



CPP  
INVESTMENT  
BOARD

**Canada Pension Plan Investment Board**  
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Condensed Interim Consolidated  
Financial Statements of

# Canada Pension Plan Investment Board

September 30, 2018

**Canada Pension Plan Investment Board**  
**Condensed Interim Consolidated Balance Sheet**  
As at September 30, 2018  
(Unaudited)

<i>(CAD millions)</i>	As at September 30, 2018	As at March 31, 2018	As at September 30, 2017
<b>Assets</b>			
Investments (note 2)	\$ 448,578	\$ 428,827	\$ 387,709
Pending trades receivable	4,525	2,613	5,958
Premises and equipment	359	348	346
Other assets	206	153	153
<b>Total assets</b>	<b>453,668</b>	431,941	394,166
<b>Liabilities</b>			
Investment liabilities (note 2)	80,277	72,641	58,216
Pending trades payable	4,714	2,477	7,342
Accounts payable and accrued liabilities	363	689	442
<b>Total liabilities</b>	<b>85,354</b>	75,807	66,000
<b>Net assets</b>	<b>\$ 368,314</b>	\$ 356,134	\$ 328,166
<b>Net assets, represented by:</b>			
Share capital	\$ -	\$ -	\$ -
Accumulated net income from operations	224,473	215,614	186,933
Accumulated net transfers from the Canada Pension Plan	143,841	140,520	141,233
<b>Net assets</b>	<b>\$ 368,314</b>	\$ 356,134	\$ 328,166

The accompanying notes are an integral part of these Condensed Interim Consolidated Financial Statements.

## Canada Pension Plan Investment Board

### Condensed Interim Consolidated Statement of Comprehensive Income

For the three and six months ended September 30, 2018

(Unaudited)

<i>(CAD millions)</i>	For the three months ended		For the six months ended	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
Investment income	\$ 3,114	\$ 2,986	\$ 10,509	\$ 9,526
Investment management fees	(428)	(382)	(908)	(805)
Transaction costs	(135)	(66)	(223)	(173)
<b>Net investment income</b> (note 5)	<b>\$ 2,551</b>	<b>\$ 2,538</b>	<b>\$ 9,378</b>	<b>\$ 8,548</b>
Personnel costs	159	158	349	334
General operating expenses	65	72	129	129
Professional services	22	16	41	27
<b>Operating expenses</b>	<b>246</b>	<b>246</b>	<b>519</b>	<b>490</b>
<b>Net income from operations and comprehensive income</b>	<b>\$ 2,305</b>	<b>\$ 2,292</b>	<b>\$ 8,859</b>	<b>\$ 8,058</b>

The accompanying notes are an integral part of these Condensed Interim Consolidated Financial Statements.

## Canada Pension Plan Investment Board

### Condensed Interim Consolidated Statement of Changes in Net Assets

For the three and six months ended September 30, 2018

(Unaudited)

<i>(CAD millions)</i>	For the three months ended				
	Number of shares outstanding	Share capital	Accumulated net transfers from the Canada Pension Plan	Accumulated net income from operations	Total net assets
<b>As at July 1, 2017</b>	10	\$ -	\$ 141,907	\$ 184,641	\$ 326,548
Total net income for the period		-	-	2,292	2,292
Canada Pension Plan transfers:					
Transfers from the Canada Pension Plan		-	7,394	-	7,394
Transfers to the Canada Pension Plan		-	(8,068)	-	(8,068)
<b>Balance at September 30, 2017</b>	10	\$ -	\$ 141,233	\$ 186,933	\$ 328,166
<b>As at July 1, 2018</b>	10	\$ -	\$ 144,431	\$ 222,168	\$ 366,599
Total net income for the period		-	-	2,305	2,305
Canada Pension Plan transfers:					
Transfers from the Canada Pension Plan		-	8,841	-	8,841
Transfers to the Canada Pension Plan		-	(9,431)	-	(9,431)
<b>Balance at September 30, 2018</b>	10	\$ -	\$ 143,841	\$ 224,473	\$ 368,314

<i>(CAD millions)</i>	For the six months ended				
	Number of shares outstanding	Share capital	Accumulated net transfers from the Canada Pension Plan	Accumulated net income from operations	Total net assets
<b>As at April 1, 2017</b>	10	\$ -	\$ 137,802	\$ 178,875	\$ 316,677
Total net income for the period		-	-	8,058	8,058
Canada Pension Plan transfers:					
Transfers from the Canada Pension Plan		-	18,906	-	18,906
Transfers to the Canada Pension Plan		-	(15,475)	-	(15,475)
<b>Balance at September 30, 2017</b>	10	\$ -	\$ 141,233	\$ 186,933	\$ 328,166
<b>As at April 1, 2018</b>	10	\$ -	\$ 140,520	\$ 215,614	\$ 356,134
Total net income for the period		-	-	8,859	8,859
Canada Pension Plan transfers:					
Transfers from the Canada Pension Plan		-	20,795	-	20,795
Transfers to the Canada Pension Plan		-	(17,474)	-	(17,474)
<b>Balance at September 30, 2018</b>	10	\$ -	\$ 143,841	\$ 224,473	\$ 368,314

The accompanying notes are an integral part of these Condensed Interim Consolidated Financial Statements.

## Canada Pension Plan Investment Board

### Condensed Interim Consolidated Statement of Cash Flows

For the three and six months ended September 30, 2018

(Unaudited)

<i>(CAD millions)</i>	For the three months ended September 30		For the six months ended September 30	
	2018	2017	2018	2017
<b>Cash flows from operating activities</b>				
Net income from operations	\$ 2,305	\$ 2,292	\$ 8,859	\$ 8,058
Adjustments for non-cash items:				
Amortization of premises and equipment	5	6	10	13
Effect of exchange rate changes on cash and cash equivalents	4	(1)		3
Unrealized (gains) on debt financing liabilities	(499)	(15)	(442)	(538)
Adjustments for net changes in operating assets and liabilities:				
(Increase) in investments	(3,630)	(7,299)	(15,542)	(17,210)
(Increase) in pending trades receivable	(1,463)	(2,760)	(1,912)	(2,724)
(Increase) decrease in other assets	(6)	2	(17)	1
Increase (decrease) in investment-related liabilities	4,364	2,035	5,909	(5,736)
Increase in debt financing liabilities	1,647	1,455	2,169	3,955
(Decrease) increase in pending trades payable	(135)	2,322	2,237	3,812
Increase (decrease) in accounts payable and accrued liabilities	80	63	(326)	(228)
<b>Net cash flows provided by (used in) operating activities</b>	<b>2,672</b>	<b>(1,900)</b>	<b>945</b>	<b>(10,594)</b>
<b>Cash flows from financing activities</b>				
Transfers from the Canada Pension Plan	8,841	7,394	20,795	18,906
Transfers to the Canada Pension Plan	(9,431)	(8,068)	(17,474)	(15,475)
<b>Net cash flows (used in) provided by financing activities</b>	<b>(590)</b>	<b>(674)</b>	<b>3,321</b>	<b>3,431</b>
<b>Cash flows from investing activities</b>				
Acquisitions of premises and equipment	(14)	(2)	(21)	(11)
Disposals of premises and equipment	-	-	-	1
<b>Net cash flows (used in) investing activities</b>	<b>(14)</b>	<b>(2)</b>	<b>(21)</b>	<b>(10)</b>
Net increase (decrease) in cash and cash equivalents	2,068	(2,576)	4,245	(7,173)
Effect of exchange rate changes on cash and cash equivalents	(4)	1	-	(3)
Cash and cash equivalents at the beginning of the period	10,477	11,475	8,296	16,076
<b>Cash and cash equivalents at the end of the period</b>	<b>12,541</b>	<b>8,900</b>	<b>12,541</b>	<b>8,900</b>
<b>Cash and cash equivalents at the end of the period are comprised of:</b>				
Cash held for operating purposes <sup>1</sup>	119	93	119	93
Cash and cash equivalents held for investment purposes <sup>2</sup>	12,422	8,807	12,422	8,807
<b>Total</b>	<b>\$ 12,541</b>	<b>\$ 8,900</b>	<b>\$ 12,541</b>	<b>\$ 8,900</b>

<sup>1</sup> Presented as a component of other assets on the Condensed Interim Consolidated Balance Sheet.

<sup>2</sup> Presented as a component of investments on the Condensed Interim Consolidated Balance Sheet and money market securities on the Condensed Interim Consolidated Schedule of Investment Portfolio.

The accompanying notes are an integral part of these Condensed Interim Consolidated Financial Statements.

# Canada Pension Plan Investment Board

## Condensed Interim Consolidated Schedule of Investment Portfolio

As at September 30, 2018

(Unaudited)

The schedule below provides information on CPP Investment Board's investments and investment liabilities:

<i>(CAD millions)</i>	As at September 30, 2018	As at March 31, 2018 <sup>1</sup>	As at September 30, 2017 <sup>1</sup>
<b>Equities (note 2a)</b>			
<b>Canada</b>			
Public equities <sup>2</sup>	\$ 7,897	\$ 7,783	\$ 6,504
Private equities	1,207	1,137	1,167
	<b>9,104</b>	<b>8,920</b>	<b>7,671</b>
<b>Foreign developed markets</b>			
Public equities <sup>2</sup>	105,559	114,164	105,261
Private equities	69,113	64,723	55,137
	<b>174,672</b>	<b>178,887</b>	<b>160,398</b>
<b>Emerging markets</b>			
Public equities <sup>2</sup>	25,714	24,274	20,045
Private equities	11,031	9,877	7,105
	<b>36,745</b>	<b>34,151</b>	<b>27,150</b>
<b>Total equities</b>	<b>220,521</b>	<b>221,958</b>	<b>195,219</b>
<b>Fixed income (note 2b)</b>			
Bonds	71,924	63,851	59,195
Other debt	26,639	22,183	20,089
Money market securities <sup>3</sup>	12,922	8,213	9,557
<b>Total fixed income</b>	<b>111,485</b>	<b>94,247</b>	<b>88,841</b>
<b>Absolute return strategies (note 2c)</b>	<b>23,380</b>	<b>21,027</b>	<b>20,090</b>
<b>Real assets (note 2d)</b>			
Real estate	43,984	44,712	39,469
Infrastructure	29,829	27,450	23,270
Energy and resources	6,060	5,729	3,409
Power and renewables	4,865	2,949	3,979
<b>Total real assets</b>	<b>84,738</b>	<b>80,840</b>	<b>70,127</b>
<b>Investment receivables</b>			
Securities purchased under reverse repurchase agreements (note 2e) and securities borrowed (note 2f)	3,680	6,164	8,981
Accrued interest	2,167	2,026	1,777
Derivative receivables (note 2g)	1,643	1,918	2,111
Other	964	647	563
<b>Total investment receivables</b>	<b>8,454</b>	<b>10,755</b>	<b>13,432</b>
<b>Total investments</b>	\$ <b>448,578</b>	\$ <b>428,827</b>	\$ <b>387,709</b>
<b>Investment liabilities</b>			
Securities sold under repurchase agreements (note 2e) and securities lent (note 2f)	(31,516)	(32,504)	(19,198)
Securities sold short (note 2a and 2b)	(20,536)	(13,574)	(13,425)
Debt financing liabilities (note 2h)	(25,807)	(24,056)	(23,300)
Derivative liabilities (note 2g)	(1,934)	(1,712)	(1,614)
Other	(484)	(795)	(679)
<b>Total investment liabilities</b>	<b>(80,277)</b>	<b>(72,641)</b>	<b>(58,216)</b>
Pending trades receivable	4,525	2,613	5,958
Pending trades payable	(4,714)	(2,477)	(7,342)
<b>Net investments</b>	\$ <b>368,112</b>	\$ <b>356,322</b>	\$ <b>328,109</b>

<sup>1</sup> Certain comparatives have been reclassified to conform to the current period's presentation.

