due to the technical nature of its business and the dynamic market in which the Company competes, continued success depends on attracting and retaining highly skilled engineering, production, managerial, consulting, marketing and sales personnel. In particular, the Company's future success depends in part on the continued services of key employees.

The engineering function requires specialized skill and knowledge, from academic and industry-related experience, for research, development and design of electronic, photonic and mechanical componentry and associated production assembly and test techniques. Production relies on technician skills and experience in several manual and semi-automated assembly and test techniques. Training programs develop and maintain those skills, whereby process documentation provides instructions on how to complete assembly and test operations. In some cases, techniques require formal training and certification such as hand soldering and fork-lift operation.

COMPETITIVE CONDITIONS

The competitive conditions vary depending on the markets where the Company's products are used. The Company competitively positions itself by highlighting its long history in the fiber optic industry, the accuracy of its products and well documented proof of this accuracy being sustainable, its products purchased and tested by some of the largest WFE manufacturers, the quality of its products, and the "Rapid Prototyping" capabilities of its new product introduction team when differentiating itself from its competitors.

The Company has perfected the use of phosphor-based fiber optic and other optical sensing technologies in harsh environments with high accuracy, rapid prototyping capabilities and Copy Exact ("CE") manufacturing. Because of this, the Company is deeply embedded with the world's largest WFE manufacturers with long product life cycles. The long-standing partnerships with such WFE manufacturers are a key differentiating factor from other competing companies.

NEW PRODUCTS

The semiconductor capital equipment industry is characterized by technological change and product development. Research and development activities require experience, innovation, long development cycles and strong financial resources. With the close relationships we have with our customers and our understanding of their current and future needs, we have invested in research and development activities for new and existing products to maintain our competitive position and to expand and diversify our target markets for fiber optic sensors. Even during down cycles in the semiconductor industry, we have remained committed to our research and development activities in order to increase our market position and grow faster than our peers.

CYCLES

The semiconductor industry has historically experienced certain cycles of growth and contraction, and as the Company is a critical subsystems supplier to the capital equipment manufacturers in the semiconductor space, it is also subject to such cycles. The Company has identified a number of non-semiconductor market segments as potential targets for its fiber optic sensing products to diversify its revenue stream in the future.

SELECTED FINANCIAL INFORMATION

The following table highlights key financial information for the three months and year ended December 31, 2019 as compared to the prior comparable periods:

	Three months ended				Year ended			
	December 31,		Variance		December 31,		Variance	
	2019	2018	($)	(%)	2019	2018	($)	(%)
Revenue	$ 8,850	$ 8,233	$ 617	7%	$ 32,730	$ 46,704	$ (13,974)	-30%
Cost of sales	4,197	3,946	251	6%	15,165	21,057	(5,892)	-28%
Gross profit	4,653	4,287	366	9%	17,565	25,647	(8,082)	-32%
Gross profit %	*52.6%*	*52.1%*			*53.7%*	*54.9%*		
Operating expenses								
General and administrative	1,394	1,719	(325)	-19%	6,516	7,035	(519)	-7%
Engineering	799	817	(18)	-2%	4,404	3,525	879	25%
Sales and marketing	416	585	(169)	-29%	1,902	2,529	(627)	-25%
Total operating expenses	2,609	3,121	(512)	-16%	12,822	13,089	(267)	-2%
Operating income	2,044	1,166	878	75%	4,743	12,558	(7,815)	-62%
Finance income	152	70	82	117%	654	356	298	84%
Accretion expense on contingent consideration	(116)	(178)	62	-35%	(520)	(748)	228	-30%
Change in fair value of contingent consideration	(597)	649	(1,246)	-192%	(115)	(141)	26	-18%
Gain on sale of assets	-	-	-	0%	-	166	(166)	-100%
Foreign exchange (loss) gain	(478)	1,332	(1,810)	-136%	(1,264)	2,499	(3,763)	-151%
	(1,039)	1,873	(2,912)	-155%	(1,245)	2,132	(3,377)	-158%
Net income before taxes	1,005	3,039	(2,034)	-67%	3,498	14,690	(11,192)	-76%
Income taxes	300	340	(40)	-12%	1,127	4,007	(2,880)	-72%
Net income	705	2,699	(1,994)	-74%	2,371	10,683	(8,312)	-78%
Other comprehensive (loss) gain on foreign exchange translation of subsidiary	(6)	(116)	110	-95%	4	(125)	129	-103%
Total comprehensive income	$ 699	$ 2,583	$ (1,884)	-73%	$ 2,375	$ 10,558	$ (8,183)	-78%
Basic earnings per share	$ 0.01	$ 0.03	$ (0.02)	-67%	$ 0.02	$ 0.10	$ (0.08)	-80%
Diluted earnings per share	$ 0.01	$ 0.03	$ (0.02)	-67%	$ 0.02	$ 0.10	$ (0.08)	-80%

Operating income is a non-GAAP measure and is therefore not universally defined. The Company defines operating income as earnings before finance income; accretion expense on contingent consideration; change in fair value of contingent consideration; gain on sale of assets; foreign exchange (loss) gain; and income taxes.

