Financial Statements of

TEACHERS' PENSION PLAN

Year ended December 31, 2018

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INDEPENDENT AUDITORS' REPORT

To the Teachers' Pension Plan Trustee Inc.

Opinion

We have audited the financial statements of Teachers' Pension Plan (the "Entity"), which comprise:

- the statement of financial position as at December 31, 2018;
- the statement of changes net assets available for benefits for the year then ended;
- the statement of changes in pension obligation for the year then ended;
- the statement of changes in deficit for the year then ended;
- and notes, comprising a summary of significant accounting policies and other explanatory information

(Hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Entity as at December 31, 2018, and the changes in net assets available for benefits, changes in pension obligation and changes in deficit for the year then ended in accordance with Canadian accounting standards for pension plans.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the "Auditors' Responsibilities for the Audit of the Financial Statements" section of our auditors' report.

We are independent of the Entity in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada and we have fulfilled our other responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Other Information

Management is responsible for the other information. Other information comprises:

- the information, other than the financial statements and the auditors' report thereon, included in a document entitled "Annual Report"

Our opinion on the financial statements does not cover the other information and we do not and will not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information identified above and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit and remain alert for indications that the other information appears to be materially misstated.

We obtained the information, other than the financial statements and the auditors' report thereon, included in the Annual Report as at the date of this auditors' report. If, based on the work we have performed on this other information, we conclude that there is a material misstatement of this other information, we are required to report that fact in the auditors' report.

We have nothing to report in this regard.

Responsibilities of Management and Those Charged with Governance for the Financial Statements
Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian accounting standards for pension plans, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Entity's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Entity or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Entity's financial reporting process.

Auditors' Responsibilities for the Audit of the Financial Statements
Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit.

KPMG

We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.

  The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Entity to cease to continue as a going concern.

- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represents the underlying transactions and events in a manner that achieves fair presentation.

- Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

KPMG LLP

Chartered Professional Accountants, Licensed Public Accountants
April 23, 2019
Halifax, Canada

Financial Statements of

TEACHERS' PENSION PLAN

Year ended December 31, 2018

Contents

Financial Statements

Statement of Financial Position

December 31, 2018, with comparative information for 2017		2018		2017
(in thousands of dollars)				
Net assets available for benefits				
Assets				
Cash	$	33,703	$	41,743
Contributions receivable:				
Employers'		8,838		7,751
Employees'		3,709		4,047
Due from administrator (note 12)		-		1,351
Receivable from repurchase agreements		61,734		-
Receivable from pending trades		10,034		14,166
Accounts receivable		2,651		1,686
Accrued investment income		12,708		11,375
Investments (note 5)		4,927,462		5,052,468
Total Assets		5,060,839		5,134,587
Liabilities				
Due to administrator (note 12)		404		-
Payable for pending trades		50,795		18,000
Payable for repurchase agreements		1,190		-
Accounts payable and accrued liabilities		3,446		3,868
Investment-related liabilities (note 5)		67,117		1,610
Total Liabilities		122,952		23,478
Net assets available for benefits	$	4,937,887	$	5,111,109
Accrued pension obligation and deficit				
Accrued pension obligation (note 7)	$	6,555,529	$	6,517,343
Deficit (note 7)		(1,617,642)		(1,406,234)
Commitments (note 8)				
Accrued pension obligation and deficit	$	4,937,887	$	5,111,109

The accompanying notes are an integral part of these financial statements.

On behalf of the Board:

John B. Carter
Chair

Karen M. Gatien
Director

Kyle Marryatt
Director

Statement of Changes in Net Assets Available for Benefits

Year ended December 31, 2018, with comparative information for 2017	2018	2017
(in thousands of dollars)		
Increase in assets		
Contributions (note 4)	$ 221,007	$ 211,277
Transfers from other pension plans	3,275	2,373
Investment activities (note 5)	157,119	139,963
Change in market value of investments (note 5)	-	272,816
Total increase in assets	381,401	626,429
Decrease in assets		
Benefits paid (note 9)	398,697	392,517
Transfers to other pension plans	2,034	1,382
Administrative expenses (note 10)	21,559	21,657
Change in market value of investments (note 5)	132,333	-
Total decrease in assets	554,623	415,556
(Decrease) increase in net assets available for benefits	(173,222)	210,873
Net assets available for benefits, beginning of year	5,111,109	4,900,236
Net assets available for benefits, end of year	$ 4,937,887	$ 5,111,109

The accompanying notes are an integral part of these financial statements.

Statement of Changes in Pension Obligation

Year ended December 31, 2018, with comparative information for 2017	2018	2017
(in thousands of dollars)		
Accrued pension obligation, beginning of year	$ 6,517,343	$ 6,309,580
Increase in accrued pension benefits:		
Interest on accrued pension obligation	394,299	388,039
Benefits accrued	126,559	116,023
Changes in actuarial assumptions (note 7)	-	77,362
Net experience gains (note 7)	-	20,238
	520,858	601,662
Decrease in accrued pension benefits:		
Benefits paid and transfers to other pension plans	400,731	393,899
Net experience losses (note 7)	81,941	-
	482,672	393,899
Net increase in accrued pension benefits	38,186	207,763
Accrued pension obligation, end of year	$ 6,555,529	$ 6,517,343

Statement of Changes in Deficit

Year ended December 31, 2018, with comparative information for 2017	2018	2017
(in thousands of dollars)		
Deficit, beginning of year	$ 1,406,234	$ 1,409,344
Decrease (increase) in net assets available for benefits	173,222	(210,873)
Net increase in accrued pension obligation	38,186	207,763
Deficit, end of year	$ 1,617,642	$ 1,406,234

See accompanying notes to financial statements.

Notes to Financial Statements

Year ended December 31, 2018
(in thousands of dollars)

1. Authority and description of Plan

The following description of the Teachers' Pension Plan (the "Plan") is a summary only. For more complete information, reference should be made to the Plan legislative documents and agreements.

General

The Plan is governed by the *Teachers' Pension Act* (the "*Act*") as part of the Acts of Nova Scotia. It is a contributory defined benefit pension plan covering public school and community college teachers and is co-sponsored by the Province of Nova Scotia (the "Province") and the Nova Scotia Teachers' Union (the "Union"). The *Act* established the Nova Scotia Teachers' Pension Fund (the "Fund") for the purpose of crediting employer and employee contributions, investment earnings and meeting the Plan's obligations.

The detailed provisions of the Plan, including pension eligibility criteria and benefit formulas, are contained in the *Act* and in the Regulations made under the *Act*.

As part of the June 22, 2005 Agreement between the Province and the Union, the Province and the Union agreed to joint and equal participation in the governance of the Plan including the sharing of any actuarial surpluses or deficits between the Province and the beneficiaries of the Plan upon the transfer of the Plan to a newly formed trustee entity. Teachers' Pension Plan Trustee Inc. (the "TPPTI") was incorporated to act as trustee of the Fund and on April 1, 2006, the TPPTI became the trustee of the Fund. The 2005 Agreement was rescinded and replaced with a new agreement on July 2, 2014. However, there were no changes to the governance of the Plan or the sharing of actuarial surpluses or deficits.