<sup>2</sup> As at September 30, 2018, public equities included fund investments with a fair value of \$10,600 million (March 31, 2018 - \$8,331 million, September 30, 2017 - \$7,840 million).

<sup>3</sup> Includes investments managed on a short-term basis to support transfers to the Canada Pension Plan.

The accompanying notes are an integral part of these Condensed Interim Consolidated Financial Statements.

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#### Corporate information

Canada Pension Plan Investment Board (CPP Investment Board) was established in December 1997 pursuant to the *Canada Pension Plan Investment Board Act* (the Act). CPP Investment Board is a federal Crown corporation, all of the shares of which are owned by Her Majesty the Queen in right of Canada. CPP Investment Board is responsible for assisting the Canada Pension Plan (the CPP) in meeting its obligations to contributors and beneficiaries under the legislation *Canada Pension Plan*. It is responsible for managing amounts that are transferred to it under Section 108.1 of the *Canada Pension Plan* in the best interests of CPP beneficiaries and contributors. CPP Investment Board received its first funds for investing purposes from the CPP in March 1999. CPP Investment Board's assets are to be invested in accordance with the Act, the regulations and the investment policies with a view to achieving a maximum rate of return without undue risk of loss, having regard to the factors that may affect the funding of the CPP and the ability of the CPP to meet its financial obligations on any given business day.

CPP Investment Board is exempt from Part I tax under paragraphs 149(1) (d) of the *Income Tax Act (Canada)* on the basis that all of the shares of CPP Investment Board are owned by Her Majesty the Queen in right of Canada. Further, all of CPP Investment Board's wholly owned subsidiaries are exempt from Part I tax.

The Condensed Interim Consolidated Financial Statements (Consolidated Financial Statements) provide information on the net assets managed by CPP Investment Board and do not include the liabilities and other assets of the CPP. CPP Investment Board has a fiscal year end of March 31.

CPP Investment Board's registered office is at One Queen Street East, Toronto, Ontario, Canada.

The Consolidated Financial Statements were approved by the Board of Directors and authorized for issue on November 8, 2018.

#### 1. Summary of significant accounting policies

##### a) Basis of presentation

These Consolidated Financial Statements have been prepared in compliance with International Accounting Standard 34, *Interim Financial Reporting* (IAS 34) and do not include all of the information and disclosures required in the annual consolidated financial statements. These Consolidated Financial Statements should be read in conjunction with CPP Investment Board's annual Consolidated Financial Statements and the accompanying note disclosures included on pages 104 to 136 in CPP Investment Board's 2018 Annual Report. These Consolidated Financial Statements follow the same accounting policies and methods as the most recent annual Consolidated Financial Statements.

CPP Investment Board qualifies as an investment entity as it meets the following definition of an investment entity outlined in IFRS 10, *Consolidated Financial Statements* (IFRS 10):

- Obtains funds from one or more investors for the purpose of providing those investor(s) with investment management services. In the case of CPP Investment Board, we have one investor (more specifically, we invest amounts transferred from the CPP that are not required to pay current CPP benefits), but we invest the funds in the best interests of a wide group of individuals being the contributors and beneficiaries of the CPP.
- Commits to its investor(s) that its business purpose is to invest funds solely for returns from capital appreciation, investment income, or both.
- Measures and evaluates the performance of substantially all of its investments on a fair value basis.

No significant judgments or assumptions were made in determining that CPP Investment Board meets the definition of an investment entity as defined in IFRS 10.

Certain comparative figures have been reclassified to conform to the current period's financial statement presentation.

**b) Subsidiaries**

CPP Investment Board is required to report the results of its operations in accordance with IFRS 10. As a consequence, the Consolidated Financial Statements represent the results of operations of CPP Investment Board and its wholly-owned subsidiaries that were created to provide investment-related services to support its operations. Operating subsidiaries of this nature include those that provide investment advisory services or subsidiaries that were created to provide financing to CPP Investment Board.

Subsidiaries that are managed by CPP Investment Board to hold investments are referred to herein as investment holding subsidiaries. Such subsidiaries are not consolidated in these Consolidated Financial Statements but instead are measured and reported at fair value. Fair value for unconsolidated investment holding subsidiaries is based on the fair value of the underlying investments and investment liabilities held by the investment holding subsidiary together with its accumulated net income from operations. The determination of the fair value of the underlying investments and investment liabilities are based on the valuation techniques and related inputs outlined in note 2a to h.

**c) Valuation of investments and investment liabilities**

Investments and investment liabilities are stated at fair value. Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

In an active market, fair value is best evidenced by an independent quoted market price. In the absence of an active market, fair value is determined by valuation techniques that make maximum use of inputs observed from markets. See note 2a to h for more details about the determination of fair value.

**2. Fair value determination**

CPP Investment Board manages the following types of investments and investment liabilities and determines fair value as follows:

**a) Equities**

- (i) Public equity investments are made directly or through funds, including hedge funds. Fair value for publicly traded equities, including equity short positions, is based on quoted market prices. Fair value for fund investments is generally based on the net asset value reported by the external administrators or managers of the funds.
- (ii) Private equity investments are generally made directly or through ownership in limited partnership funds. The fair value for investments held directly is primarily determined using earnings multiples of comparable publicly traded companies or discounted cash flows. Significant inputs for these valuation methods include company-specific earnings before interest, taxes, depreciation and amortization (EBITDA), earnings multiples of comparable publicly traded companies, projected cash flows and discount rates using current market yields of instruments with similar characteristics. Recent market transactions, where available, are also used. In the case of investments held through a limited partnership fund, fair value is generally determined based on relevant information reported by the general partner using similar accepted industry valuation methods.

**b) Fixed income**

- (i) Bonds include non-marketable and marketable bonds. Fair value for non-marketable Canadian provincial government bonds is calculated using discounted cash flows based on current market yields of instruments with similar characteristics. In the case of marketable bonds, including bond short positions, fair value is based on quoted prices or calculated using discounted cash flow based on benchmark yield curves and credit spreads pertaining to the issuer.
- (ii) Other debt includes investments in direct private debt, private real estate debt, asset-backed securities, distressed mortgage funds, private debt funds, hedge funds and investments in income streams of intellectual properties and royalties.

Fair value for direct investments in private debt, private real estate debt and asset-backed securities is based on quoted market prices or broker quotes or recent market transactions, if available. Where the market price is not available, fair value is calculated using discounted cash flows based on significant inputs such as projected cash flows and discount rates using current market yields of instruments with similar characteristics.

Fair value for fund investments is generally based on the net asset value as reported by the external administrators or managers of the funds.

In the case of investments in income streams of intellectual properties and royalties, fair value is primarily determined using discounted cash flows based on projected cash flows and discount rates using current market yields of instruments with similar characteristics.

- (iii) Money market securities include cash, term deposits, treasury bills, commercial paper and floating rate notes. Fair value is determined using cost, which, together with accrued interest income, approximates fair value due to the short-term or floating rate nature of these securities.

**c) Absolute return strategies**

Absolute return strategies include investments in hedge funds whose objective is to generate positive returns regardless of market conditions, that is, returns with a low correlation to broad market indices. The underlying securities of the funds could include, but are not limited to, equities, fixed income securities and derivatives. Fair value for fund investments is generally based on the net asset value as reported by the external administrators or managers of the funds.

**d) Real assets**

- (i) CPP Investment Board obtains exposure to real estate through direct investments in privately held real estate and real estate funds. Private real estate investments are managed by investment managers primarily through co-ownership arrangements.

Fair value for private real estate investments is primarily determined using discounted cash flows based on various factors such as net operating income, discount rate and terminal capitalization rate.

Fair value for real estate funds is generally based on the net asset value reported by the external managers of the funds.

- (ii) Infrastructure, energy and resources, and power and renewables investments are generally made directly, but can also occur through limited partnership funds.

The fair value of these investments is primarily determined using discounted cash flows based on significant inputs including projected cash flows and discount rates. Earnings multiples of comparable companies may also be used for determining the fair value of energy and resources investments.

Fair value for investments held through limited partnership funds are generally based on the net asset value as reported by the external managers of the funds.

**e) Securities purchased under reverse repurchase agreements and sold under repurchase agreements**

Reverse repurchase and repurchase agreements are carried at the amounts at which the securities were initially acquired or sold, which, together with accrued interest income or expense, approximates fair value due to the short-term nature of these securities.

**f) Securities borrowed and lent**

Securities borrowing and lending agreements are transactions in which CPP Investment Board borrows securities from or lends securities to third parties. The lent securities remain on our Consolidated Balance Sheet as CPP Investment Board retains substantially all of the risks and rewards of ownership of the transferred securities. Correspondingly, borrowed securities are not recognized on the Consolidated Balance Sheet. Collateral received or pledged is generally in the form of cash, equities or fixed income securities. Cash collateral received is accounted for as an investment liability while equities and fixed income securities received as collateral are not recognized on the Consolidated Balance Sheet. Cash collateral pledged is accounted for as an investment asset, while securities collateral pledged by CPP Investment Board in securities borrowing agreements remain on the Consolidated Balance Sheet.

**g) Derivative contracts**

Fair value for exchange-traded derivatives, which includes futures, options and warrants, is based on quoted market prices. Fair value for over-the-counter derivatives, which includes swaps, options, forward contracts and warrants, is determined based on valuation techniques such as option pricing models, discounted cash flows and consensus pricing from independent brokers and/or third-party vendors. Inputs used in these valuation techniques may include, but are not limited to, spot prices, price volatilities, currency exchange rates, interest rate curves and credit spreads. In determining fair value, consideration is also given to the credit risk of the counterparty.

**h) Debt financing liabilities**

Debt financing liabilities consist of commercial paper payable and term debt. Commercial paper payable is recorded at the amount originally issued, which, together with accrued interest expense, approximates fair value due to the short-term nature of these liabilities. Fair value for term debt is based on quoted market prices.