6 (In Canadian dollars, amounts in thousands except number of shares and per share amounts

The following table highlights key financial information as at December 31, 2019 and 2018:

Financial Position	December 31, 2019	December 31, 2018	Variance ($)	Variance (%)
Cash and cash equivalents	$ 33,400	$ 42,407	$ (9,007)	-21%
Total assets	58,101	64,872	(6,771)	-10%
Total liabilities	8,723	11,207	(2,484)	-22%
Total shareholders' equity	49,378	53,665	(4,287)	-8%

The following table provides the details of our EBITDA for the three months and year ended December 31, 2019 and 2018:

	Three months ended December 31, 2019	Three months ended December 31, 2018	Year ended December 31, 2019	Year ended December 31, 2018
Net income for the period	$ 705	$ 2,699	$ 2,371	$ 10,683
Add (deduct)				
Finance income	(152)	(70)	(654)	(356)
Accretion expense on contingent consideration	116	178	520	748
Income taxes	300	340	1,127	4,007
Depreciation of property and equipment	409	380	1,610	1,460
Amortization of intangible assets	258	332	1,005	1,316
Foreign exchange loss (gain)	478	(1,332)	1,264	(2,499)
EBITDA[1] for the period	**$ 2,114**	**$ 2,527**	**$ 7,243**	**$ 15,359**

(1) EBITDA is a non-GAAP measure and is therefore not universally defined. The Company defines EBITDA as earnings before finance income, accretion expense, income taxes, depreciation, amortization and foreign exchange loss (gain).

The following table provides key financial information for the three most recently completed fiscal years of the Company:

Statements of comprehensive income	Year ended December 31, 2019	Year ended December 31, 2018	Year ended December 31, 2017 (Restated)
Revenue	$ 32,730	$ 46,704	$ 43,813
Net income and total comprehensive income	$ 2,375	$ 10,558	$ 5,549
Basic earnings per share	$ 0.02	$ 0.10	$ 0.05
Diluted earnings per share	$ 0.02	$ 0.10	$ 0.05
Statements of financial position	**December 31, 2019**	**December 31, 2018**	**December 31, 2017 (Restated)**
Total assets	$ 58,101	$ 64,872	$ 55,549
Total non-current financial liabilities	$ 2,714	$ 2,211	$ 2,986

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OVERALL PERFORMANCE AND DISCUSSION OF OPERATIONS

Revenue

Total revenues for the quarter increased 7% over the prior comparable period due to an increase in wafer fabrication equipment spending following a multi-quarter period of market weakness due to the semiconductor cycle, and revenues earned from new products. The increase in new product revenues is attributable to continued collaboration with customers and investments in technology innovation. For the year ended December 31, 2019, total revenues decreased 30% over the same year-ago period, which reflects the market weakness relative to 2018.

The following table provides a summary of our revenues by territory:

	Three months ended December 31,		Variance		Year ended December 31,		Variance	
	2019	2018	($)	(%)	2019	2018	($)	(%)
United States	$ 5,763	$ 3,466	$ 2,297	66%	$ 20,788	$ 26,285	$ (5,497)	-21%
Asia	3,087	4,767	(1,680)	-35%	11,942	20,419	(8,477)	-42%
Total	**$ 8,850**	**$ 8,233**	**$ 617**	**7%**	**$ 32,730**	**$ 46,704**	**$ (13,974)**	**-30%**

For the three months ended December 31, 2019, revenues generated from customers located in the United States increased over the prior comparable period due to strong near-term demand, while revenues generated from customers located in Asia decreased due to significant orders fulfilled for a new distributor in the prior sequential quarter, which was not repeated in the current period. For the year ended December 31, 2019, revenues generated from customers located in the United States and Asia decreased over the prior comparable period due to inventory reduction strategies employed by our customers.

Gross Profit

Gross profit of $4,653 and margin of 52.6% increased for the three months ended December 31, 2019, while gross profit of $17,565 and margin of 53.7% decreased for the year compared to the same year-ago periods, respectively. The variability of gross margin is a function of overall revenues, sales volume and product and customer mix.

Operating Expenses

Total operating expenses for the three months and year ended December 31, 2019 were $2,609 and $12,822 compared to $3,121 and $13,089 in the prior comparable periods, respectively.