The TPPTI is responsible for the administration of the Plan and the investment management of the Fund assets. The investment of the Fund assets is guided by the Fund's Statement of Investment Policies & Goals (the "SIP&G") as written by the TPPTI. The SIP&G sets out the parameters within which the investments are made. These parameters include permissible investments and the policy asset mix. The Investment Beliefs, also found within the SIP&G, state the general principles upon which the investments are made.

Funding

Plan benefits are funded by contributions and investment earnings. Contributions are made by active members of the Plan and are matched by either the Province or participating employers. The determination of the value of the benefits and required contributions is made on the basis of periodic actuarial valuations (note 7).

In accordance with the Plan regulations, employers and employees are required to contribute 11.3% of salary up to the Year's Maximum Pensionable Earnings (the "YMPE") per the Canada Pension Plan (the "CPP") and 12.9% of salary above the YMPE.

Authority and description of Plan (continued)

Retirement benefits

The pension benefit consists of two components. The lifetime pension, for every year of pensionable service, is 1.3% times the 5-year highest average salary at retirement (the "HAS-5") up to the average YMPE, plus 2.0% times the portion of the HAS-5 in excess of the average YMPE (if applicable). The bridge benefit, for every year of pensionable service, is 0.7% times the lesser of (i) the HAS-5, and (ii) the average YMPE. The lifetime pension is payable for life, while the bridge benefit is payable until age 65, at which point it ceases as a result of integration with the CPP.

Plan members are eligible for a pension upon reaching any of the following criteria

- 35 years of service;
- age 50 with 30 years of service (reduced pension);
- age 55 with an age plus service factor of 85 "Rule of 85";
- age 55 with two years of service (reduced pension);
- age 60 with 10 years of service;
- age 65 with two years of service.

Indexing

For pensions with an effective date before August 1, 2006, the rate is equal to the increase in the 12-month average Consumer Price Index ("CPI") for Canada, less 1%, to a maximum of 6%.

Indexing in a given year for pensions with an effective date on or after August 1, 2006, as well as those of existing pensioners who opted for the new indexing arrangement, depends on the funding level of the Plan. If the funding level as at December 31 of the preceding fiscal year is less than 90%, no indexing will be provided. At a funding level of between 90% and 100%, indexing may be granted at 50% of the increase in the 12-month average CPI up to a maximum of 6%, at the discretion of the Board of Trustees.

If the funding level is greater than 100%, indexing will be provided at 100% of the increase in the 12-month average CPI up to a maximum of 6%, to the extent that it does not reduce the funding level to below 100%; however, pensions will be increased by at least 50% of the increase in the 12-month average CPI up to a maximum of 6%. For the purposes of the valuation, it was assumed that indexing would not be paid in years in which it is discretionary.

Disability Benefits

Prior to August 1, 2014, active members who became mentally or physically disabled were entitled to apply for a disability pension from the Plan. Effective August 1, 2014, however, disability coverage was moved to the union's long-term disability insurance plan, and the ability to apply for a disability pension from the Plan was discontinued except in very limited circumstances.

Authority and description of Plan (continued)

Death Benefits

Upon the death of a vested member, the surviving spouse is entitled to receive 60% of the vested member's pension benefit payable for life, or a higher percentage if the member elected an optional form of pension. Eligible children are entitled to receive 10% of the vested member's pension benefit, payable until age 18 (or 25 while still in school).

Termination Benefits

Upon termination of employment, a vested member may choose to defer their pension until they satisfy one of the above eligibility criteria, or they may remove their funds from the Plan in the form of a commuted value (or refund of contributions, for service prior to January 1, 1988).

Refunds

The benefit payable upon termination or death of a non-vested member, or upon death prior to retirement of a vested member with no eligible survivors, is a lump sum refund of the member's contributions with interest.

2. Basis of Preparation

a. Basis of presentation

These financial statements are prepared in Canadian dollars, which is the Plan's functional currency in accordance with the accounting standards for pension plans in Part IV of the Canadian Institute of the Chartered Professional Accountants (CPA) Canada Handbook (Section 4600). Section 4600 provides specific accounting guidance on investments and pension obligations. For accounting policies that do not relate to either investments or pension obligations, the Plan must consistently comply with either International Financial Reporting Standards ("IFRS") in Part I or Accounting Standards for Private Enterprises in Part II of the CPA Canada Handbook. The Plan has elected to comply on a consistent basis with IFRS in Part I of the CPA Canada Handbook. To the extent that IFRS in Part I is inconsistent with Section 4600, Section 4600 takes precedence.

Consistent with Section 4600, investment assets and liabilities are presented on a non-consolidated basis even when the investment is in an entity over which the Plan has effective control. Earnings of such entities are recognized as income as earned and as dividends are declared. The Plan's total investment income includes valuation adjustments required to bring the investments to their fair value.

These financial statements are prepared on a going concern basis and present the aggregate financial position of the Plan as a separate reporting entity.

These financial statements were authorized for issue by the Board of Trustees of the Teachers' Pension Plan Trustee Inc. on April 23, 2019.

b. Basis of measurement

The financial statements have been prepared on the historical cost basis except for financial instruments which are measured at fair value through the statement of changes in net assets available for benefits and derivative financial instruments which are measured at fair value. Units of subsidiaries held are measured at the fair value of the underlying assets and liabilities.

c. Use of estimates and judgments

The preparation of the financial statements in conformity with Section 4600 and IFRS requires management to make judgments, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets and liabilities at the date of the statement of financial position, the reported amounts of changes in net assets available for benefits and accrued pension benefits during the year. Actual results may differ from those estimates. Significant estimates included in the financial statements relate to the valuation of real estate, infrastructure, agriculture & timber, and the determination of the accrued pension obligation.

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 years affected.

3. Significant accounting policies

a. Investment transactions, income recognition and transaction costs

i. **Investment transactions:**
Investment transactions are accounted for on a trade date basis.

ii. **Income recognition:**
Income from investments is recorded on an accrual basis and includes interest, dividends and gains and losses that have been realized on disposal of investments and the unrealized appreciation and depreciation in the fair value of investments.

iii. **Transaction costs:**
Brokers' commissions and other transaction costs are recorded in the statement of changes in net assets available for benefits when incurred.

b. Foreign currency translation

Transactions denominated in foreign currencies are translated into Canadian dollars at the rates of exchange prevailing on the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies at the reporting date are re-translated into Canadian dollars at the exchange rate at that date.

Foreign currency differences arising on re-translation are recognized in the statement of changes in net assets available for benefits as a change in net unrealized gains (losses).

c. Financial assets and liabilities

i. **Non-derivative financial assets:**
Financial assets are recognized initially on the trade date, which is the date that the Plan becomes a party to the contractual provisions of the instrument.

The Plan classifies all of its financial assets at fair value through the statement of changes in net assets available for benefits if it is classified as held for trading or is designated as such upon initial recognition. Financial assets are designated at fair value through the statement of changes in net assets available for benefits if the Plan manages such investment and makes purchase and sale decisions based on their fair value in accordance with the Plan's documented risk management or investment strategy. Upon initial recognition, attributed transaction costs are recognized in the statement of changes in net assets available for benefits as incurred. Financial assets at fair value through the statement of changes in net assets available for benefits are measured at fair value and changes therein are recognized in the statement of changes in net assets available for benefits.

ii. **Non-derivative financial liabilities:**
All financial liabilities are recognized initially on the trade date at which the Plan becomes a party to the contractual provisions of the instrument.