Notes to the Condensed Interim Consolidated Financial Statements

For the three and six months ended September 30, 2018

(Unaudited)

3. Derivative instruments

The fair value of derivative contracts was as follows:

Fair value of derivative contracts

(CAD millions)	As at September 30, 2018		As at March 31, 2018		As at September 30, 2017	
	Positive fair value	Negative fair value	Positive fair value	Negative fair value	Positive fair value	Negative fair value
<b>Equity contracts</b>						
Futures	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Swaps	1,340	(1,215)	1,326	(967)	1,356	(736)
Options:						
Over-the-counter – Purchased	1	-	-	-	-	-
Over-the-counter – written	-	(21)	-	(12)	-	(5)
Warrants	1	-	-	-	1	-
<b>Total equity contracts</b>	<b>1,342</b>	<b>(1,236)</b>	<b>1,326</b>	<b>(979)</b>	<b>1,357</b>	<b>(741)</b>
<b>Foreign exchange contracts</b>						
Forwards	93	(55)	185	(273)	475	(419)
Options:						
Over-the-counter – written	-	(12)	-	(2)	-	-
<b>Total foreign exchange contracts</b>	<b>93</b>	<b>(67)</b>	<b>185</b>	<b>(275)</b>	<b>475</b>	<b>(419)</b>
<b>Interest rate contracts</b>						
Futures	-	-	-	-	-	-
Forwards	-	-	-	-	-	-
Swaps	95	(445)	225	(271)	28	(212)
Options:						
Over-the-counter – written	-	(19)	-	-	-	-
<b>Total interest rate contracts</b>	<b>95</b>	<b>(464)</b>	<b>225</b>	<b>(271)</b>	<b>28</b>	<b>(212)</b>
<b>Credit contracts</b>						
Purchased credit default swaps	4	(107)	2	(174)	2	(230)
Written credit default swaps	109	(6)	180	(2)	244	(2)
<b>Total credit contracts</b>	<b>113</b>	<b>(113)</b>	<b>182</b>	<b>(176)</b>	<b>246</b>	<b>(232)</b>
<b>Commodity contracts</b>						
Futures	-	-	-	-	-	-
Options:						
Exchange-traded – purchased	-	-	-	-	5	-
Exchange-traded – written	-	(54)	-	(11)	-	(10)
<b>Total commodity contracts</b>	<b>-</b>	<b>(54)</b>	<b>-</b>	<b>(11)</b>	<b>5</b>	<b>(10)</b>
<b>Total</b>	<b>\$ 1,643</b>	<b>\$ (1,934)</b>	<b>\$ 1,918</b>	<b>\$ (1,712)</b>	<b>\$ 2,111</b>	<b>\$ (1,614)</b>

4. Fair value measurement

a) Fair value hierarchy

The following shows investments and investment liabilities recognized at fair value, analyzed between those whose fair value is based on:

- Quoted prices in active markets for identical assets or liabilities (Level 1);

## Canada Pension Plan Investment Board

### Notes to the Condensed Interim Consolidated Financial Statements

For the three and six months ended September 30, 2018

(Unaudited)

- Inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly (as prices) or indirectly (derived from prices) (Level 2); and
- Inputs for the asset or liability that are not based on observable market data (unobservable inputs) (Level 3).

#### Fair value hierarchy

(CAD millions)	As at September 30, 2018			
	Level 1	Level 2	Level 3	Total
<b>Investments</b>				
<b>Equities</b>				
<b>Canada</b>				
Public equities <sup>1</sup>	\$ 7,897	\$ -	\$ -	\$ 7,897
Private equities	-	-	1,207	1,207
	<b>7,897</b>	<b>-</b>	<b>1,207</b>	<b>9,104</b>
<b>Foreign developed markets</b>				
Public equities <sup>1</sup>	97,719	7,711	129	105,559
Private equities	-	-	69,113	69,113
	<b>97,719</b>	<b>7,711</b>	<b>69,242</b>	<b>174,672</b>
<b>Emerging markets</b>				
Public equities <sup>1</sup>	21,445	4,160	109	25,714
Private equities	-	-	11,031	11,031
	<b>21,445</b>	<b>4,160</b>	<b>11,140</b>	<b>36,745</b>
<b>Total equities</b>	<b>127,061</b>	<b>11,871</b>	<b>81,589</b>	<b>220,521</b>
<b>Fixed income</b>				
Bonds	43,183	28,741	-	71,924
Other debt	-	7,390	19,249	26,639
Money market securities	-	12,922	-	12,922
<b>Total fixed income</b>	<b>43,183</b>	<b>49,053</b>	<b>19,249</b>	<b>111,485</b>
<b>Absolute return strategies<sup>1</sup></b>	<b>-</b>	<b>21,654</b>	<b>1,726</b>	<b>23,380</b>
<b>Real assets</b>				
Real estate	-	-	43,984	43,984
Infrastructure	-	-	29,829	29,829
Energy and resources	-	-	6,060	6,060
Power and renewables	-	-	4,865	4,865
<b>Total real assets</b>	<b>-</b>	<b>-</b>	<b>84,738</b>	<b>84,738</b>
<b>Investment receivables</b>				
Securities purchased under reverse repurchase agreements and securities borrowed	-	3,680	-	3,680
Accrued interest	-	2,167	-	2,167
Derivative receivables	-	1,642	1	1,643
Other	-	950	14	964
<b>Total investment receivables</b>	<b>-</b>	<b>8,439</b>	<b>15</b>	<b>8,454</b>
<b>Total investments</b>	<b>\$ 170,244</b>	<b>\$ 91,017</b>	<b>\$ 187,317</b>	<b>\$ 448,578</b>
<b>Investment liabilities</b>				
Securities sold under repurchase agreements and securities lent	-	(31,516)	-	(31,516)
Securities sold short	(20,536)	-	-	(20,536)
Debt financing liabilities	(21,606)	(4,201)	-	(25,807)
Derivative liabilities	(54)	(1,880)	-	(1,934)
Other	-	(484)	-	(484)
<b>Total investment liabilities</b>	<b>(42,196)</b>	<b>(38,081)</b>	<b>-</b>	<b>(80,277)</b>
Pending trades receivable	-	4,525	-	4,525
Pending trades payable	-	(4,714)	-	(4,714)
<b>Net investments</b>	<b>\$ 128,048</b>	<b>\$ 52,747</b>	<b>\$ 187,317</b>	<b>\$ 368,112</b>

# Canada Pension Plan Investment Board

## Notes to the Condensed Interim Consolidated Financial Statements

For the three and six months ended September 30, 2018

(Unaudited)

<i>(CAD millions)</i>	As at March 31, 2018 <sup>2</sup>			
	Level 1	Level 2	Level 3	Total
<b>Investments</b>				
<b>Equities</b>				
<b>Canada</b>				
Public equities <sup>1</sup>	\$ 7,779	\$ 4	\$ -	\$ 7,783
Private equities	-	-	1,137	1,137
	7,779	4	1,137	8,920
<b>Foreign developed markets</b>				
Public equities <sup>1</sup>	106,846	7,171	147	114,164
Private equities	-	1,174	63,549	64,723
	106,846	8,345	63,696	178,887
<b>Emerging markets</b>				
Public equities <sup>1</sup>	22,230	1,918	126	24,274
Private equities	-	-	9,877	9,877
	22,230	1,918	10,003	34,151
<b>Total equities</b>	<b>136,855</b>	<b>10,267</b>	<b>74,836</b>	<b>221,958</b>
<b>Fixed income</b>				
Bonds	36,347	27,504	-	63,851
Other debt	-	5,557	16,626	22,183
Money market securities	-	8,213	-	8,213
<b>Total fixed income</b>	<b>36,347</b>	<b>41,274</b>	<b>16,626</b>	<b>94,247</b>
<b>Absolute return strategies<sup>1</sup></b>	<b>-</b>	<b>19,442</b>	<b>1,585</b>	<b>21,027</b>
<b>Real assets</b>				
Real estate	-	-	44,712	44,712
Infrastructure	-	-	27,450	27,450
Energy and resources	-	-	5,729	5,729
Power and renewables	-	-	2,949	2,949
<b>Total real assets</b>	<b>-</b>	<b>-</b>	<b>80,840</b>	<b>80,840</b>
<b>Investment receivables</b>				
Securities purchased under reverse repurchase agreements and securities borrowed	-	6,164	-	6,164
Accrued interest	-	2,026	-	2,026
Derivative receivables	-	1,918	-	1,918
Other	-	641	6	647
<b>Total investment receivables</b>	<b>-</b>	<b>10,749</b>	<b>6</b>	<b>10,755</b>
<b>Total investments</b>	<b>\$ 173,202</b>	<b>\$ 81,732</b>	<b>\$ 173,893</b>	<b>\$ 428,827</b>
<b>Investment liabilities</b>				
Securities sold under repurchase agreements and securities lent	-	(32,504)	-	(32,504)
Securities sold short	(13,574)	-	-	(13,574)
Debt financing liabilities	(17,802)	(6,254)	-	(24,056)
Derivative liabilities	(11)	(1,701)	-	(1,712)
Other	-	(795)	-	(795)
<b>Total investment liabilities</b>	<b>(31,387)</b>	<b>(41,254)</b>	<b>-</b>	<b>(72,641)</b>
Pending trades receivable	-	2,613	-	2,613
Pending trades payable	-	(2,477)	-	(2,477)
<b>Net investments</b>	<b>\$ 141,815</b>	<b>\$ 40,614</b>	<b>\$ 173,893</b>	<b>\$ 356,322</b>

# Canada Pension Plan Investment Board

## Notes to the Condensed Interim Consolidated Financial Statements

For the three and six months ended September 30, 2018

(Unaudited)

<i>(CAD millions)</i>	As at September 30, 2017 <sup>2</sup>			
	Level 1	Level 2	Level 3	Total
<b>Investments</b>				
<b>Equities</b>				
<b>Canada</b>				
Public equities <sup>1</sup>	\$ 6,504	\$ -	\$ -	\$ 6,504
Private equities	-	-	1,167	1,167
	6,504	-	1,167	7,671
<b>Foreign developed markets</b>				
Public equities <sup>1</sup>	97,355	7,828	78	105,261
Private equities	-	1,179	53,958	55,137
	97,355	9,007	54,036	160,398
<b>Emerging markets</b>				
Public equities <sup>1</sup>	18,205	1,678	162	20,045
Private equities	-	-	7,105	7,105
	18,205	1,678	7,267	27,150
<b>Total equities</b>	122,064	10,685	62,470	195,219
<b>Fixed income</b>				
Bonds	33,262	25,933	-	59,195
Other debt	-	4,157	15,932	20,089
Money market securities	-	9,557	-	9,557
<b>Total fixed income</b>	33,262	39,647	15,932	88,841
<b>Absolute return strategies<sup>1</sup></b>	-	18,590	1,500	20,090
<b>Real assets</b>				
Real estate	-	-	39,469	39,469
Infrastructure	-	-	23,270	23,270
Energy and resources	-	-	3,409	3,409
Power and renewables	-	-	3,979	3,979
<b>Total real assets</b>	-	-	70,127	70,127
<b>Investment receivables</b>				
Securities purchased under reverse repurchase agreements and securities borrowed	-	8,981	-	8,981
Accrued interest	-	1,777	-	1,777
Derivative receivables	5	2,105	1	2,111
Other	-	563	-	563
<b>Total investment receivables</b>	5	13,426	1	13,432
<b>Total investments</b>	\$ 155,331	\$ 82,348	\$ 150,030	\$ 387,709
<b>Investment liabilities</b>				
Securities sold under repurchase agreements and securities lent	-	(19,198)	-	(19,198)
Securities sold short	(13,425)	-	-	(13,425)
Debt financing liabilities	(11,400)	(11,900)	-	(23,300)
Derivative liabilities	(10)	(1,604)	-	(1,614)
Other	-	(679)	-	(679)
<b>Total investment liabilities</b>	(24,835)	(33,381)	-	(58,216)
Pending trades receivable	-	5,958	-	5,958
Pending trades payable	-	(7,342)	-	(7,342)
<b>Net investments</b>	\$ 130,496	\$ 47,583	\$ 150,030	\$ 328,109

<sup>1</sup> Includes investments in funds.