General and Administrative

General and administrative totaled $1,394 and $6,516 for the three months and year ended December 31, 2019 compared to $1,719 and $7,035 in the prior comparable periods, respectively. The decrease for the quarter and year ended December 31, 2019 was the result of cost reduction measures in response to the cyclical nature of the semiconductor industry.

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Engineering

Engineering totaled $799 and $4,404 for the three months and year compared to $817 and $3,525 in the prior comparable periods, respectively. The decrease in engineering expenses for the quarter compared to the same year-ago period was due to investment tax credits recognized for research and development activities and lower staffing costs due to headcount vacancies, partially offset by costs to support new product development and investments in disruptive technologies. The increase in engineering expenses for the year over 2018 is consistent with the Company's growth strategy of investing in technology innovation to serve existing markets and expand to new markets.

Sales and Marketing

Sales and marketing totaled $416 and $1,902 for the three months and year compared to $585 and $2,529 in the prior comparable periods, respectively. The decreases for the quarter and year over the same year-ago periods were due to lower staffing costs following a reorganization in 2019. The Company expects to increase its sales and marketing costs in 2020 as it focuses on expanding to new markets.

Contingent Consideration

Contingent consideration relates to the acquisition of certain assets of Photon Control R&D Ltd. ("Photon R&D") in 2017. It is determined using a discount model applied to royalties on revenues earned from defined products from January 1, 2017 to December 31, 2021. Accretion expense represents the calculated increase of contingent consideration resulting from the passage of time.

Change in fair value of contingent consideration resulted in a loss of $597 and $115 for the three months and year ended December 31, 2019, compared to a gain of $649 and a loss of $141 in the comparable periods, respectively. Change in fair value of contingent consideration is based on revisions to management's estimate of the potential total amount of contingent consideration compared to the estimate made at the end of the preceding quarter. The change for the three months ended December 31, 2019 resulted in an increase in management's estimate of future royalties payable to Photon R&D, supported by an improved order backlog position and early signs of a recovering wafer fabrication equipment environment.

Foreign Exchange Gain/Loss

The Company is subject to foreign exchange risk as its products are priced in United States dollars ("USD"), while the majority of its expenses and assets are denominated in Canadian dollars. The Company does have a partial "natural hedge" against foreign exchange risk, as some of its component parts and accounts payable are priced and or valued in USD. The foreign exchange loss for the three months ended December 31, 2019 was due to the strengthening of the Canadian dollar relative to the US dollar throughout the period.

Income Taxes

Income taxes for the three months and year ended December 31, 2019 were $300 and $1,127 compared to $340 and $4,007 in the prior comparable periods, respectively.

EBITDA

EBITDA is defined as earnings before finance income, accretion expense, income taxes, depreciation, amortization and foreign exchange loss or gain. EBITDA for the three months and year ended December 31, 2019 were $2,114 and $7,243 compared to $2,527 and $15,359 in the prior comparable periods, respectively. The decrease for the quarter over the same year-ago period was due to the change in fair value of contingent consideration, in spite of increased revenues and gross profit, and lower operating expenses.

Order Backlog

Order backlog was $20,840 on December 31, 2019, an increase from $11,921 at September 30, 2019 and $13,097 at December 31, 2018. Order backlog represents the unfulfilled value of sales orders received and scheduled for fulfillment in the next 6 months. The increase in order backlog versus September 30, 2019 reflects the beginning of an upturn in wafer fabrication equipment spending and improved near-term demand from semiconductor wafer fabrication equipment manufacturers.

SUMMARY OF QUARTERLY RESULTS

The global semiconductor industry is fast-paced, competitive and constantly innovating to increase processing speed and power. The ability to anticipate these technological changes and innovate to meet them without compromising quality is a key competitive advantage in this market. As a supplier of componentry to semiconductor WFE manufacturers, Photon Control's key strengths include our rapid prototyping capabilities, our ISO-certified production facility and CE methods, and our ability to manufacture to our customers' exacting standards with our highly trained workforce. In addition to our high-quality manufacturing strengths, our products include unique proprietary characteristics which both differentiate our products and allow us to outperform competitive offerings.