Financial assets and liabilities are presented in the statement of financial position. The net amount is presented in the statement of financial position, when and only when, the Plan has a legal right to offset the amounts and it intends either to settle on a net basis or to realize the asset and settle the liability simultaneously.

The Plan considers its amounts payable to be a non-derivative financial liability.

Significant accounting policies (continued)

iii. **Derivative financial instruments:**
Derivative financial instruments are recognized initially at fair value and their related transaction costs are recognized in the statement of changes in net assets available for benefits as incurred. Subsequent to initial recognition, derivatives are measured at fair value, and all changes are recognized immediately in the statement of changes in net assets available for benefits.

Derivative-related assets and liabilities are presented in the statement of financial position. The net amount is presented in the statement of financial position, when and only when, the Plan has a legal right to offset the amounts and it intends either to settle on a net basis or to realize the asset and settle the liability simultaneously.

d. Fair value measurement

Fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction on the measurement date.

As allowed under IFRS 13, if an asset or a liability measured at fair value has a bid and an ask price, the price within the bid-ask spread that is the most representative of fair value in the circumstances shall be used to measure fair value. The Plan uses closing market price as a practical expedient for fair value measurement.

When available, the Plan measures the fair value of an instrument using quoted prices in an active market for that instrument. A market is regarded as active if quoted prices are readily and regularly available and represent actual and regularly occurring market transactions on an arm's length basis.

If a market for a financial instrument is not active, then the Plan establishes fair value using a valuation technique. Valuation techniques include using recent arm's length transactions between knowledgeable, willing parties (if available), reference to the current fair value of other instruments that are substantially the same, discounted cash flow analyses and option pricing models.

The best evidence of the fair value of a financial instrument at initial recognition is the transaction price, i.e. the fair value of the consideration given or received, unless the fair value of that instrument is evidenced by comparison with other observable current market transactions in the same instrument or based on a valuation technique whose variables include only data from observable markets. When a transaction price provides the best evidence of fair value at initial recognition, the financial instrument is initially measured at the transaction price and any difference between this price and the value initially obtained from a valuation model is subsequently recognized in profit or loss on an appropriate basis over the life of the instrument but not later than when the valuation is supported wholly by observable market data or the transaction is closed out.

All changes in fair value, other than interest and dividend income and expense, are recognized in the statement of changes in net assets available for benefits as part of the change in market value of investments.

Significant accounting policies (continued)

Fair values of investments are determined as follows:

i. Fixed income securities and equities are valued at year-end quoted closing prices, where available. Where quoted prices are not available, estimated fair values are calculated using comparable securities.

ii. Short-term notes, treasury bills, repurchase agreements and term deposits maturing within one year are stated at cost, which together with accrued interest income approximates fair value given the short-term nature of these investments.

iii. Pooled fund investments include investments in fixed income, equities, real estate and commodities. Pooled funds are valued at the unit values supplied by the pooled fund administrator, which represent the Plan's proportionate share of underlying net assets at fair values determined using closing market prices. These net asset values are reviewed by management.

iv. Directly held real estate is valued based on estimated fair values determined by appropriate techniques and best estimates by management, appraisers, or both. Where external appraisers are engaged to perform the valuation, management ensures the appraisers are independent and compares the assumptions used by the appraisers with management's expectations based on current market conditions and industry practice to ensure the valuation captures the business and economic conditions specific to the investment.

v. Private fund investments include investments in real estate, infrastructure, and agriculture & timber assets. The fair value of a private fund investment where the Plan's ability to access information on underlying individual fund investments is restricted, such as under the terms of a limited partnership agreement, is equal to the value provided by the fund's general partner unless there is a specific and objectively verifiable reason to vary from the value provided by the general partner. These net asset values are reviewed by management.

vi. Derivatives, including futures, options, interest rate swaps, credit default swaps, total return swaps, and currency forward contracts, are valued at year-end quoted market prices, interest, spot and forward rates, where available. Where quoted prices are not available, appropriate alternative valuation techniques are used to determine fair value. The gains or losses from derivative contracts are included in the realized and unrealized gains or losses on investments.

vii. Absolute return strategy investments, comprised of hedge funds, are recorded at fair value based on net asset values obtained from each of the hedge funds' administrators. These net asset values are reviewed by management.

Significant accounting policies (continued)

e. Non-investment assets and liabilities

The fair value of non-investment assets and liabilities are equal to their amortized cost value and are adjusted for foreign exchange where applicable.

f. Receivable/payable for pending trades

For securities transactions, the fair value of receivable from pending trades and payable for pending trades approximate their carrying amounts due to their short-term nature.

g. Accrued pension obligation

The value of the accrued pension obligation of the Plan is based on a going concern method actuarial valuation prepared by an independent firm of actuaries using the projected unit credit method. The accrued pension obligation is measured in accordance with accepted actuarial methods using actuarial assumptions and methods adopted by the TPPTI for the purpose of establishing the long-term funding requirements of the Plan. The actuarial valuation included in the financial statements is consistent with the valuation for funding purposes.

h. Contributions

Basic contributions from employers and members are recorded on an accrual basis. Service purchases that include but are not limited to leaves of absence and transfers from other pension plans are recorded and service is credited when the purchase amount is received.

In certain years, an additional contribution to the Plan may be required from the Minister of Finance and Treasury Board. In any indexing period in which there is an actuarial deficit and clause 27B(3)(a) of the Teachers' Pension Plan Regulations applies, the Minister must contribute to the Plan, no later than the beginning of the following indexing period, an amount equal to the actuarial value, as calculated by the Plan's actuary at the beginning of the indexing period, of the difference between:

i. the indexing of all pensions to which subsection 27B(3) applies for that indexing period at a rate of one-half of the percentage increase in the 12-month average CPI for that indexing period over the 12-month average CPI for the preceding indexing period to a maximum of 6% and, for all future indexing periods, at a rate of one-half of the assumed percentage increase in the 12-month average CPI determined in accordance with the actuarial assumptions and methods; and

ii. no indexing of all pensions to which subsection 27B(3) applies for that indexing period and, for all future indexing periods, indexing at a rate of one-half of the assumed percentage increase in the 12-month average CPI determined in accordance with the actuarial assumptions and methods.

Significant accounting policies (continued)

i. Benefits

Benefit payments to retired, surviving and disabled members, commuted value payments and refunds to former members, and transfers to other pension plans are recorded in the period in which they are paid. Accrued benefits are recorded as part of the accrued pension benefit obligation.

j. Administrative expenses

Administrative expenses, incurred for plan administration and direct investment management services, are recorded on an accrual basis. Plan administration expenses represent expenses incurred to provide direct services to the Plan members and employers. Investment management expenses represent expenses incurred to manage the Fund. Base external manager fees for portfolio management are expensed in investment management expenses as incurred.

k. Income taxes

The Fund is the funding vehicle for a registered pension plan, as defined by the Income Tax Act (Canada) and, accordingly is not subject to income taxes.

l. Future changes to accounting policies

The relevant new guidance issued by the International Accounting Standards Board not yet adopted by the Plan includes:

- IFRS 16 Leases. The new standard will replace IAS 17, Leases for reporting periods beginning on or after January 1, 2019. IFRS 16 introduces a new single lessee accounting model for all leases by eliminating the distinction between operating and financing leases and requires lessees to recognize right-of-use assets and lease liabilities on the statement of net assets. Depreciation expense on the right-of-use asset and interest expense on the lease liability will replace the operating lease expense.