<sup>2</sup> Certain comparatives have been reclassified to conform to the current period's presentation.

## Canada Pension Plan Investment Board

### Notes to the Condensed Interim Consolidated Financial Statements

For the three and six months ended September 30, 2018

(Unaudited)

#### b) Transfers between Level 1 and Level 2

During the six months ended September 30, 2018, there were \$5 million of transfers from Level 1 to Level 2 (September 30, 2017 - \$7 million) and no transfers from Level 2 to Level 1 (September 30, 2017 - \$16 million). Transfers between Level 1 and Level 2 depend on the availability of quoted market prices in active markets and valuations using inputs other than quoted prices that are observable. These transfers are deemed to have occurred at the end of period values.

#### c) Level 3 reconciliation

The following presents the reconciliations for investments included in Level 3 of the fair value hierarchy:

#### Reconciliation of changes in fair value for Level 3 investments

For the six months ended September 30, 2018									
(CAD millions)	Fair value as at April 1, 2018 <sup>1</sup>	Gain (loss) included in net investment income	Purchases	Sales <sup>2</sup>	Transfers into Level 3 <sup>3</sup>	Transfers out of Level 3 <sup>3</sup>	Fair value as at September 30, 2018	Change in unrealized gains (losses) on investments still held at September 30, 2018 <sup>4,5</sup>	
<b>Investments</b>									
<b>Equities</b>									
<b>Canada</b>									
Private equities	\$ 1,137	\$ 80	\$ 140	\$ (150)	\$ -	\$ -	\$ 1,207	\$ (8)	
	1,137	80	140	(150)	-	-	1,207	(8)	
<b>Foreign developed markets</b>									
Public equities	147	(18)	-	-	-	-	129	(18)	
Private equities	63,549	4,198	6,832	(5,289)	-	(177)	69,113	1,693	
	63,696	4,180	6,832	(5,289)	-	(177)	69,242	1,675	
<b>Emerging markets</b>									
Public equities	126	(7)	6	(18)	7	(5)	109	(7)	
Private equities	9,877	501	1,532	(581)	552	(850)	11,031	(197)	
	10,003	494	1,538	(599)	559	(855)	11,140	(204)	
<b>Total equities</b>	<b>74,836</b>	<b>4,754</b>	<b>8,510</b>	<b>(6,038)</b>	<b>559</b>	<b>(1,032)</b>	<b>81,589</b>	<b>1,463</b>	
<b>Fixed income</b>									
Other debt	16,626	349	7,083	(3,895)	195	(1,109)	19,249	(107)	
<b>Total fixed income</b>	<b>16,626</b>	<b>349</b>	<b>7,083</b>	<b>(3,895)</b>	<b>195</b>	<b>(1,109)</b>	<b>19,249</b>	<b>(107)</b>	
<b>Absolute return strategies</b>									
	1,585	37	109	(5)	-	-	1,726	37	
<b>Real assets</b>									
Real estate	44,712	(565)	1,520	(1,683)	-	-	43,984	(659)	
Infrastructure	27,450	812	1,854	(287)	-	-	29,829	782	
Energy and resources	5,729	150	182	(1)	-	-	6,060	149	
Power and renewables	2,949	(28)	1,944	-	-	-	4,865	(28)	
<b>Total real assets</b>	<b>80,840</b>	<b>369</b>	<b>5,500</b>	<b>(1,971)</b>	<b>-</b>	<b>-</b>	<b>84,738</b>	<b>244</b>	
<b>Investment receivables</b>									
Derivative receivables	-	1	-	-	-	-	1	1	
Other	6	-	8	-	-	-	14	-	
<b>Total investment receivables</b>	<b>6</b>	<b>1</b>	<b>8</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>15</b>	<b>1</b>	
<b>Total</b>	<b>\$ 173,893</b>	<b>\$ 5,510</b>	<b>\$ 21,210</b>	<b>\$ (11,909)</b>	<b>\$ 754</b>	<b>\$ (2,141)</b>	<b>\$ 187,317</b>	<b>\$ 1,638</b>	

## Canada Pension Plan Investment Board

### Notes to the Condensed Interim Consolidated Financial Statements

For the three and six months ended September 30, 2018

(Unaudited)

For the six months ended September 30, 2017 <sup>1</sup>								
(CAD millions)	Fair value as at April 1, 2017	Gain (loss) included in net investment income	Purchases	Sales <sup>2</sup>	Transfers into Level 3 <sup>3</sup>	Transfers out of Level 3 <sup>3</sup>	Fair value as at September 30, 2017	Change in unrealized gains (losses) on investments still held at September 30, 2017 <sup>4,5</sup>
<b>Investments</b>								
<b>Equities</b>								
<b>Canada</b>								
Private equities	\$ 1,228	\$ 13	\$ 69	\$ (143)	\$ -	\$ -	\$ 1,167	\$ (11)
	1,228	13	69	(143)	-	-	1,167	(11)
<b>Foreign developed markets</b>								
Public equities	76	4	-	(2)	-	-	78	4
Private equities	52,880	1,484	7,331	(6,337)	-	(1,400)	53,958	(258)
	52,956	1,488	7,331	(6,339)	-	(1,400)	54,036	(254)
<b>Emerging markets</b>								
Public equities	153	24	-	(15)	-	-	162	24
Private equities	5,781	172	1,669	(522)	9	(4)	7,105	(111)
	5,934	196	1,669	(537)	9	(4)	7,267	(87)
<b>Total equities</b>	<b>60,118</b>	<b>1,697</b>	<b>9,069</b>	<b>(7,019)</b>	<b>9</b>	<b>(1,404)</b>	<b>62,470</b>	<b>(352)</b>
<b>Fixed income</b>								
Other debt <sup>6</sup>	15,728	(641)	4,203	(3,358)	-	-	15,932	(779)
<b>Total fixed income</b>	<b>15,728</b>	<b>(641)</b>	<b>4,203</b>	<b>(3,358)</b>	<b>-</b>	<b>-</b>	<b>15,932</b>	<b>(779)</b>
<b>Absolute return strategies</b>								
	1,536	(51)	15	-	-	-	1,500	(51)
<b>Real assets</b>								
Real estate	38,732	(345)	1,976	(894)	-	-	39,469	(626)
Infrastructure	23,467	(101)	69	(165)	-	-	23,270	(88)
Energy and resources	3,688	(335)	61	(5)	-	-	3,409	(136)
Power and renewable:	4,432	(449)	-	(4)	-	-	3,979	(400)
<b>Total real assets</b>	<b>70,319</b>	<b>(1,230)</b>	<b>2,106</b>	<b>(1,068)</b>	<b>-</b>	<b>-</b>	<b>70,127</b>	<b>(1,250)</b>
<b>Investment receivables</b>								
Derivative receivables	1	-	-	-	-	-	1	-
<b>Total investment receivables</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>-</b>
<b>Total</b>	<b>\$ 147,702</b>	<b>\$ (225)</b>	<b>\$ 15,393</b>	<b>\$ (11,445)</b>	<b>\$ 9</b>	<b>\$ (1,404)</b>	<b>\$ 150,030</b>	<b>\$ (2,432)</b>

<sup>1</sup> Certain comparatives have been reclassified to conform to the current period's presentation.

<sup>2</sup> Includes return of capital.

<sup>3</sup> Transfers into and out of Level 3 are deemed to have occurred at the end of period values.

<sup>4</sup> Includes the entire change in fair value for the period for those investments that were transferred into Level 3 during the period, and excludes the entire change in fair value for the period for those investments that were transferred out of Level 3 during the period.

<sup>5</sup> Included in Investment income.

<sup>6</sup> Opening balance has been revised for an immaterial misclassification from Level 2 to Level 3.

During the six months ended September 30, 2018 and September 30, 2017, transfers into and out of Level 3 were primarily due to changes in the availability of market observable inputs used to determine fair value.

Notes to the Condensed Interim Consolidated Financial Statements

For the three and six months ended September 30, 2018

(Unaudited)

d) Level 3 – Significant unobservable inputs

The following presents fair values of the investments categorized within Level 3 of the fair value hierarchy, valuation techniques used to determine their fair values, ranges and weighted averages of unobservable inputs:

Valuation techniques and inputs used in the fair value measurement of Level 3 investments

As at September 30, 2018					
(CAD millions)	Fair value	Primary valuation techniques used	Significant unobservable inputs	Range of input values <sup>3</sup>	Weighted average <sup>3</sup>
<b>Public equities</b>					
Fund investments <sup>1</sup>	\$ 238	Net asset value provided by Investment Manager	-	-	-
<b>Private equities</b>					
Direct <sup>1,2</sup>	30,165	Earnings multiples of comparable companies	EBITDA multiple	8.5X-18.3X	13.6X
	6,384	Discounted cash flow	Discount rate	10.5%-12.6%	12.0%
		Value provided by Investment Manager	-	-	-
Fund investments <sup>1</sup>	44,802	Net asset value provided by Investment Manager	-	-	-
<b>Other debt</b>					
Direct private debt <sup>2</sup>	9,758	Discounted cash flow	Discount rate	6.2%-24.8%	11.3%
	2,181	Value provided by Investment Manager	-	-	-
Direct private real estate debt	4,423	Discounted cash flow	Discount rate	4.9%-10.1%	6.6%
Asset-backed securities <sup>1</sup>	844	Valuation model by third-party pricing vendor	-	-	-
Fund investments <sup>1</sup>	2,043	Net asset value provided by Investment Manager	-	-	-
<b>Absolute return strategies</b>					
Fund investments <sup>1</sup>	1,726	Net asset value provided by Investment Manager	-	-	-
<b>Real estate</b>					
Direct <sup>1,2</sup>	20,901	Discounted cash flow	Discount rate	5.0%-14.3%	6.4%
			Terminal capitalization rate	3.8%-9.5%	5.3%
	20,256	Value provided by Investment Manager	-	-	-
Fund investments <sup>1</sup>	2,827	Net asset value provided by Investment Manager	-	-	-
<b>Infrastructure</b>					
Direct <sup>2</sup>	29,780	Discounted cash flow	Discount rate	7.1%-11.9%	9.2%
Fund investments <sup>1</sup>	49	Net asset value provided by Investment Manager	-	-	-
<b>Energy and resources</b>					
Direct <sup>2</sup>	6,060	Discounted cash flow	Discount rate	10.0%-13.6%	11.9%
<b>Power and renewables</b>					
Direct <sup>2</sup>	4,865	Discounted cash flow	Discount rate	10.0%-11.0%	10.5%
Other <sup>1,2</sup>	15	Value provided by Investment Manager	-	-	-
<b>Total</b>	<b>\$ 187,317</b>				