The following table provides a summary of the Company's financial results for the eight most recently completed quarters:

	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Revenue	$ 13,854	$ 14,565	$ 10,052	$ 8,233	$ 8,032	$ 7,106	$ 8,742	$ 8,850
Gross profit	$ 7,879	$ 8,288	$ 5,193	$ 4,287	$ 4,230	$ 3,891	$ 4,791	$ 4,653
Gross margin %	57%	57%	52%	52%	53%	55%	55%	53%
Net income	$ 2,882	$ 3,853	$ 1,249	$ 2,699	$ 70	$ 109	$ 1,487	$ 705
Basic EPS	$ 0.03	$ 0.03	$ 0.01	$ 0.03	$ 0.00	$ 0.00	$ 0.01	$ 0.01
Diluted EPS	$ 0.03	$ 0.03	$ 0.01	$ 0.03	$ 0.00	$ 0.00	$ 0.01	$ 0.01
Cash and cash equivalents	$ 33,367	$ 40,794	$ 42,651	$ 42,407	$ 37,264	$ 31,422	$ 34,025	$ 33,400

Following a multi-year period of industry growth that continued through the second quarter of 2018, the Company's revenue levels declined as a result of a prolonged downturn in semiconductor wafer fabrication equipment spending, which is cyclical by nature, as the industry experienced a period of weakness in the memory market. The industry downturn affected revenue levels through 2019, but late in the year early signs of a market recovery emerged, and revenues in the second half of 2019 increased 16% over the first half of 2019.

LIQUIDITY AND CAPITAL RESOURCES

The following table provides a summary of the Company's working capital as at December 31, 2019 and 2018:

	December 31, 2019	December 31, 2018	Variance
Cash and cash equivalents	$ 33,400	$ 42,407	$ (9,007)
Trade and other receivables	4,051	4,065	(14)
Income taxes receivable	714	-	714
Inventories	6,459	5,515	944
Prepaid expenses and deposits	575	468	107
Total current assets	**45,199**	**52,455**	**(7,256)**
Accounts payable and accrued liabilities	4,318	3,524	794
Income taxes payable	-	4,354	(4,354)
Current portion of contingent consideration	1,419	1,118	301
Current portion of lease liabilities	272	-	272
Total current liabilities	**6,009**	**8,996**	**(2,987)**
Working capital	**$ 39,190**	**$ 43,459**	**$ (4,269)**

11 (In Canadian dollars, amounts in thousands except number of shares and per share amounts

Management believes the Company will be able to continue to meet its liabilities and commitments as they become due and will generate sufficient amounts of cash and cash equivalents from the continued design, manufacturing and distribution of existing products and the commercialization of new products. This cash will be used to maintain capacity, meet planned growth and development activities and other corporate initiatives. The Company continues to monitor all expenditures and implement cash management strategies to ensure that it has adequate cash reserves to fund identified expenditure requirements.

Notwithstanding the Company's positive working capital position, the Company may require financing in order to satisfy future growth activities. The Company may also need additional capital to fund specific growth projects or acquisitions in the future, and while no such projects are planned at this time, a change in circumstances could result in the need for additional capital.

Capital Risk Management

The Company considers shareholders' equity as capital, the book value of which totaled $49,378 at December 31, 2019 (2018 - $53,665).

The Company manages its capital structure to safeguard its ability to operate as a going concern, to provide sufficient resources to meet day-to-day operating requirements, to allow it to enhance existing product offerings as well as develop new ones, and to have the financial ability to expand the size of its operations by taking on new customers and new markets. In managing its capital structure, the Company takes into consideration various factors, including the growth of its business and related infrastructure and the upfront cost of taking on new clients and expanding to new markets.

The Company's officers and senior management are responsible for managing the Company's capital and do so through regular meetings and regular review of financial information. The Company's Board of Directors is responsible for overseeing this process.

Working Capital

The decrease in working capital over December 31, 2018 was due to cash of $7,095 used towards the NCIB to re-purchase and cancel 5,490,000 common shares as at December 31, 2019.

Cash and Cash Equivalents

At December 31,2019, the Company held cash and cash equivalents of $33,400 compared to $42,407 as at December 31, 2018. The decrease was attributable to cash used to buy back shares of the Company, an increased inventory position to support the order backlog, and the timing impact of tax payments made in the period, including the full payment of taxes made to a foreign jurisdiction as part of a voluntary disclosure agreement.

Trade and Other Receivables

Trade and other receivables of $4,051 decreased from $4,065 as at December 31, 2018 and is consistent with the underlying revenues earned in the period.

Inventories

Inventories as at December 31, 2019 totaled $6,459 compared to $5,515 as at December 31, 2018 with the increase attributable to strong near-term demand, as represented by the order backlog.

The Company follows a CE standard in providing its products to its customers and is required to maintain adequate inventory on hand to fulfill purchase orders from its customers. As a result, and due to the fact that the timing and quantum of such purchase orders cannot be forecasted with complete accuracy, the Company's inventory supply must be planned to protect against variation between the forecast and actual customer demand. These variances in demand and revenue can have a short-term effect on the Company's liquidity from time to time.