Management has determined that there will not be a significant impact on either the Plan's financial position or its investment income upon adoption of the new standard.

4. Contributions

(in thousands of dollars)	2018	2017
Employer:		
Matched current service	$ 102,314	$ 97,830
Matched past service	55	123
	102,369	97,953
Employee:		
Matched current service	102,314	7,830
Matched past service	55	123
Unmatched current service	3	2
Unmatched past service	433	615
	102,805	98,570
Special contribution from the Province of Nova Scotia	15,833	14,754
	$ 221,007	$ 211,277

5. Investments and investment-related liabilities

a. The fair value of the Plan's investments and investment-related liabilities along with the related income as at December 31 are summarized in the following tables:

		2018			2017	
(in thousands of dollars)			%			%
Investment assets						
Fixed income						
Money market	$	158,269	3.2	$	154,649	3.1
Canadian bonds & debentures		520,456	10.6		519,000	10.3
Non-Canadian bonds & debentures		750,195	15.1		726,957	14.4
Canadian real return bonds		146,638	3.0		150,438	3.0
Equities						
Canadian		338,131	6.9		428,803	8.5
US		712,339	14.5		770,282	15.2
Global		713,695	14.5		834,933	16.5
Commodities		146,387	3.0		151,247	3.0
Real assets						
Real estate		725,603	14.7		659,771	13.0
Infrastructure		318,104	6.5		260,296	5.2
Agriculture & timber		12,063	0.2		-	-
Absolute return strategy						
Hedge funds		383,705	7.8		379,068	7.5
Derivative-related receivables		1,877	-		17,024	0.3
	$	4,927,462	100.0	$	5,052,468	100.0
Investment-related liabilities						
Derivative-related payables	$	(67,117)	100.0	$	(1,610)	100.0
	$	(67,117)	100.0	$	(1,610)	100.0
Net investments	$	4,860,345		$	5,050,858	

Investments and investment-related liabilities (continued)

2018

(in thousands of dollars)

	Investment income	Changes in market value of investments and derivatives: Realized	Unrealized	Total
Fixed income	$ 53,731	$ 10,704	$ 75,645	$ 86,349
Equities	46,054	104,475	(186,650)	(82,175)
Commodities	-	1,513	(6,374)	(4,861)
Real assets	55,699	(2,449)	60,788	58,339
Absolute return strategies	-	10,022	25,022	35,044
Derivatives	468	(63,041)	(161,988)	(225,029)
Other	1,167	-	-	-
	$ 157,119	$ 61,224	$ (193,557)	$ (132,333)

2017

(in thousands of dollars)

	Investment income	Changes in market value of investments and derivatives: Realized	Unrealized	Total
Fixed income	$ 50,551	$ 9,482	$ (26,113)	$ (16,631)
Equities	46,318	152,813	68,048	220,861
Commodities	-	1,819	(8,030)	(6,211)
Real assets	41,930	3,398	17,193	20,591
Absolute return strategies	-	352	(8,635)	(8,283)
Derivatives	(190)	25,524	36,965	62,489
Other	1,354	-	-	-
	$ 139,963	$ 193,388	$ 79,428	$ 272,816

b. Derivatives

Derivatives are financial contracts, the value of which is “derived” from the value of underlying assets or interest or exchange rates. The Plan utilizes such contracts to provide flexibility in implementing investment strategies and for managing exposure to interest rate and foreign currency volatility.

Notional amounts of derivative contracts are the contract amounts used to calculate the cash flows to be exchanged. They represent the contractual amount to which a rate or price is applied for computing the cash to be paid or received. Notional amounts are the basis upon which the returns from, and the fair value of, the contracts are determined. They do not necessarily indicate the amounts of future cash flows involved or the current fair value of the derivative contracts. They are a common measure of volume of outstanding transactions but do not represent credit or market risk exposure. The derivative contracts become favourable

Investments and investment-related liabilities (continued)

(assets) or unfavourable (liabilities) as a result of fluctuations in either market rates or prices relative to their terms. The aggregate notional amounts and fair values of derivative contracts can fluctuate significantly.

Derivative contracts transacted either on a regulated exchange market or in the over-the-counter ("OTC") market, directly between two counterparties include the following:

Futures

Futures are transacted in standardized amounts on regulated exchanges and are subject to daily cash margining. The futures contracts that the Plan enters into are as follows:

- Government futures - contractual obligations to either buy or sell at a fixed value (the contracted price) government fixed income financial instruments at a predetermined future date. They are used to adjust interest rate exposure and replicate government bond positions. Long future positions are backed with high grade, liquid debt securities.

- Money market futures - contractual obligations to either buy or sell money market financial instruments at a predetermined future date at a specified price. They are used to manage exposures at the front end of the yield curve. Futures are based on short-term interest rates and do not require delivery of an asset at expiration. Therefore they do not require cash backing.

Options

Options are contractual agreements under which the seller (writer) grants the purchaser the right, but not the obligation, either to buy (call option) or sell (put option), a security, exchange rate, interest rate, or other financial instrument or commodity at a predetermined price, at or by a specified future date. The seller (writer) of an option can also settle the contract by paying the cash settlement value of the purchaser's right. The seller (writer) receives a premium from the purchaser for this right. Purchased options are used to manage interest rate volatility exposures. Written options generate income in expected interest rate scenarios and may generate capital losses if unexpected interest rate environments are realized. Both written and purchased options will become worthless at expiration if the underlying instrument does not reach the strike price of the option. In-the-money portion of written options are covered by high grade, liquid debt securities.

Swaptions are contractual agreements that convey to the purchaser the right but not the obligation to enter into or cancel a swap agreement at a fixed future date or at any time within a fixed future period. The seller receives a premium from the purchaser for this right.

Investments and investment-related liabilities (continued)

Credit default swaps

Credit default swaps ("CDS") provide protection against the decline in value of the referenced asset as a result of specified events such as payment default or insolvency. The purchaser pays a premium to the seller of the CDS in return for payment related to the deterioration in the value of the referenced asset. The referenced asset for CDS is a debt instrument. They are used to manage credit exposure without buying or selling securities outright. Written CDS increase credit exposure (selling protection), obligating the Plan to buy bonds from counterparties in the event of a default. Purchased CDS decrease exposure (buying protection), providing the right to "put" bonds to the counterparty in the event of a default. Net long exposures are backed with high grade, liquid debt securities. Underlying credit exposures are continuously monitored.

Interest rate swaps

Interest rate swaps involve contractual agreements between two counterparties to exchange fixed and floating interest payments based on notional amounts. They are used to adjust interest rate yield curve exposures and substitute for physical securities. Long swap positions increase exposure to long-term interest rates and short positions decrease exposure. Long swap positions are backed with high grade, liquid debt securities.

Total return swaps

Total return swaps are contractual agreements under which the total return receiver assumes market and credit risk on a bond or loan, where the total return payer forfeits risk associated with market performance, but takes on the credit exposure that the total return receiver may be subject to. The total return receiver receives income and capital gains generated by an underlying loan or bond. In return, the total return receiver must pay a set rate and any capital losses generated by the underlying loan or bond over the life of the swap.