## Canada Pension Plan Investment Board

### Notes to the Condensed Interim Consolidated Financial Statements

For the three and six months ended September 30, 2018

(Unaudited)

		As at March 31, 2018 <sup>4</sup>			
<i>(CAD millions)</i>	Fair value	Primary valuation techniques used	Significant unobservable inputs	Range of input values <sup>3</sup>	Weighted average <sup>3</sup>
<b>Public equities</b>					
Fund investments <sup>1</sup>	\$ 273	Net asset value provided by Investment Manager	-	-	-
<b>Private equities</b>					
Direct <sup>1,2</sup>	25,896	Earnings multiples of comparable companies	EBITDA multiple	8.5X-15.9X	12.6X
	6,578	Discounted cash flow Value provided by Investment Manager	Discount rate	12.0%-12.9%	12.1%
Fund investments <sup>1</sup>	42,089	Net asset value provided by Investment Manager	-	-	-
<b>Other debt</b>					
Direct private debt <sup>2</sup>	10,696	Discounted cash flow	Discount rate	5.7%-29.6%	12.1%
Direct private real estate debt	3,581	Discounted cash flow	Discount rate	4.7%-10.1%	6.6%
Asset-backed securities <sup>1</sup>	3	Valuation model by third-party pricing vendor	-	-	-
Fund investments <sup>1</sup>	2,346	Net asset value provided by Investment Manager	-	-	-
<b>Absolute return strategies</b>					
Fund investments <sup>1</sup>	1,585	Net asset value provided by Investment Manager	-	-	-
<b>Real estate</b>					
Direct <sup>1,2</sup>	21,318	Discounted cash flow	Discount rate	5.0%-14.0%	6.3%
	20,071	Value provided by Investment Manager	Terminal capitalization rate	3.5%-9.5%	5.2%
Fund investments <sup>1</sup>	3,323	Net asset value provided by Investment Manager	-	-	-
<b>Infrastructure</b>					
Direct <sup>2</sup>	27,401	Discounted cash flow	Discount rate	7.1%-15.3%	9.6%
Fund investments <sup>1</sup>	49	Net asset value provided by Investment Manager	-	-	-
<b>Energy and resources</b>					
Direct <sup>2</sup>	5,729	Discounted cash flow	Discount rate	10.0%-13.6%	11.9%
<b>Power and renewables</b>					
Direct <sup>2</sup>	2,949	Discounted cash flow	Discount rate	10.0%-11.0%	10.5%
Other <sup>1,2</sup>	6	Value provided by Investment Manager	-	-	-
<b>Total</b>	\$ 173,893				

# Canada Pension Plan Investment Board

## Notes to the Condensed Interim Consolidated Financial Statements

For the three and six months ended September 30, 2018

(Unaudited)

As at September 30, 2017 <sup>4</sup>						
(CAD millions)	Fair value	Primary valuation techniques used	Significant unobservable inputs	Range of input values <sup>3</sup>	Weighted average <sup>3</sup>	
<b>Public equities</b>						
Fund investments <sup>1</sup>	\$ 240	Net asset value provided by Investment Manager	-	-	-	-
<b>Private equities</b>						
Direct <sup>1,2</sup>	20,871	Earnings multiples of comparable companies	EBITDA multiple	8.0X-15.4X	11.3X	
	4,348	Discounted cash flow Value provided by Investment Manager	Discount rate	12.0%-12.9%	12.1%	
Fund investments <sup>1</sup>	37,011	Net asset value provided by Investment Manager	-	-	-	-
<b>Other debt</b>						
Direct private debt <sup>2</sup>	9,819	Discounted cash flow	Discount rate	5.0%- 22.6%	10.3%	
Direct private real estate debt	4,042	Discounted cash flow	Discount rate	4.7%-9.6%	6.7%	
Asset-backed securities <sup>1</sup>	4	Valuation model by third-party pricing vendor	-	-	-	-
Fund investments <sup>1</sup>	2,067	Net asset value provided by Investment Manager	-	-	-	-
<b>Absolute return strategies</b>						
Fund investments <sup>1</sup>	1,500	Net asset value provided by Investment Manager	-	-	-	-
<b>Real estate</b>						
Direct <sup>1,2</sup>	20,987	Discounted cash flow	Discount rate	5.0%-15.0%	6.4%	
	15,411	Value provided by Investment Manager	Terminal capitalization rate	3.5%-9.5%	5.2%	
Fund investments <sup>1</sup>	3,071	Net asset value provided by Investment Manager	-	-	-	-
<b>Infrastructure</b>						
Direct <sup>2</sup>	23,224	Discounted cash flow	Discount rate	7.4%-12.2%	9.6%	
Fund investments <sup>1</sup>	46	Net asset value provided by Investment Manager	-	-	-	-
<b>Energy and resources</b>						
Direct <sup>2</sup>	3,409	Earnings multiples of comparable companies	EBITDA multiple	7.6X-10.4X	7.9X	
<b>Power and renewables</b>						
Direct <sup>2</sup>	3,979	Transactional price	-	-	-	-
<b>Derivative receivables</b>						
Warrants	1	Option model	Market volatility	30.0%	30.0%	
<b>Total</b>	\$ 150,030					

<sup>1</sup> In certain cases, external valuations are prepared by a third-party and hence, valuation information is not available.

<sup>2</sup> May include certain recently acquired investments held at cost, which approximates fair value.

<sup>3</sup> The range of input values represents the highest and lowest inputs used to value the investments in a particular asset class. The weighted average of the input values is calculated based on the relative fair values of the investments within the asset class. The diversity of investments reported within each asset class, such as the geographic location and industry sector of the investments, may result in certain ranges of inputs being wide and unevenly distributed across the range.

<sup>4</sup> Certain comparatives have been revised to conform to the current period's presentation.

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Significant increases (decreases) in any of the above unobservable inputs would result in a significantly higher or lower fair value measurement. The interrelationship of significant unobservable inputs and fair value measurement for the most significant key inputs identified in the table above is as follows:

- An increase (decrease) in the EBITDA multiple will result in a higher (lower) fair value.
- An increase (decrease) in the discount rate and terminal capitalization rate will result in a lower (higher) fair value.

The fair value of these direct investments classified within Level 3 of the fair value hierarchy above are based on accepted industry valuation methods that may include the use of estimates made by management, appraisers or both where significant judgment is required. By using valuation methods based on reasonable alternative assumptions, different fair values could result. With all other variables held constant the use of reasonable alternative assumptions would result in a decrease of \$5,600 million (March 31, 2018 - \$5,200 million, September 30, 2017 - \$3,200 million) or increase of \$6,100 million (March 31, 2018 - \$6,000 million, September 30, 2017 - \$3,800 million) in net assets. This sensitivity analysis excludes investments where fair values are provided by Investment Managers as the underlying assumptions used are not available to CPP Investment Board.

5. Net investment income

Net investment income is reported net of transaction costs and investment management fees, and is grouped based on the nature of the income.

Net investment income

(CAD millions)	For the three months ended	
	September 30, 2018	September 30, 2017
Interest, dividends, and other investment income <sup>1</sup>	\$ 1,236	\$ 1,098
Realized gains on private equities and real assets <sup>2</sup>	12	42
Unrealized (losses) on private equities and real assets <sup>2</sup>	(13)	(386)
Unrealized gains on investment holding subsidiaries <sup>2,3</sup>	2,665	1,274
Realized and unrealized gains (losses) on public and other investments <sup>2,4</sup>	(786)	958
<b>Total investment income</b>	<b>3,114</b>	<b>2,986</b>
Investment management fees <sup>5</sup>	(428)	(382)
Transaction costs <sup>6</sup>	(135)	(66)
<b>Net investment income</b>	<b>\$ 2,551</b>	<b>\$ 2,538</b>

<sup>1</sup> Net of interest expense on debt financing liabilities of \$110 million (September 30, 2017 - \$10 million).

<sup>2</sup> Includes foreign currency gains or losses.

<sup>3</sup> Unrealized gains on investment holding subsidiaries exclude investment management fees and transaction costs incurred by the subsidiaries. It is a composite of the following sources of income:

Interest, dividends, and other investment income of \$978 million (September 30, 2017 - \$744 million),  
 Realized gains on private equities and real assets of \$1,782 million (September 30, 2017 - \$1,714 million),  
 Unrealized (losses) on private equities and real assets of \$(437) million (September 30, 2017 - \$(764) million), and  
 Realized and unrealized gains (losses) on public and other investments of \$342 million (September 30, 2017 - \$(420) million).

<sup>4</sup> Consists of investment income from public equities, fixed income, absolute return strategies, derivatives and other.

<sup>5</sup> Includes investment management fees of \$346 million (September 30, 2017 - \$283 million) incurred by investment holding subsidiaries.

<sup>6</sup> Includes transaction costs of \$37 million (September 30, 2017 - \$30 million) incurred by investment holding subsidiaries.

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(CAD millions)	For the six months ended	
	September 30, 2018	September 30, 2017
Interest, dividends, and other investment income <sup>1</sup>	\$ 2,806	\$ 2,365
Realized gains on private equities and real assets <sup>2</sup>	11	60
Unrealized gains (losses) on private equities and real assets <sup>2</sup>	824	(763)
Unrealized gains on investment holding subsidiaries <sup>2,3</sup>	7,304	3,063
Realized and unrealized gains (losses) on public and other investments <sup>2,4</sup>	(436)	4,801
<b>Total investment income</b>	<b>10,509</b>	<b>9,526</b>
Investment management fees <sup>5</sup>	(908)	(805)
Transaction costs <sup>6</sup>	(223)	(173)
<b>Net investment income</b>	<b>\$ 9,378</b>	<b>\$ 8,548</b>

<sup>1</sup> Net of interest expense on debt financing liabilities of \$214 million (September 30, 2017 - \$78 million).

<sup>2</sup> Includes foreign currency gains or losses.

<sup>3</sup> Unrealized gains on investment holding subsidiaries exclude investment management fees and transaction costs incurred by the subsidiaries. It is a composite of the following sources of income:

Interest, dividends, and other investment income of \$2,421 million (September 30, 2017 - \$1,653 million),

Realized gains on private equities and real assets of \$2,558 million (September 30, 2017 - \$4,605 million),

Unrealized gains (losses) on private equities and real assets of \$1,284 million (September 30, 2017 - \$(3,198) million), and

Realized and unrealized gains on public and other investments of \$1,041 million (September 30, 2017 - \$3 million).

<sup>4</sup> Consists of investment income from public equities, fixed income, absolute return strategies, derivatives and other.

<sup>5</sup> Includes investment management fees of \$584 million (September 30, 2017 - \$527 million) incurred by investment holding subsidiaries.

<sup>6</sup> Includes transaction costs of \$58 million (September 30, 2017 - \$51 million) incurred by investment holding subsidiaries.

## 6. Segment information

### a) Investment segments

As explained in Corporate information on page 7, CPP Investment Board's sole purpose is to manage amounts transferred to it under Section 108.1 of the CPP Act in the best interests of CPP beneficiaries and contributors. This requires investing in assets with a view to achieving a maximum rate of return without undue risk of loss. During the first quarter, CPP Investment Board made executive management and organizational changes. This resulted in the reorganization of the previous five investment departments into six investment departments as described below. Comparative numbers have been revised to reflect this change.