Accounts Payable and Accrued Liabilities

As at December 31, 2019, the Company's accounts payable and accrued liabilities, which are due for payment within 12 months of the balance sheet date, were $4,318 compared to $3,524 as at December 31, 2018. The increase is due to inventory purchases to support an improved order backlog position.

CONTINGENT CONSIDERATION

The Company had historical relationships with Photon Control R&D Ltd. and DCD Management Ltd., and both were considered related parties as the companies had directors and shareholders in common. These relationships involved the Company outsourcing its research and development function to Photon R&D and certain administrative functions to both Photon R&D and DCD Management Ltd. On April 14, 2017 (the "Acquisition Date"), the Company acquired certain tangible and intangible assets of Photon R&D for cash consideration of $770 and contingent consideration with an estimated fair value of $4,088. In addition, the Company severed its relationship with DCD Management Ltd. settling all amounts owing and bringing all previously outsourced administrative functions in-house.

The contingent consideration relates to a royalty agreement included in the Settlement Agreement, which provides for quarterly royalties on revenues earned from defined products from January 1, 2017 to December 31, 2021.

The contingent consideration is payable in cash and has been recorded as a liability on the consolidated statements of financial position at fair value based on management's best estimate of future revenues. The estimate uses a discount rate of 20% which incorporates the inherent risk of the Company achieving these future revenues.

For the year ended December 31, 2019, the Company recognized a change in fair value of contingent consideration which resulted in a loss of $115 (2018 – $141) as a result of a revision in management's estimate of the amount based on current information regarding the underlying revenue performance.

The following table shows a reconciliation of the contingent consideration liability:

Contingent consideration, January 1, 2018	**$**	**4,005**
Payment of contingent consideration		(1,565)
Accretion expense		748
Change in fair value of contingent consideration		141
Contingent consideration, December 31, 2018		**3,329**
Payment of contingent consideration		(1,072)
Accretion expense		520
Change in fair value of contingent consideration		115
Contingent consideration, December 31, 2019	**$**	**2,892**

The table below presents the contingent consideration as at December 31, 2019 and 2018 recorded on the consolidated statements of financial position:

		December 31, 2019		**December 31, 2018**
Current portion	**$**	**1,419**	$	1,118
Long term portion		**1,473**		2,211
Total	**$**	**2,892**	$	3,329

The estimated amounts payable related to the contingent consideration could be higher or lower depending on the related future revenue outcome. Significant increases or decreases in related revenue would result in a higher or lower fair value of the contingent consideration liability, while significant increases or decreases in the discount rate and performance risk would result in a lower or higher fair value of the liability.

It is not practicable to estimate the revenue or profit of Photon R&D since the acquisition date as the business combination represents the integration of an external service provider, resulting in lower royalty costs and elimination of engineering support fees partially offset by increased staffing costs.

OFF BALANCE SHEET ARRANGEMENTS

The Company had no off-balance sheet arrangements other than short-term lease agreements and a credit card facility.

14 (In Canadian dollars, amounts in thousands except number of shares and per share amounts

LEASE LIABILITIES

The Company's lease liabilities are for office premises. The carrying amount of the lease liabilities as at December 31, 2019 was $1,513 and the breakdown of contractual undiscounted cash flows for lease liabilities and short-term leases by maturities as at December 31, 2019 is presented below:

		December 31, 2019
Less than one year	**$**	**391**
One to five years		**1,385**
Total	**$**	**1,776**

For the year ended December 31, 2019, interest expense on lease liabilities were $78, and lease expenses related to short-term leases were $172.

RELATED PARTY TRANSACTIONS

Transactions between the Company and its subsidiaries, which are related parties of the Company, have been eliminated on consolidation and not disclosed in this section.

The following table discloses the compensation amount of the Board of Directors and key management personnel in the ordinary course of their employment recognized as an expense during the reporting periods. Key management personnel have authority and responsibility for overseeing, planning, directing and controlling the activities of the Company and consist of the Company's executive officers.

The remuneration of key management for the years ended December 31, 2019 and 2018 is as follows:

	Year ended			
		December 31, 2019		December 31, 2018
Cash-based payments	**$**	**1,361**	$	1,702
Share-based payments		**288**		327
	$	**1,649**	$	2,029

Cash-based payments include salaries, bonuses, consulting fees, severance and other benefits.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

15 (In Canadian dollars, amounts in thousands except number of shares and per share amounts

The preparation of the consolidated financial statements in conformity with IFRS requires management to make judgments, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, income and expenses. Actual results may differ from these estimates. 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 critical judgments in applying accounting policies that have the most significant effect on the amounts recognized in the consolidated financial statements is as follows:

Valuation of contingent consideration

The Company recognizes the fair value of contingent consideration relating to acquisitions on the date the transaction closes. Contingent consideration is classified as either a liability or equity. Contingent consideration classified as a liability is carried at fair value with changes in fair value recorded in the consolidated statements of net income and comprehensive income. Contingent consideration classified as equity is not remeasured subsequent to initial recognition.