Currency forwards

Currency forwards are contractual obligations to exchange one currency for another at a specified price or settlement at a predetermined future date. Forward contracts are used to manage the currency exposure of investments held in foreign currencies. The notional amount of a currency forward represents the contracted amount purchased or sold for settlement at a future date. The fair value is determined by the difference between the market value and the notional value upon settlement.

Investments and investment-related liabilities (continued)

The following tables set out the notional values of the Plan's derivatives and their related assets and liabilities as at December 31:

2018

(in thousands of dollars)

	Notional value	Fair value		
		Assets	Liabilities	Net
Derivatives				
Futures	$ 22,547	$ 788	$ (194)	$ 594
Options	24,450	614	(580)	34
Credit default swaps	6,625	117	(69)	48
Interest rate swaps	39,500	336	(233)	103
Total return swaps	8,700	-	(333)	(333)
Currency forwards	2,237,120	22	(65,708)	(65,686)
	$ 2,338,942	$ 1,877	$ (67,117)	$ (65,240)

2017

(in thousands of dollars)

	Notional value	Fair value		
		Assets	Liabilities	Net
Derivatives				
Futures	$ 22,110	$ 15	$ (197)	$ (182)
Options	-	-	-	-
Credit default swaps	2,900	347	(16)	331
Interest rate swaps	350,850	94	(120)	(26)
Total return swaps	200	-	-	-
Currency forwards	2,269,130	16,568	(1,277)	15,291
	$ 2,645,190	$ 17,024	$ (1,610)	$ 15,414

Investments and investment-related liabilities (continued)

The following tables set out the contractual maturities of the Plan's derivatives and their related assets and liabilities as at December 31:

2018 (in thousands of dollars)	Under 1 year	1 to 5 years	5 to 10 years	Over 10 years	Total
Derivatives					
Futures	$ 594	$ -	$ -	$ -	$ 594
Options	34	-	-	-	34
Credit default swaps	6	42	-	-	48
Interest rate swaps	76	134	(107)	-	103
Total return swaps	(333)	-	-	-	(333)
Currency forwards	(65,686)	-	-	-	(65,686)
	$ (65,309)	$ 176	$ (107)	$ -	$ (65,240)

2017 (in thousands of dollars)	Under 1 year	1 to 5 years	5 to 10 years	Over 10 years	Total
Derivatives					
Futures	$ (182)	$ -	$ -	$ -	$ (182)
Options	-	-	-	-	-
Credit default swaps	-	331	-	-	331
Interest rate swaps	-	90	(36)	(80)	(26)
Total return swaps	-	-	-	-	-
Currency forwards	15,291	-	-	-	15,291
	$ 15,109	$ 421	$ (36)	$ (80)	$ 15,414

Cash is deposited or pledged with various financial institutions as collateral or margin in the event that the Plan was to default on payment obligations on its derivative contracts. On the statement of financial position collateral is represented as part of the net cash balance of the Plan.

The fair value of cash held or pledged with other financial institutions as collateral and or margin as at December 31 is as follows:

Year ended December 31 (in thousands of dollars)	2018	2017
Collateral	$ 2,110	$ 1,671
Margin	41	(248)
	$ 2,151	$ 1,423

6. Financial Instruments

a. Fair Values

The fair values of investments and derivatives are as described in note 3(d). The fair values of other financial assets and liabilities, being cash, contributions receivable, receivable from repurchase agreements, receivable from pending trades, accrued investment income, pension benefits payable, payable for repurchase agreements , and payable from pending trades, approximate their carrying values due to the short-term nature of these financial instruments.

Fair value measurements recognized in the statement of financial position are categorized using a fair value hierarchy that reflects the significance of inputs used in determining the fair values.

Level 1: Fair value is based on inputs that reflect unadjusted quoted prices in active markets for identical assets or liabilities that the Investment Manager has the ability to access at the measurement date. Level 1 primarily includes publicly listed investments.

Level 2: Fair value is based on valuation methods that make use of inputs other than quoted prices included in Level 1, that are observable for the asset or liability, either directly or indirectly, including inputs in markets that are not considered to be active. Level 2 primarily includes debt securities and derivative contracts not traded on a public exchange and public equities not traded in an active market.

Level 3: Fair value is based on valuation methods where inputs that are based on non-observable market data have a significant impact on the valuation. Level 3 primarily includes real estate, infrastructure, and private equity investments valued based on discounted future cash flow models which reflect assumptions that a market participant would use when valuing such an asset or liability.

Financial Instruments (continued)

2018

(in thousands of dollars)	Level 1	Level 2	Level 3	Total
Investment assets				
Fixed income				
Money market	$ 39,846	$ 118,423	$ -	$ 158,269
Canadian bonds & debentures	166,839	353,617	-	520,456
Non-Canadian bonds & debentures	42,660	707,535	-	750,195
Canadian real return bonds	-	68,759	77,879	146,638
Equities				
Canadian	330,226	7,905	-	338,131
US	386,894	325,445	-	712,339
Global	525,904	187,791	-	713,695
Commodities	-	146,387	-	146,387
Real assets				
Real estate	-	113,962	611,641	725,603
Infrastructure	-	-	318,104	318,104
Agriculture & timber	-	-	12,063	12,063
Absolute return strategies				
Hedge funds	-	383,705	-	383,705
Derivatives-related receivables	1,402	475	-	1,877
	$ 1,493,771	$ 2,414,004	$ 1,019,687	$ 4,927,462
Investment-related liabilities				
Derivative-related receivables	$ (774)	$ (66,343)	$ -	$ (67,117)
	$ (774)	$ (66,343)	$ -	$ (67,117)
Net investment	$ 1,492,997	$ 2,347,661	$ 1,019,687	$ 4,860,345

Financial Instruments (continued)

2017 (in thousands of dollars)		Level 1		Level 2		Level 3		Total
Investment assets								
Fixed income								
Money market	$	11,804	$	142,845	$	-	$	154,649
Canadian bonds & debentures		129,356		389,644		-		519,000
Non-Canadian bonds & debentures		40,629		686,328		-		726,957
Canadian real return bonds		-		68,786		81,652		150,438
Equities								
Canadian		419,467		9,336		-		428,803
US		425,401		344,881		-		770,282
Global		622,418		212,515		-		834,933
Commodities		-		151,247		-		151,247
Real assets								
Real estate		-		112,072		547,699		659,771
Infrastructure		-		-		260,296		260,296
Agriculture & timber		-		-		-		-
Absolute return strategies								
Hedge funds		-		379,068		-		379,068
Derivatives-related receivables		15		17,009		-		17,024
	$	1,649,090	$	2,513,731	$	889, 647	$	5,052,468
Investment-related liabilities								
Derivative-related receivables	$	(197)	$	(1,413)	$	-	$	(1,610)
	$	(197)	$	(1,413)	$	-	$	(1,610)
Net investment	$	1,648,893	$	2,513,318	$	889,647	$	5,050,858

There were no significant transfers between level 1 and level 2 financial instruments during the years ended December 31, 2018 and 2017.