- Total Portfolio Management - ensures the investing activities of the organization collectively produce a total portfolio that maximizes long-term returns without taking undue risk. Total Portfolio Management also directs the Balancing Portfolio (the remaining portion of the CPP Investment Portfolio after excluding the assets of all active programs managed by the other investment departments) to achieve overall desired investment exposures.
- Capital Markets and Factor Investing - invests assets globally in public equities, fixed income securities, currencies, commodities and derivatives, as well as engagement of investment managers and co-investments to invest in public market securities. Capital Markets and Factor Investing is also responsible for managing CPP Investment Board's liquidity needs.
- Active Equities - invests globally in public and soon-to-be public companies as well as securities focused on long-term global changes which can include earlier stage private companies. Active Equities also works with departments across the organization to ensure that environmental, social and governance

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risks and opportunities are incorporated into our investment decision-making and asset management activities.

- Credit Investments - responsible for public and private credit investments globally. Credit Investments invests across the entire credit structure, including term loans, high-yield bonds, mezzanine lending, structured products and other credit instruments for borrowers in all sectors.
- Private Equity - responsible for private equity investments globally including funds, secondaries and direct private equity investments.
- Real Assets - responsible for investments in real estate, infrastructure, energy and resources, and power and renewables, which are typically long term, tangible assets with steady income streams.

#### Net income from operations by investment segment

For the three months ended September 30, 2018								
(CAD millions)	Total Portfolio Management	Capital Markets and Factor Investing <sup>1</sup>	Active Equities	Credit Investments	Private Equity	Real Assets	Total	
Investment income (loss)	\$ 583	\$ (53)	\$ (44)	\$ 498	\$ 1,654	\$ 476	\$	\$ 3,114
Expenses <sup>3</sup>	(56)	(225)	(72)	(32)	(212)	(212)		(809)
<b>Net income (loss) from operations</b>	<b>\$ 527</b>	<b>\$ (278)</b>	<b>\$ (116)</b>	<b>\$ 466</b>	<b>\$ 1,442</b>	<b>\$ 264</b>	<b>\$</b>	<b>\$ 2,305</b>

For the three months ended September 30, 2017								
(CAD millions)	Total Portfolio Management	Capital Markets and Factor Investing <sup>1</sup>	Active Equities	Credit Investments	Private Equity	Real Assets	Total	
Investment income (loss)	\$ 1,235	\$ 591	\$ 440	\$ (92)	\$ 441	\$ 371	\$	\$ 2,986
Expenses <sup>3</sup>	(75)	(243)	(44)	(36)	(189)	(107)		(694)
<b>Net income (loss) from operations</b>	<b>\$ 1,160</b>	<b>\$ 348</b>	<b>\$ 396</b>	<b>\$ (128)</b>	<b>\$ 252</b>	<b>\$ 264</b>	<b>\$</b>	<b>\$ 2,292</b>

For the six months ended September 30, 2018								
(CAD millions)	Total Portfolio Management	Capital Markets and Factor Investing <sup>2</sup>	Active Equities	Credit Investments	Private Equity	Real Assets	Total	
Investment income	\$ 920	\$ 343	\$ 1,700	\$ 1,096	\$ 4,988	\$ 1,462	\$	\$ 10,509
Expenses <sup>3</sup>	(126)	(611)	(134)	(72)	(368)	(339)		(1,650)
<b>Net income (loss) from operations</b>	<b>\$ 794</b>	<b>\$ (268)</b>	<b>\$ 1,566</b>	<b>\$ 1,024</b>	<b>\$ 4,620</b>	<b>\$ 1,123</b>	<b>\$</b>	<b>\$ 8,859</b>

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For the six months ended September 30, 2017								
	Capital Markets and		Active		Credit		Private	
(CAD millions)	Total Portfolio Management	Factor Investing <sup>2</sup>	Equities	Investments	Equity	Real Assets	Total	
Investment income (loss)	\$ 5,615	\$ 825	\$ 1,017	\$ (141)	\$ 2,262	\$ (52)	\$ 9,526	
Expenses <sup>3</sup>	(145)	(565)	(88)	(68)	(393)	(209)	(1,468)	
<b>Net income (loss) from operations</b>	<b>\$ 5,470</b>	<b>\$ 260</b>	<b>\$ 929</b>	<b>\$ (209)</b>	<b>\$ 1,869</b>	<b>\$ (261)</b>	<b>\$ 8,058</b>	

<sup>1</sup> For the three months ended September 30, 2018, net income from operations attributable to Capital Markets and Factor Investing includes net income from investments managed on a short-term basis to support transfers to the CPP of \$6 million (September 30, 2017 - \$3 million).

<sup>2</sup> For the six months ended September 30, 2018, net income from operations attributable to Capital Markets and Factor Investing includes net income from investments managed on a short-term basis to support transfers to the CPP of \$10 million (September 30, 2017 - \$5 million).

<sup>3</sup> Includes investment management fees, transaction costs and operating expenses.

### Net assets (liabilities) by investment segment

Net assets (liabilities)								
	Capital Markets and		Active		Credit		Private	
(CAD millions)	Total Portfolio Management <sup>1</sup>	Factor Investing <sup>2</sup>	Equities	Investments	Equity	Real Assets	Total	
<b>As at:</b>								
<b>September 30, 2018</b>	<b>\$ 177,115</b>	<b>\$ (236)</b>	<b>\$ (170)</b>	<b>\$ 28,235</b>	<b>\$ 75,953</b>	<b>\$ 87,417</b>	<b>\$ 368,314</b>	
March 31, 2018	176,422	410	1,117	25,050	69,345	83,790	356,134	
September 30, 2017	172,756	463	437	21,870	59,434	73,206	328,166	

<sup>1</sup> Net assets attributable to Total Portfolio Management include debt financing liabilities of \$25,807 million (March 31, 2018 - \$24,056 million, September 30, 2017 - \$23,300 million) and net corporate assets of \$202 million (March 31, 2018 - net corporate liabilities of \$188 million, September 30, 2017 - net corporate assets of \$57 million).

<sup>2</sup> Net assets attributable to Capital Markets and Factor Investing include investments managed on a short-term basis to support transfers to the CPP of \$1 million (March 31, 2018 - \$1 million, September 30, 2017 - \$106 million), which are included in money market securities.

### b) Geographic information

Net investments are presented in the table below based on the region to which they have primary economic exposure:

#### Geographic information

Net investments <sup>1</sup>							
(CAD millions)	Canada	U.S.	Asia	Europe (excluding U.K.)	U.K.	Other	Total
<b>As at</b>							
<b>September 30, 2018</b>	<b>\$ 53,600</b>	<b>\$ 131,050</b>	<b>\$ 79,614</b>	<b>\$ 53,140</b>	<b>\$ 21,236</b>	<b>\$ 29,472</b>	<b>\$ 368,112</b>
March 31, 2018	53,977	135,058	72,512	47,068	19,844	27,863	356,322
September 30, 2017	59,489	115,048	63,523	44,682	19,271	26,096	328,109

<sup>1</sup> Includes debt financing liabilities of \$4,972 million, \$16,293 million, \$4,542 million and nil (March 31, 2018 - \$3,466 million, \$15,807 million, \$4,783 million and nil, September 30, 2017 - \$3,580 million, \$16,365 million, \$2,936 million and \$419 million), based on the currencies of the issuances, in Canada, the U.S., Europe (excluding the U.K.), and the U.K., respectively.

## 7. Risk management

CPP Investment Board manages the investment portfolio on behalf of the Canada Pension Plan (CPP Investment Portfolio). The CPP Investment Portfolio is exposed to a variety of financial risks. These risks include market risk, credit risk and liquidity risk. CPP Investment Board utilizes a total portfolio approach to risk management which considers all of the investment activities taken together, including those made through its unconsolidated investment holding subsidiaries. In the discussion that follows, any references to the investment activities and exposures to risk of CPP Investment Board also include those of its unconsolidated investment holding subsidiaries.

CPP Investment Board employs the Risk/Return Accountability Framework, which establishes accountability of the Board of Directors, the various committees and the investment departments to manage investment related risks. CPP Investment Board manages and mitigates financial risks through the Risk Policy approved by the Board of Directors at least once every fiscal year. This policy contains risk limits and risk management provisions that govern investment decisions. It has been designed to achieve the mandate of CPP Investment Board.

Upper and Lower Absolute Risk Limits and the Absolute Risk Operating Range (AROR) are included within the Risk Policy, and these govern the amount of total investment risk that CPP Investment Board can take in the long term CPP Investment Portfolio. CPP Investment Board monitors the absolute risk, the possible loss of value expressed in absolute dollar and percentage terms, in the CPP Investment Portfolio daily and reports risk exposures to the Board of Directors on at least a quarterly basis. Risk targeting for the Investment Portfolio, and compliance with the Upper/Lower Risk Limits and AROR is assessed using an equity/debt risk equivalence ratio.

### Stress testing

To complement the suite of risk measures used to monitor CPP Investment Portfolio risk, CPP Investment Board further examines the potential impact of exceptional but plausible adverse market events. Stress testing considers the effect of various hypothetical scenarios. CPP Investment Board has a bottom-up approach for stress testing that considers the effect of either historical or predictive shocks across the entire portfolio. The focus is predominantly on those expected to be more extreme tail event losses for the CPP Investment Portfolio. Generally, the forecasted time line considered is one year in order to appropriately include the effect of private asset valuations, as well as initial public market shocks. These are reported to both senior management and the Board.

Unlike VaR measures, which have an implied probability because they are calculated at a specified confidence level, there is generally no implied probability that our stress test scenarios will occur. Instead, trigger points will be highlighted as a potential situation starts to evolve and then the directional trend gauged accordingly.

### a) Market risk

Market risk is the risk that the fair value or future cash flows of an investment or investment liability will fluctuate because of changes in market prices and rates. As discussed previously, CPP Investment Board manages market risk through the Risk/Return Accountability Framework. This includes investing across a wide spectrum of asset classes and investment strategies to earn a diversified set of risk premiums at the total fund level, based on risk limits established in the risk policies. In addition, derivatives are used, where appropriate, to manage certain risk exposures.

CPP Investment Board uses a tiered structure of limits to govern market risk by controlling the size of risk exposures. The top tier Board limits are currently based upon an equity/debt risk equivalency ratio further

discussed under Absolute Risk (see note 7c). The next level of market risk limits are set based upon volatility or exposure measures and reflect the market risk allocation methodology. These limits ensure that none of the individual investment department's market risks grow faster than originally anticipated in the annual planning period. These measures are supplemented with drawdown triggers that highlight to senior management any individual strategies that are having losses outsized to their estimated investment risk levels. The lowest set of limits are investment program specific and are tailored to the way that the strategies are managed. Examples include, DV01 that measures the possible loss/gain in the investment strategy as a result of 1 basis point increase/decrease in interest rate yield curves, hedge ratios and concentration limits that assess the significance of systematic and non-systematic risks for long/short equity, and divergence limits that track the portfolios risks against their respective benchmarks.