Contingent consideration classified as a liability is measured at fair value based on management's best estimate of future royalties on revenues earned from defined products at the date of acquisition and is subsequently revalued at each financial reporting period. Changes in management's estimate of royalties could have a material impact on the valuation of the contingent consideration classified as a liability. The current portion of contingent consideration is based on the Company's estimate of the value that will be payable within twelve months.

FINANCIAL INSTRUMENTS AND FAIR VALUES

Measurement categories, fair values and valuation methods

Financial assets and liabilities have been classified into categories that determine their basis of measurement and, for items measured at fair value, whether changes in fair value are recognized in the statements of net income and comprehensive income.

The Company’s financial assets and liabilities, with the exception of contingent consideration liability, are measured using amortized costs which approximates fair value due to the nature of these instruments:

	December 31, 2019		**December 31, 2018**	
	Carrying value	**Fair value**	**Carrying value**	**Fair value**
Financial assets	**$ 37,451**	**$ 37,451**	$ 46,472	$ 46,472
Financial liabilities	**4,318**	**4,318**	3,524	3,524

Financial risk factors

The Company is exposed to a number of risks. These risks include credit risk, liquidity risk and market risk. The Company has established policies and procedures to manage these risks, with the objective of minimizing the adverse effects that changes in the variable underlying these risks could have on the Company’s consolidated financial statements.

Credit risk

Credit risk is the risk that a counter-party will not meet their obligations under a financial instrument or customer contract, leading to a financial loss being incurred by the Company. Financial instruments that potentially subject the Company to concentrations of credit risk consist of cash and cash equivalents, and trade and other receivables.

16 (In Canadian dollars, amounts in thousands except number of shares and per share amounts

The Company limits its exposure to credit loss by maintaining its cash and cash equivalents with high credit quality financial institutions in Canada and the United States.

The Company provides credit to its customers in the normal course of operations. The Company minimizes its credit risk associated with its trade and other receivables by performing credit evaluations on customers, maintaining regular and ongoing contact with customers, routinely reviewing the status of individual trade and other receivables balances and following up on overdue amounts.

From time to time, the Company does enter into agreements with very large customers that, due to the size of the transaction, will result in some concentration of credit risk. The Company estimates, on a continuing basis, the probable losses on its accounts and records a provision for losses based on the estimated realizable value of the accounts. Management does not believe that there is significant credit risk arising from any of the Company's current customers; however, should one of the Company's large customers be unable to settle amounts due, the impact on the Company could be significant. The maximum exposure to loss arising from trade and other receivables is equal to their total carrying amounts.

The following table provides information regarding the aging of trade and other receivables as at December 31, 2019 and 2018:

	Neither past due nor impaired	Aged 1 - 30 days	Aged 31 - 60 days	Aged 61 - 90 days	Aged 90 + days
As at December 31, 2019	**93%**	**5%**	**2%**	**0%**	**0%**
As at December 31, 2018	98%	2%	0%	0%	0%

As at December 31, 2019, 7% (2018 – 2%) of the Company's trade and other receivables was past due. The definition of items that are past due was determined by reference to the Company's standard credit terms, net of any provisions for losses. At December 31, 2019, the provision against trade and other receivables was $nil (2018 - $14). At each period end, the Company reviews the collectability of outstanding receivables. Specific accounts are only written off once all collection efforts have been explored or when legal bankruptcy has occurred. During the year ended December 31, 2019, the Company did not incur any bad debt expense (2018 – $93).

The Company reviews financial assets past due on an ongoing basis with the objective of identifying potential matters that could delay the collection of funds at an early stage.

Liquidity risk

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 budgeting, ongoing management and forecasting of operating cash flows, review of trade and other receivables balances, management of cash, and use of credit facilities and equity financings when appropriate.

At December 31, 2019, the Company had a $220 credit card facility (2018 - $80) with a Canadian Chartered bank.

17 (In Canadian dollars, amounts in thousands except number of shares and per share amounts

Market risk

Foreign exchange risk

The Company operates internationally and generates revenues and incurs expenses in foreign currencies, holds cash, and has operations based in the United States carried through its wholly owned subsidiaries.

The Company's financial results are reported in Canadian dollars. The Company's exposure to foreign currency risk is primarily related to fluctuations in the value of the Canadian dollar relative to the United States dollar ("USD"), as a majority of the Company's revenues are earned in USD. As such, the Company may be subject to material, realized and unrealized foreign exchange gains or losses resulting from above average changes in exchange rates between the Canadian and the United States dollar.