Financial Instruments (continued)

The following tables present the changes in the fair value measurement in Level 3 of the fair value hierarchy:

2018

(in thousands of dollars)

	Fixed income	Real assets	Total
Balance, beginning of year	$ 81,652	$ 807,995	$ 889,647
Purchases, contributed capital	-	123,461	132,461
Sales, capital returned	(1,036)	(39,668)	(40,704)
Realized gains	236	(4,477)	(4,241)
Unrealized gains (losses)	(2,973)	54,497	51,524
Balance, end of year	$ 77,879	$ 941,808	$ 1,019,687

2017

(in thousands of dollars)

	Fixed income	Real assets	Total
Balance, beginning of year	$ 83,195	$ 614,832	$ 689,027
Purchases, contributed capital	-	188,576	188,576
Sales, capital returned	(983)	(9,855)	(10,838)
Realized gains	224	1,699	(1,923)
Unrealized gains (losses)	(784)	12,743	11,959
Balance, end of year	$ 81,652	$ 807,995	$ 889, 647

The total income from level 3 financial instruments held as at December 31, 2018 and 2017, respectively, was $47,283 and $13,882.

Fair value assumptions and sensitivity

Level 3 financial instruments are valued using various methods. Listed real return bonds are valued by a third party using broker prices and comparable securities. Certain unlisted private equity, real estate and infrastructure funds are valued using various methods including overall capitalization method and discount rate method. Real estate subsidiaries are valued using the overall capitalization method and discount rate method and the valuations are significantly affected by non-observable inputs, the most significant of which are the capitalization rate and the discount rate.

Financial Instruments (continued)

Significant unobservable inputs used in measuring fair value:

The table below sets out information about significant unobservable inputs used at December 31, 2018 in measuring financial instruments categorized as level 3 in the fair value hierarchy.

Description	2018 Fair value		Valuation technique	Unobservable inputs
(in thousands of dollars)				
Unlisted direct real estate subsidiaries	$	530,215	Income approach technique: overall capitalization rate method and discounted cash flow method	Capitalization rates, discount rates
Unlisted real estate, infrastructure, agriculture & timber funds	$	411,593	Net asset value – audited financial statements	Information not available
Listed real return bond	$	77,879	Vendor supplied price - proprietary price model	Information not available

The following analysis illustrates the sensitivity of the Level 3 valuations to reasonably possible capitalization rate and discount rate assumptions for real estate properties where reasonably possible alternative assumptions would change the fair value significantly.

Valuations determined by the direct capitalization method and discount cash flow method are most sensitive to changes in the capitalization rates and discount rates.

		2018		2017
(in thousands of dollars)				
Unlisted direct real estate subsidiaries				
Direct capitalization method				
Minimum capitalization rate		3.60%		3.80%
Maximum capitalization rate		8.00%		8.00%
Increase in 25 basis points in capitalization rate	$	(31,160)	$	(24,879)
Decrease of 25 basis points in capitalization rate	$	29,306	$	29,527
Discounted cash flow method				
Minimum discount rate		3.70%		3.80%
Maximum discount rate		9.00%		9.30%
Increase in 25 basis points in discount rate	$	(12,465)	$	(4,130)
Decrease of 25 basis points in discount rate	$	13,877	$	13,178

Note 1: basis point is equal to 0.01%

Financial Instruments (continued)

The Plan does not have access to underlying information that comprises the fair market value of real return bonds, and certain real estate and infrastructure fund investments. The fair market value is provided by the general partner or other external managers. In the absence of information supporting the fair market value, no other reasonably possible alternative assumptions could be applied.

Significant investments

The Plan's investments, each having a fair value or cost exceeding one per cent of the fair market value or cost of net investment assets and liabilities as follows:

December 31, 2018

(in thousands of dollars)

	Number of investments	Fair value	Cost
Public market investments	1	$ 77,879	$ 31,354
Private market investments	17	1,871,860	1,546,036
	18	$ 1,949,739	$ 1,577,390

December 31, 2017

(in thousands of dollars)

	Number of investments	Fair value	Cost
Public market investments	1	$ 81,652	$ 32,154
Private market investments	16	1,849,760	1,538,617
	17	$ 1,931,412	$ 1,570,771

The Plan's significant private market investments consist of fixed income and equity pooled funds, commodities, real estate, and infrastructure.

Financial Instruments (continued)

b. Investment risk management

Risk management relates to the understanding and active management of risks associated with all areas of the business and the associated operating environment. Investments are primarily exposed to interest rate volatility, market price fluctuations, credit risk, foreign currency risk and liquidity risk. The Plan has set formal goals, policies, and operating procedures that establish an asset mix among equity, fixed income, real assets, absolute return strategy investments and derivatives that requires diversification of investments within categories, and set limits on the size of exposure to individual investments and counterparties. Risk and credit committees have been created to regularly monitor the risks and exposures of the Plan. Trustee oversight, procedures and compliance functions are incorporated into Plan processes to achieve consistent controls and to mitigate operational risk.

i. Interest rate risk

Interest rate risk refers to the fact that the Plan's financial position will change with market interest rate changes, as fixed income securities are sensitive to changes in nominal interest rates. Interest rate risk is inherent in the management of a pension plan due to prolonged timing differences between cash flows related to the Plan's assets and cash flows related to the Plan's liabilities. To properly manage the Plan's interest rate risk, appropriate guidelines on the weighting and duration for the bonds and other fixed income investments are set and monitored.

Financial Instruments (continued)

2018

(in thousands of dollars)	Under 1 year	1 to 5 years	5 to 10 years	Over 10 years	*Total*	Average yield (%)(1)
Fixed income						
Money market	$ 157,465	$ -	$ -	$ -	$ 157,465	-
Bonds and debentures	11,135	312,694	253,843	244,025	826,697	3.9
Real return bonds (2)	-	-	-	77,879	77,879	5.3
	$ 168,600	$ 312,694	$ 253,843	$ 321,904	$ 1,062,041	3.4
Pooled funds					513,517	
Total Fixed income					$ 1,575,558	

2017

(in thousands of dollars)	Under 1 year	1 to 5 years	5 to 10 years	Over 10 years	*Total*	Average yield (%)(1)
Fixed income						
Money market	$ 152,852	$ -	$ -	$ -	$ 152,852	-
Bonds and debentures	18,754	269,153	229,751	233,716	751,374	4.0
Real return bonds (2)	-	-	-	81,652	81,652	5.3
	$ 171,606	$ 269,153	$ 229,751	$ 315,368	$ 985,878	3.4
Pooled funds					565,166	
Total Fixed income					$ 1,551,044	

1. The average effective yield reflects the estimated annual income of a security as a percentage of its year-end fair value. The total average yield is the weighted average of the average yields shown.

2. Real return bond yields are based on real interest rates. The ultimate yield will be impacted by inflation as it occurs.

The fair value of the Plan's investments is affected by short-term changes in nominal interest rates. Pension liabilities are exposed to the long-term expectation of rate of return of the Fund as well as expectations of inflation and salary escalation.