Investment departments are expected to stay within their limits but are allowed to request limit increases from the relevant Senior Management Team (SMT) member or Investment Planning Committee (IPC) dependent upon established escalation guidelines. Any limit excesses are reported to the SMT member and/or the IPC. These groups will then make an assessment as to whether to increase the limit or reduce the position.

Market risk comprises the following:

**Equity risk**

The CPP Investment Portfolio invests in both publicly traded and private equities. Equity risk, which is the risk that the fair value or future cash flows will fluctuate because of changes in equity prices, is a significant source of risk of the investment portfolio.

After taking into account derivative positions and with all other variables held constant, a 1% decrease/increase in the S&P 500 Index would result in a loss/profit of \$1,122 million (March 31, 2018 - \$1,200 million, September 30, 2017 - \$1,100 million) on public equity investments. This calculation assumes that equities other than the S&P 500 Index would move in accordance with their historical behaviour conditional on a 1% decrease/increase in the S&P 500 Index.

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**Currency risk**

The CPP Investment Portfolio is exposed to currency risk through holdings of investments or investment liabilities in various currencies. Fluctuations in the relative value of foreign currencies against the Canadian dollar can result in a positive or negative effect on the fair value or future cash flows of these investments and investment liabilities.

In Canadian dollars, the net currency exposures, after allocating foreign currency derivatives are as follows:

**Currency risk exposures**

<i>(CAD millions)</i>	As at September 30, 2018		As at March 31, 2018		As at September 30, 2017	
	Net exposure	% of total	Net exposure	% of total	Net exposure	% of total
United States dollar	\$ 191,627	52 %	\$ 171,898	48 %	\$ 129,222	39 %
Euro	32,887	9	36,135	10	37,377	12
British pound sterling	17,930	5	19,329	5	19,820	6
Australian dollar	12,869	4	11,889	3	10,260	3
Chinese yuan	9,325	3	6,412	2	5,598	2
Hong Kong dollar	9,185	2	8,086	2	4,371	1
Japanese yen	8,623	2	15,019	4	17,533	5
Indian rupee	4,981	1	4,947	1	4,225	1
South Korean won	3,880	1	3,680	1	3,605	1
Swiss franc	3,419	1	4,002	1	3,635	1
Other	16,823	5	17,811	7	15,141	5
Total foreign exposure	311,549	85	299,208	84	250,787	76
Canadian dollar	56,563	15	57,114	16	77,322	24
<b>Total</b>	<b>\$ 368,112</b>	<b>100 %</b>	<b>\$ 356,322</b>	<b>100 %</b>	<b>\$ 328,109</b>	<b>100 %</b>

With all other variables and underlying values held constant, a 1% appreciation/depreciation of the Canadian dollar against all other currencies would result in a decrease/increase in net investments as follows:

**Currency risk sensitivity**

<i>(CAD millions)</i>	As at September 30, 2018		As at March 31, 2018		As at September 30, 2017	
	Decrease/Increase in Net Assets		Decrease/Increase in Net Assets		Decrease/Increase in Net Assets	
United States dollar	\$	1,916	\$	1,719	\$	1,292
Euro		329		361		374
British pound sterling		179		193		198
Australian dollar		129		119		103
Other		562		600		541
<b>Total</b>	<b>\$</b>	<b>3,115</b>	<b>\$</b>	<b>2,992</b>	<b>\$</b>	<b>2,508</b>

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**Interest rate risk**

Interest rate risk is the risk that the fair value or future cash flows of an investment or investment-related liability will fluctuate because of changes in market interest rates. The CPP Investment Portfolio is exposed to interest rate risk primarily through holdings of fixed income securities, certain investment liabilities and interest rate derivative instruments.

With all other variables held constant, a 1 basis point increase/decrease in nominal risk free rates would result in a decrease/increase in the value of investments directly impacted by interest rate changes as follows:

**Interest rate risk sensitivity<sup>1</sup>**

<i>(CAD millions)</i>	As at September 30, 2018		As at March 31, 2018		As at September 30, 2017	
<b>Maturity</b>	Decrease/Increase in Net Assets		Decrease/Increase in Net Assets		Decrease/Increase in Net Assets	
Within 1 year	\$	-	\$	-	\$	-
1 to 5 years		12		12		8
6 to 10 years		15		13		11
Over 10 years		39		37		35
<b>Total</b>	\$	66	\$	62	\$	54

<sup>1</sup> This sensitivity only applies to small yield curve changes. More substantial (stress) shocks would impact the value of real assets but for 1 basis point moves their values remain unchanged.

The CPP Investment Portfolio's sensitivity to various countries' risk free rates are concentrated in North America with 45% (March 31, 2018 – 51%, September 30, 2017 – 52%) in Canada, 44% (March 31, 2018 – 47%, September 30, 2017 – 49%) in the United States, 8% (March 31, 2018 – 1%, September 30, 2017 – nil) in Europe, and minor exposures to other regions in all periods.

**Credit spread risk**

Credit spread is the difference in yield on certain securities compared to a comparable risk free security (i.e. government issued) with the same maturity date. Credit spread risk is the risk that the fair value of these securities will fluctuate because of changes in credit spread. As at September 30, 2018, 74% (March 31, 2018 – 80%, September 30, 2017 – 83%) of credit spread risk was in A or better rated debt, primarily in Canadian provincial bonds.

With all other variables held constant, a 1 basis point widening of the credit spreads would result in a decrease in net assets by \$29 million (March 31, 2018 – \$30 million, September 30, 2017 - \$31 million).

**Other price risk**

Other price risk is the risk that the fair value or future cash flows of an investment will fluctuate because of changes in market prices arising from other risk factors such as commodity price risk, basis risk and volatility.

**b) Credit risk**

Credit risk is the risk of financial loss due to a counterparty failing to meet its contractual obligations, or a reduction in the value of the assets due to a decline in the credit quality of the borrower, counterparty, guarantor or the assets (collateral) supporting the credit exposure. The CPP Investment Portfolio's credit risk exposure arises primarily through its investment in debt securities and over-the-counter derivatives.

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The carrying amounts of these investments as presented in the Condensed Interim Consolidated Schedule of Investment Portfolio represent the maximum direct credit risk exposure at the Balance Sheet date.

The fair value of debt securities and over-the-counter derivatives exposed to credit risk, by credit rating category and without taking account of any collateral held or other credit enhancements was as follows:

#### Credit risk exposures

Credit rating	As at September 30, 2018							As at March 31, 2018		As at September 30, 2017	
	Bonds <sup>1</sup>	Money market securities <sup>1</sup>	Reverse repurchase agreements <sup>1</sup>	Over-the-counter derivatives	Other <sup>1,2</sup>	Total	% of total	Total	% of total	Total	% of total
AAA	\$ 16,657	\$ 29	\$ -	\$ -	\$ 735	\$ 17,421	17 %	\$ 12,072	13 %	\$ 10,551	12 %
AA	30,393	2,804	-	414	107	33,718	34	28,801	32	30,111	33
A	23,062	3,531	1,322	927	463	29,305	30	33,457	37	36,920	40
BBB	2,195	-	2,358	299	1,300	6,152	6	5,038	6	3,847	4
BB	253	-	-	-	3,779	4,032	4	3,770	4	3,343	4
B	-	-	-	-	7,517	7,517	7	6,065	7	5,577	6
CCC/D	-	-	-	-	2,323	2,323	2	783	1	847	1
<b>Total</b>	<b>\$ 72,560</b>	<b>\$ 6,364</b>	<b>\$ 3,680</b>	<b>\$ 1,640</b>	<b>\$ 16,224</b>	<b>\$ 100,468</b>	<b>100 %</b>	<b>\$ 89,986</b>	<b>100 %</b>	<b>\$ 91,196</b>	<b>100 %</b>

<sup>1</sup> Includes accrued interest.

<sup>2</sup> Includes direct investments in private debt, private real estate debt and asset-backed securities.

In addition to the above, the CPP Investment Portfolio is indirectly exposed to credit risk on the underlying securities of fund investments.

Credit risk exposure is mitigated on certain financial assets and financial liabilities, which have conditional offset rights in the event of default, insolvency or bankruptcy. For securities purchased under reverse repurchase agreements, securities sold under repurchase agreements and over-the-counter derivatives, collateral is collected from or pledged to counterparties to manage credit exposure (see note 8). In addition, in the event of default, amounts with a specific counterparty are settled on a net basis under master netting or similar arrangements, such as the Global Master Repurchase Agreement and the International Swaps and Derivatives Association Netting Agreements.

#### Credit VaR

Credit Risk for the CPP Investment Portfolio is estimated using a Monte Carlo simulation that incorporates likelihood of default, credit rating migration and recovery in the event of default for underlying credit instruments. The primary risk measure used to monitor credit risk at the total portfolio level is VaR over a one year period at a 99% level of confidence. As at September 30, 2018, Credit VaR was \$4,619 million (March 31, 2018 - \$4,106 million, September 30, 2017 - \$3,700 million) which implies there is a 1% chance that the CPP Investment Board portfolio of credit instruments will lose more than this amount in any given year due to default and credit migration risk.

#### c) Absolute risk

CPP Investment Board uses a simulation methodology to derive a distribution of potential portfolio outcomes at a future point in time. These distributions are used to estimate a variety of risk measures to monitor the absolute risk of the CPP Investment Portfolio across various time periods. The primary risk governance measure within the Risk/Return Accountability Framework is expressed using an equity/debt risk equivalency ratio. It is the proportion of equity versus debt in a simple two-asset-portfolio (Global Equity and Canadian Government Bonds) that would give the same measured absolute risk as that of the CPP Investment Portfolio. Absolute Risk for this purpose is defined as the Conditional Value at Risk (CVaR), after

inflation, at the 90<sup>th</sup> percentile expressed over a five-year horizon and encompasses both market and credit risks.

The Absolute Risk measure, CVaR, is based on the average of the worst ten percent outcomes in the simulated return distribution over a five-year period. It captures the impact of extreme market events that would lead to large losses within the CPP Investment Portfolio.

The methodology employed to calculate CVaR assumes that historical market data is a sound basis for estimating potential future losses but it allows for the incorporation of forward-looking return expectations. If future market conditions and interrelationships of equity markets, interest rates, foreign exchange rates and other market prices differ significantly from those of the past, then the actual losses could materially differ from those estimated. To ensure a variety of business cycles and market conditions are captured within the risk model, a long historical data period (1971 - current) is used in simulating the distribution of potential outcomes. The CVaR measure provides an estimate of the average value in this distribution of potential losses that CPP Investment Portfolio could experience. It is not an estimate of the worst-case scenario.

As at September 30, 2018, the CVaR of the CPP Investment Portfolio was \$67,864 million (March 31, 2018 - \$70,328 million, September 30, 2017 - \$69,400 million) with an associated equity/debt risk equivalency ratio of 87% (March 31, 2018 - 86%, September 30, 2017 - 85%). Note that the CVaR measure necessitates an estimate of mean expected returns on the CPP Investment Portfolio over the upcoming five years. The above CVaR estimate is strongly influenced by equity returns realized throughout the historical data period used within the risk model. As forward-looking expectations are further considered within the modeling process the CVaR value may move materially as the mean return estimates change through time. Changes in equity/debt risk equivalency ratio will also occur, but likely smaller in magnitude.