At December 31, 2019, the Company held net current monetary assets in USD equal to $23,659 (2018 - $27,095). The Company estimates the impact of a 10% change in the Canadian dollar exchange rate on its net current monetary assets to be $2,366 (2018 - $2,710).

Interest rate risk

The Company is exposed to interest rate risk by virtue of holding cash and cash equivalents. The Company's objective in managing its cash is to provide sufficient funds to meet day-to-day requirements and placing excess cash in short-term deposits.

RESTATEMENT OF PRIOR COMPARATIVE INFORMATION

As described in the consolidated financial statements for the years ended December 31, 2018 and 2017, the Company restated its comparative financial information related to a previously unreported liability of income taxes owing to a foreign jurisdiction. As a result, the Company restated its consolidated statement of changes in shareholders' equity for the year ended December 31, 2018. This resulted in a decrease of $1,581 in retained earnings as at January 1, 2018. For further details, please refer to the consolidated financial statements for the years ended December 31, 2018 and 2017.

DISCLOSURE CONTROLS AND PROCEDURES AND INTERNAL CONTROLS OVER FINANCIAL REPORTING

Disclosure controls and procedures

The Company has disclosure controls and procedures in place that are designed to provide reasonable assurance that information relating to the Company that is required to be disclosed under applicable securities laws is recorded, processed, summarized, and reported in the manner specified by such laws. Management has reviewed and evaluated, or caused to be evaluated under their supervision, the design and effectiveness of the Company's disclosure controls and procedures as of December 31, 2019, and has concluded that the Company's disclosure controls and procedures were effective.

The Company's CEO and the Chief Financial Officer ("CFO") have reviewed and evaluated the design of the Company's disclosure controls and procedures related to the preparation of Management's

Discussion and Analysis and the Company's consolidated financial statements as at December 31, 2019. The Company's CEO and CFO have concluded that the Company's disclosure controls and procedures were designed and effective, at a reasonable assurance level, to ensure that material information relating to the Company and its consolidated subsidiaries would be made known to them by others within those entities, particularly during the period in which the Management's Discussion and Analysis and the consolidated financial statements contained in this report were being prepared.

Internal control over financial reporting

The Company's management, with the participation of its CEO and CFO, are also responsible for establishing and maintaining adequate internal control over financial reporting, as defined in National Instrument 52-109 – *Certification of Disclosure in Issuers' Annual and Interim Filings*, in order to provide reasonable assurance regarding the reliability and accuracy of the Company's financial reporting and the preparation of its financial statements for external purposes in accordance with IFRS. The Company's CEO and CFO have evaluated, or caused to be evaluated under their supervision, the design and effectiveness of the Company's internal control over financial reporting as of December 31, 2019 and have concluded that the Company's internal control over financial reporting is effective.

There have been no changes in the Company's disclosure controls or internal control over financial reporting during the year ended December 31, 2019 that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting. The Company's CEO and CFO will certify Photon Control's annual filings with the Canadian securities regulatory authorities.

OUTSTANDING SHARE DATA

As at December 31, 2019, the Company had 104,513,571 common shares issued and outstanding. As at March 18, 2020, the Company had 104,513,571 common shares were issued and outstanding.

As at December 31, 2019 the Company had 3,396,250 stock options outstanding entitling the holders to purchase one common share for each option held. As at March 18, 2020, the Company had 3,331,250 stock options outstanding.

As at December 31, 2019, the Company had restricted share units outstanding for 43,000 common shares. As at March 18, 2020, the Company had restricted share units outstanding for 43,000 common shares.

RISKS AND UNCERTAINTIES

Our business is subject to significant risks and uncertainties and past performance is no guarantee of future performance. The risks and uncertainties in the Company's most recently filed AIF, which is available on the Canadian System for Electronic Document Analysis and Retrieval website ("SEDAR") (www.sedar.com) are those that we currently believe to be material, and do not represent all of the risks that we face. Additional risks and uncertainties, not presently known to us, may become material in the future or those risks that we currently believe to be immaterial may become material in the future. If any of the following risks actually occur, alone or in combination, our business, financial condition and results of operations, as well as the market price of our common shares, could be materially adversely affected.

SEDAR

Additional information relating to the Company, including the Company's AIF, is available on SEDAR at www.sedar.com.

CAUTIONARY NOTE REGARDING FORWARD LOOKING STATEMENTS

This MD&A contains certain statements and information that are not based on historical facts and constitute forward-looking statements or forward-looking information within the meaning of Canadian securities laws (collectively, "forward-looking statements"), including our business outlook for the short and longer-term and statements regarding our strategy, plans and future operating performance. Forward-looking statements are provided to help you understand our views of our short and longer-term plans, expectations and prospects. We caution you that forward-looking statements may not be appropriate for other purposes.