Financial Instruments (continued)

Interest rate sensitivity

The Plan's investments in fixed income and fixed income related derivatives are sensitive to interest rate movements. The following table represents the assets held in the Plan as at December 31, subject to interest rate changes, average duration due to a one percent increase (decrease) in interest rate and the change in fair value of those assets:

	2018	2017
(in thousands of dollars)		
Interest rate sensitive assets	$ 1,062,487	$ 986,000
Average duration for 1% increase in interest rates	(5.8)	(5.8)
Sensitivity to 1% increase in interest rates	(62,005)	(56,832)
Fair value after 1% increase in rates	$ 1,000,482	$ 929,168
Average duration for 1% decrease in interest rates	5.8	5.8
Sensitivity to 1% decrease in interest rates	62,005	56,832
Fair value after 1% decrease in rates	$ 1,124,492	$ 1,042,832

ii. **Market price risk**

Market price risk is the risk of fluctuation in market values of investments from influences specific to a particular investment or from influences on the market as a whole. Market price risk does not include interest rate risk and foreign currency risk which are also discussed in this note. As all of the Plan's financial instruments are carried at fair value with fair value changes recognized in the statement of changes in financial position, all changes in market conditions will directly result in an increase (decrease) in net assets. Market price risk is managed by the Plan through the construction of a diversified portfolio of instruments traded on various markets and across various industries.

Financial Instruments (continued)

Market sensitivity

The Plan's investments in equities are sensitive to market fluctuations. The following table represents the change in fair value of the Plan's investment in public and private equities due to a ten percent increase (decrease) in fair market values as at December 31:

		2018		2017
(in thousands of dollars)				
Total equity	$	1,764,165	$	2,034,018
10% increase in market values		176,417		203,402
Fair value after 10% increase in market values	$	1,940,582	$	2,237,420
10% decrease in market values		(176,417)		(203,402)
Fair value after 10% decrease in market values	$	1,587,748	$	1,830,616

iii. **Credit risk**

Credit risk is the risk of loss in the event the counterparty to a transaction fails to discharge an obligation and causes the other party to incur a loss. Credit risk is generally higher when a non-exchange traded financial instrument is involved because the counterparty for the traded financial instrument is not backed by an exchange clearing house. Credit risk associated with the Plan is regularly monitored and analyzed through risk and credit committees.

Financial Instruments (continued)

Fixed income

The Plan's Fixed Income Program includes two main sectors: the Government Sector and the Corporate Sector. One benefit to managing these two pieces separately is to provide the opportunity to access physical government bonds when required. When markets are at their utmost distress these may be the only securities available for liquidation. Managing the Corporate Sector and the Government Sector separately allows for the adjustment of credit risk within the Fixed Income Program by changing the allocation between these two sectors - increasing the Government Sector through periods of market duress and increasing the Corporate Sector through periods of stability. This approach also allows the active management of the Corporate Sector and taking active decisions where returns can be maximized. In order to minimize the exposure to credit risk, a comprehensive investment policy has been developed. There were no significant concentrations of credit risk in the portfolio in 2018.

The fair values of the Plan's fixed income investments exposed to credit risk are categorized in the following table as at December 31:

	2018	2017
(in thousands of dollars)		
Fixed income		
Canadian		
Governments	$ 425,732	$ 346,340
Corporate	170,428	179,278
Non-Canadian		
Governments	42,660	41,102
Corporate	423,221	419,158
	$ 1,062,041	$ 985,878
Pooled funds	513,517	565,166
Total fixed income	$ 1,575,558	$ 1,551,044

Financial Instruments (continued)

Derivatives

The Plan is exposed to credit-related losses in the event counterparties fail to meet their payment obligations upon maturity of derivative contracts. The Plan limits derivative contract risk by dealing with counterparties that have a minimum "A" credit rating. In order to mitigate this risk, the Fund:

i. Deals only with highly rated counterparties, with whom International Swap and Derivative Association agreements have been executed, normally major financial institutions with a minimum credit standard of "A" rating, as supported by a recognized credit rating agency; and
ii. Credit risk represents the maximum amount that would be at risk as at the reporting date if the counterparties failed completely to perform under the contracts, and if the right of offset proved to be non-enforceable. Credit risk exposure on derivative contracts is represented by the receivable replacement cost of contracts with counterparties, less any prepayment collateral or margin received, as at the reporting date.

Securities lending

The Plan engages in securities lending to enhance portfolio returns (see note 11). Through a securities lending program at the Plan's custodian, the Plan lends securities for a fee to approved borrowers. Credit risk associated with securities lending is mitigated by requiring the borrowers to provide high quality collateral. In the event that a borrower defaults completely or in part, the custodian will replace the security at its expense. Regular reporting of the securities lending program ensures that its various components are continuously being monitored.

iv. **Foreign currency risk**

Foreign currency risk is the risk that the value of future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates. The Plan primarily invests in financial instruments and enters into transactions denominated in various foreign currencies, other than its measurement currency. Consequently, the Plan is exposed to risk that the exchange rates of the various currencies may change in a manner that has an adverse effect on the value of the portion of the Plan's investment and non-investment assets or liabilities denominated in currencies other than the Canadian dollar. Foreign currency risk is hedged by using foreign exchange forward contracts. A policy of hedging up to 100% of the currency exposure helps to mitigate this risk.

The Plan's currency policy allows for the management of risk of investment and non-investments assets and liabilities held in the Fund through hedging strategies that are implemented through the purchase of forward currency contracts. The forward currency contracts offset the Plan's foreign currency exposure, hence reducing the Plan's foreign currency risk.

Financial Instruments (continued)

The Plan's investment and non-investment assets and liabilities that are held in the Fund are represented as unhedged and hedged currency exposures as at December 31 in the following table:

December 31, 2018		Unhedged		Hedged
(in thousands of dollars)				
Summary FX exposure				
Canadian dollar	$	2,229,424	$	4,031,267
United States dollar		2,205,893		866,322
Euro		186,814		(112,121)
British pound sterling		130,750		17,665
Japanese yen		74,995		53,719
Other		164,178		69,516
	$	4,992,054	$	4,926,368

December 31, 2017		Unhedged		Hedged
(in thousands of dollars)				
Summary FX exposure				
Canadian dollar	$	2,243,415	$	3,916,907
United States dollar		2,243,513		1,026,906
Euro		226,013		(13,628)
British pound sterling		136,473		39,694
Japanese yen		83,978		53,218
Other		150,447		76,033
	$	5,083,839	$	5,099,130

After the effect of hedging, and without change in all other variables, a ten percent increase (de-crease) in the Canadian dollar against all other currencies would (decrease) increase the fair value of the Plan's investment and non-investment assets and liabilities held in the Fund, respectively.

Financial Instruments (continued)

The following table below represents these changes in the Plan's investment and non-investment assets and liabilities held in the Fund as at December 31:

	2018	2017
(in thousands of dollars)		
Fund assets and liabilities	$ 4,992,368	$ 5,099,130
10% increase in Canadian Dollar	(81,373)	(107,475)
Fund assets and liabilities after increase	$ 4,910,995	$ 4,991,655
10% decrease in market values	99,456	131,358
Fund assets and liabilities after decrease	$ 5,091,824	$ 5,230,488

v. **Liquidity risk:**

Liquidity risk is the risk that the Plan's does not have sufficient cash to meet its current payment liabilities and acquire investments in a timely and cost-effective manner. Liquidity risk is inherent in the Plan's operations and can be impacted by a range of situation specific and market-wide events including, but not limited to, credit events and significant movements in the market. Cash obligations are fulfilled from contributions to the Plan, cash income of the Plan and planned dispositions of Plan assets as required. Cash requirements of the Plan are reviewed on an ongoing basis to provide for the orderly availability of resources to meet the financial obligations of the Plan. The Plan's cash management policy ensures that the quality and liquidity of the investment vehicles within the cash portfolios are consistent with the needs of the Plan.