**d) Liquidity risk**

Liquidity risk is the risk of being unable to generate sufficient cash or its equivalent in a timely and cost-effective manner to meet commitments and liabilities as they come due. CPP Investment Board supplements its management of liquidity risk through its ability to raise funds through the issuance of commercial paper and term debt and transacting in securities sold under repurchase agreements.

CPP Investment Board also maintained \$6,024 million (March 31, 2018 - \$6,012 million, September 30, 2017 - \$5,900 million) of unsecured credit facilities to meet potential liquidity requirements. There were no credit facilities drawn as at September 30, 2018, March 31, 2018 and September 30, 2017.

Refer to note 7e for investment liabilities terms to maturity.

# Canada Pension Plan Investment Board

## Notes to the Condensed Interim Consolidated Financial Statements

For the three and six months ended September 30, 2018

(Unaudited)

### e) Terms to maturity

The tables below present the contractual maturities of investments and investment liabilities:

#### Investments

(CAD millions)	Terms to maturity						Average effective yield	As at		Average effective yield	As at	
	As at							March 31, 2018			September 30, 2017	
	Within 1 year	1 to 5 years	6 to 10 years	Over 10 years	Total <sup>1</sup>	Total <sup>1</sup>		Total <sup>1</sup>	Total <sup>1</sup>		Total <sup>1</sup>	Total <sup>1</sup>
<b>Non-marketable bonds</b>												
Canadian provincial government	\$ 1,163	\$ 5,535	\$ 4,361	\$ 11,817	\$ 22,876	3.1 %	\$ 23,527	2.9 %	\$ 23,303	3.1 %		
<b>Marketable bonds</b>												
Government of Canada	-	3,155	281	1,030	4,466	2.4	5,017	2.1	4,382	2.2		
Canadian provincial government	-	1,245	1,662	2,937	5,844	3.1	6,483	2.9	5,746	3.1		
Canadian government corporations	-	1,985	740	479	3,204	2.8	2,626	2.6	1,657	2.7		
Foreign government	817	16,541	9,116	5,677	32,151	2.6	23,113	2.9	22,369	2.5		
Corporate bonds	527	1,363	901	592	3,383	3.8	3,085	3.4	1,738	3.1		
<b>Other debt</b>												
Private debt <sup>2</sup>	104	4,926	6,530	857	12,417	7.0	9,573	8.4	8,071	9.1		
Private real estate debt <sup>2</sup>	848	1,308	2,057	-	4,213	6.6	3,582	6.6	4,042	6.8		
Asset-backed securities	-	5	77	780	862	2.3	5	4.4	8	4.3		
<b>Securities purchased under reverse repurchase agreements</b>	3,680	-	-	-	3,680	1.2	6,164	1.8	8,981	0.9		
<b>Securities borrowed<sup>3</sup></b>	-	-	-	-	-	n/a	-	n/a	-	n/a		
<b>Total</b>	<b>\$ 7,139</b>	<b>\$ 36,063</b>	<b>\$ 25,725</b>	<b>\$ 24,169</b>	<b>\$ 93,096</b>	<b>3.3 %</b>	<b>\$ 83,175</b>	<b>3.3 %</b>	<b>\$ 80,297</b>	<b>3.3 %</b>		

<sup>1</sup> Represents fair value.

<sup>2</sup> Includes direct investments and excludes fund investments.

<sup>3</sup> Relates to cash collateral and average effective yield is not applicable.

#### Investment liabilities

(CAD millions)	Terms to maturity												
	As at September 30, 2018						As at March 31, 2018			As at September 30, 2017			
	Within 1 year	1 to 5 years	6 to 10 years	Over 10 years	Total <sup>1</sup>	Fair value	Weighted average interest rate	Total <sup>1</sup>	Fair value	Weighted average interest rate	Total <sup>1</sup>	Fair value	Weighted average interest rate
<b>Securities sold under repurchase agreements</b>	\$ 31,564	\$ -	\$ -	\$ -	\$ 31,564	\$ 31,477	2.0 %	\$ 32,559	\$ 32,504	1.7 %	\$ 19,264	\$ 19,198	1.4 %
<b>Securities lent<sup>4</sup></b>	39	-	-	-	39	39	n/a	-	-	n/a	-	-	n/a
<b>Securities sold short<sup>2,3</sup></b>	20,536	-	-	-	20,536	20,536	n/a	13,574	13,574	n/a	13,425	13,425	n/a
<b>Debt financing liabilities</b>													
Commercial paper payable	4,224	-	-	-	4,224	4,201	2.4	6,263	6,254	1.9	11,927	11,900	1.3
Term debt	5,085	9,386	5,795	1,501	21,767	21,606	2.2	17,910	17,802	1.8	11,443	11,400	1.2
<b>Total</b>	<b>\$ 61,448</b>	<b>\$ 9,386</b>	<b>\$ 5,795</b>	<b>\$ 1,501</b>	<b>\$ 78,130</b>	<b>\$ 77,859</b>	<b>2.2 %</b>	<b>\$ 70,306</b>	<b>\$ 70,134</b>	<b>1.8 %</b>	<b>\$ 56,059</b>	<b>\$ 55,923</b>	<b>1.3 %</b>

<sup>1</sup> Represents contractual amounts.

<sup>2</sup> Considered repayable within one year based on the earliest period in which the counterparty could request payment under certain conditions.

<sup>3</sup> Includes equities sold short for which the average interest rate is not applicable.

<sup>4</sup> Relates to cash collateral and average interest rate is not applicable.

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(Unaudited)

8. Collateral

Collateral transactions are conducted to support investment activities under terms and conditions that are common and customary to collateral arrangements. The net fair value of collateral held and pledged was as follows:

Collateral held and pledged

<i>(CAD millions)</i>	As at September 30, 2018	As at March 31, 2018	As at September 30, 2017
<b>Third-party assets held as collateral on<sup>1</sup>:</b>			
Reverse repurchase agreements	\$ 3,683	\$ 6,187	\$ 8,987
Over-the-counter derivative transactions	517	692	648
Securities lent <sup>2</sup>	42	-	-
Other debt	874	760	681
<b>Own and third-party assets pledged as collateral on:</b>			
Repurchase agreements	(31,599)	(32,621)	(19,192)
Securities sold short <sup>3,4</sup>	(24,625)	(16,610)	(16,242)
Over-the-counter derivative transactions	(673)	(315)	(313)
Private equities	(7,011)	(5,942)	(5,194)
Other debt	(4,448)	(4,417)	(3,923)
<b>Total</b>	<b>\$ (63,240)</b>	<b>\$ (52,266)</b>	<b>\$ (34,548)</b>

<sup>1</sup> The fair value of the collateral held that may be sold or repledged as at September 30, 2018 was \$4,607 million (March 31, 2018 - \$6,967 million, September 30, 2017 - \$9,792 million). The fair value of collateral sold or repledged as at September 30, 2018 was \$1,079 million (March 31, 2018 - \$5,969 million, September 30, 2017 - \$4,147 million).

<sup>2</sup> Includes cash collateral of \$39 million (March 31, 2018 - nil, September 30, 2017 - nil). The fair value of securities lent as at September 30, 2018 was \$41 million (March 31, 2018 - nil, September 30, 2017 - nil).

<sup>3</sup> The fair value of securities borrowed as at September 30, 2018 was \$20,697 million (March 31, 2018 - \$13,045 million, September 30, 2017 - \$9,848 million) of which \$20,180 million was sold or repledged (March 31, 2018 - \$12,547 million, September 30, 2017 - \$9,848 million) for securities sold short.

<sup>4</sup> Comparative figures have been revised to include third-party collateral pledged on bond shorts.

9. Commitments

CPP Investment Board has entered into commitments related to the funding of investments. These commitments are generally payable on demand based on the funding needs of the investment subject to the terms and conditions of each agreement. As at September 30, 2018, the unfunded commitments totalled \$44,017 million (March 31, 2018 - \$41,767 million, September 30, 2017 - \$39,425 million).

CPP Investment Board made lease and other commitments, which require future annual payments as follows:

Lease and other commitments

<i>(CAD millions)</i>	As at September 30, 2018	As at March 31, 2018	As at September 30, 2017
Within one year	\$ 22	\$ 36	\$ 31
After one year but not more than five years	126	115	118
More than five years	27	26	35
<b>Total</b>	<b>\$ 175</b>	<b>\$ 177</b>	<b>\$ 184</b>

## 10. Related party transactions

Related parties of CPP Investment Board include unconsolidated subsidiaries, joint ventures and associates and all related party investments are measured at fair value.

CPP Investment Board provides financial or other support to investment holding subsidiaries (as referred to in note 1b) to fund their day-to-day operations and investment activities under loan agreements or shareholder's resolutions, as needed.

In addition, CPP Investment Board also owns interests in unconsolidated subsidiaries that are themselves investments. These investments, some of which may be wholly-owned, are controlled through ownership rights directly or indirectly by CPP Investment Board.

Investments in joint ventures are those arrangements where CPP Investment Board has joint control. An associate is an entity which CPP Investment Board has the ability to exercise significant influence over decision making.

Related party transactions consist of investments and investment income primarily in private equities, debt and real assets. These transactions are measured at fair value and will, therefore, have the same impact on net assets and net investment income as those investment transactions with unrelated parties.

Related party transactions with consolidated subsidiaries are eliminated upon consolidation.

## 11. Guarantees

As part of certain investment transactions, CPP Investment Board agreed to guarantee, as at September 30, 2018, up to \$3,043 million (March 31, 2018 - \$2,842 million, September 30, 2017 - \$2,600 million) to other counterparties in the event certain investee entities default under the terms of loan and other related agreements.

## 12. Enhanced Canada Pension Plan

In December 2016, Royal Assent was given to Bill C-26 titled *An Act to Amend the Canada Pension Plan, the Canada Pension Plan Investment Board Act and the Income Tax Act*. These legislative amendments increase the amount of CPP contributions and the corresponding retirement pensions and other benefits that will be paid on CPP contributions made after 2018. The CPP Act now defines two separate parts of the CPP as the "base" CPP (being the existing CPP) and "additional" CPP (being the new contributions and corresponding benefits). The additional CPP contributions begin on January 1, 2019. The assets of the additional CPP will be accounted for separately from those of the base CPP.

In order to prepare for the additional CPP account, costs are being incurred by CPP Investment Board. Since CPP Investment Board will not receive additional CPP contributions until January 1, 2019, these costs are, in effect, being paid for from funds transferred to CPP Investment Board on account of the base CPP. To ensure that these costs and the related accrued interest are properly attributed to the additional CPP rather than the base CPP, CPP Investment Board will reimburse the base CPP account from the additional CPP account once CPP Investment Board has received sufficient additional CPP funds to do so.

As at September 30, 2018, the CPP Investment Board has incurred \$17 million (March 31, 2018 - \$8 million, September 30, 2017 – nil) in order to prepare for the additional CPP. The amount is recorded in other assets.