Any statements that express or involve discussions with respect to predictions, expectations, beliefs, plans, projections, objectives, assumptions or future events or performance (often, but not always, identified by words or phrases such as "expects", "is expected", "anticipates", "believes", "plans", "projects", "estimates", "assumes", "intends", "strategy", "goals", "objectives", "potential", "possible" or variations thereof or stating that certain actions, events, conditions or results "may", "could", "would", "should", "might" or "will" be taken, occur or be achieved, or the negative of any of these terms and similar expressions) are not statements of historical fact and may be forward-looking statements. Forward-looking statements are not promises or guarantees of future performance; they represent our current views and may change significantly. Forward-looking statements are based on a number of material assumptions, including, but not limited to, those listed below, which could prove to be significantly incorrect:

- our ability to develop, manufacture and sell new products that meet the needs of our customers and gain commercial acceptance;
- our ability to continue to sell our products in line with expected quantity, price and delivery times;
- our ability to attract new business;
- continued and future demand for the Company's products;
- continued sales to the Company's major customers;
- our operations not being adversely affected by supply, operating, cyber security, litigation or regulatory risks;
- our ability to react to the cyclical nature of the semiconductor industry;
- our ability to enhanced revenue diversification and open new market opportunities; and,
- our expectations regarding market risk, including interest rate changes, tax changes and foreign currency fluctuations.

The forward-looking statements included in this report include, without limitation, statements relating to:

- factors that we expect to drive continued demand for the Company's products;
- expected growth within the semiconductor industry and the Company's reliance on the financial health of the semiconductor industry from which it derives its sales;
- the market for the Company's products;
- sources of our revenues from operations in the future;
- continued international expansion and the effect of such expansion on our operations;
- potential acquisitions in the future and the effect of such acquisitions on our operations;
- fluctuation of the price of the common shares of the Company in the future;
- potential inability of investors to sell their common shares of the Company;
- our future performance being dependent on our ability to hire and retain qualified personnel; and
- the Company is not anticipating paying any dividends in the foreseeable future.

Forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of the Company to be materially different from any results, performance or achievements expressed or implied by the forward-looking statements. Such uncertainties and factors include, among others:

- risks associated with the Company's ability to retain its major customers;
- risks associated with a lengthy sales cycle;
- risks related to our dependency on the semiconductor industry and our ability to respond to industry cyclicality;
- risks associated with the Company's ability to expand its manufacturing capacity or reduce costs in response to rapid shifts in demand for the Company's products;
- risks associated with continuous technological change, evolving industry standards, shifting customer needs and new product introductions and enhancements;
- risks associated with failure to operate our business in accordance with our business plan;
- uncertainty relating to the timing of product development and commercial launch;
- risks associated with competition;
- operational risks associated with manufacturing and our dependence on sole or limited source suppliers;
- risks associated with compliance with customers' requirements;
- uncertainty relating to operating results;
- risks related to legal, regulatory and tax environments in which we conduct our business;
- risks associated with product liability claims;
- risks related to product pricing;
- risks related to inability to use or access information systems, or related to breaches of our network security;
- risks associated with manufacturing interruptions or delays;
- risks relating to legal proceedings and with the Company's intellectual property;
- risks associated with infringing on the intellectual property rights of others;
- uncertainty relating to general economic conditions;
- risks related to tariffs or other trade restrictions;
- risks related to future mergers or acquisitions;

- uncertainty related to international operations, including currency fluctuations, additional development projects, other business opportunities and disruption due to the spread of the COVID-19 virus;
- risks associated with the adverse impact of climate change;
- risks related to the volatility of the trading price and volume of the common shares of the Company;
- risks associated with maintaining an active market for the common shares of the Company;
- risks associated with our directors and officers;
- risks associated with attracting and retaining qualified personnel; and
- risks associated with compliance with various federal, provincial, local and international laws governing the environment.

This list is not exhaustive of the factors that may affect any of our forward-looking statements. Forward-looking statements are statements about the future and are inherently uncertain, and our actual achievements or other future events or conditions may differ materially from those reflected in the forward-looking statements due to a variety of risks, uncertainties and other factors, including, without limitation, those referred to in this report under the heading “Risks and Uncertainties”.

The Company’s forward-looking statements are based on beliefs, expectations and opinions of management on the date the statements are made. For the reasons set forth above, readers should not place undue reliance on forward-looking statements. The Company undertakes no obligation to update or revise any forward-looking statements included herein if these beliefs, estimates and opinions or other circumstances should change, except as otherwise required by applicable law.