Approximately 45% (2017 - 46%) of the Plan's investments are in liquid securities traded in public markets, consisting of fixed income and equities. Pooled funds consisting of exchange traded fixed income and equities are approximately 27% (2017 - 27%) of the Plan's investments and are liquid within 30 days or less. Although market events could lead to some investments becoming illiquid, the diversity of the Plan's portfolios should ensure that liquidity is available for benefit payments. The Plan also maintains cash on hand for liquidly purposes and for payment of Plan liabilities. At December 31, 2018, the Plan had cash in the amount of $33,703 (2017 - $41,743).

7. Accrued pension obligation

a. Actuarial assumptions

The actuarial present value of the accrued pension obligation is an estimate of the value of pension obligations of the Plan in respect of benefits accrued to date for all active and inactive members including pensioners and survivors. As the experience of the Plan unfolds, and as underlying conditions change over time, the actual value of accrued benefits payable in the future could be materially different than the actuarial present value.

Actuarial valuations of the Plan are required every year by the Act, and provide an estimate of the accrued pension obligation (Plan liabilities) calculated using various economic and demographic assumptions, based on membership data as at the valuation date. The Plan's consulting actuaries, Eckler Limited, performed a valuation as at December 31, 2018 and issued their report in April 2019. The report indicated that the Plan had an unfunded liability of $1,617,642 (2017 - $1,406,234).

The actuarial valuation calculates liabilities for each member on the basis of service earned to date and the employee's projected five-year highest average salary at the expected date of retirement, or in the case of pensioners and survivors, on the basis of the amount of pension being paid to them. The projected unit credit method was adopted for the actuarial valuation to determine the current service cost and actuarial liability.

	2018	2017
Discount rate	**6.05% per annum**	6.05% per annum
Inflation	**2.00% per annum**	2.00% per annum
Salary	**2.00% per annum plus promotional ranging from 0.00% to 3.25%**	2.00% per annum plus promotional ranging from 0.00% to 3.25%
Retirement age	**50% of active members who achieve eligibility for an unreduced pension under the rule of 85 prior to age 62 will retire when they first become eligible; the remainder of active and all inactive members will retire at the earliest of: • age 65 with 2 years of service, • 35 years of service; and • age 62 with 10 years of service**	50% of active members who achieve eligibility for an unreduced pension under the rule of 85 prior to age 62 will retire when they first become eligible; the remainder of active and all inactive members will retire at the earliest of: • age 65 with 2 years of service, • 35 years of service; and • age 62 with 10 years of service
Mortality	**2014 Public Sector Mortality Table projected generationally with CPM improvement Scale B**	2014 Public Sector Mortality Table projected generationally with CPM improvement Scale B

Accrued pension obligation (continued)

The assumed real rates of increases in pensionable earnings (i.e. increase in excess of the assumed inflation rate) are dependent on the attained age of the members.

Demographic assumptions are used to estimate when future benefits are payable to members and beneficiaries, including assumptions about mortality rates, termination rates, and patterns of early retirement. Each of these assumptions is updated periodically, based on a detailed review of the experience of the Plan and on the expectations for future trends.

b. Experience gains and losses

Experience losses (gains) on the accrued pension obligation of $81,941 (2017 – $(20,238)) arose from differences between the actuarial assumptions and actual results.

8. Commitments

The Plan has committed capital to investments in real estate, infrastructure, and agriculture & timber over a definitive period of time. The future commitments are generally payable on demand based on the capital needs of the related investment. The table below indicates the capital amount committed and outstanding as at December 31, 2018.

December 31, 2018	Committed	Outstanding
(in thousands of dollars)		
United States dollar		
Real estate	25,000	4,769
Infrastructure	185,000	46,156
Agriculture & timber	25,000	16,374
	USD 235,000	USD 67,299

9. Benefits

(in thousands of dollars)	2018	2017
Pension benefits paid	$ 356,553	$ 346,410
Survivor benefits paid	20,067	21,290
Disability benefits paid	18,932	21,993
Refunds paid to terminated members	3,145	2,824
	$ 398,697	$ 392,517

10. Administrative Expenses

The Plan is charged by its service providers, including Nova Scotia Pension Services Corporation, a related entity, for professional and administrative services. The following is a summary of these administrative expenses.

	2018	2017
(in thousands of dollars)		
Plan administration:		
Office and administration services	$ 4,909	$ 4,636
Actuarial and consulting services	204	134
Legal services	61	44
Audit services	37	31
Other professional services	32	30
	5,243	4,875
Investment expenses:		
Investment management services	12,533	13,086
Transaction costs	935	926
Custody services	483	397
Advisory and consulting services	312	302
Information services	197	212
	14,460	14,923
HST	1,856	1,859
	$ 21,559	$ 21,657

Investment management and performance fees included in the unrealized gains/ (losses) on investments consisting of pooled funds, limited partnerships and subsidiaries are estimated at $16,021 (2017 - $16,851). These fees are not direct expenses of the Plan and therefore are not included in administrative expenses.

11. Securities lending

The Plan participates in a securities lending program where it lends securities that it owns to third parties for a fee. For securities lent, the Plan receives a fee and the borrower provides readily marketable securities of higher value as collateral which mitigates the credit risk associated with the program. When the Plan lends securities, the risk of failure by the borrower to return the loaned securities is alleviated by such loans being continually collateralized. The securities lending agent also provides indemnification if there is a shortfall between collateral and the lent security that cannot be recovered. The securities lending contracts are collateralized by securities issued by, or guaranteed without any limitation or qualification by, the government of Canada or the governments of other countries.

The following table represents the estimated fair value of securities that were loaned out and the related collateral as at December 31:

	2018	2017
(in thousands of dollars)		
Securities on loan	$ 361,627	$ 347,967
Collateral held	$ 387,098	$ 399,722

12. Related party transactions

Investments held by the Plan include bonds & debentures of the Province of Nova Scotia. The total fair value of these investments is $2,991 (0.1% of Fund assets and liabilities) as at December 31, 2018 ($2,544 (0.1% of Fund assets and liabilities) at December 31, 2017.

The Plan's administrator, Nova Scotia Pension Services Corporation, an entity co-owned by Teachers' Pension Plan Trustee Inc. and Public Service Superannuation Plan Trustee Inc. for the purpose of providing pension plan administration and investment services, charges the Plan at cost, an amount equal to the expenses incurred in order to service the Plan. As Nova Scotia Pension Services Corporation operates on a cost recovery basis, the Plan loans cash to its administrator, as required to pay upcoming expenses or to purchase capital assets. The administration expense charged to the Plan for the year ending December 31, 2018 was $5,231 (2017 - $4,927). The amount due to the administrator was $404 (2017 – ($1,351) at December 31, 2018.

13. Interest in subsidiaries

The Plan's subsidiaries were created for the purposes of providing investment earnings from real estate, infrastructure and other investment arrangements. The Plan's subsidiaries are presented on a non-consolidated basis. The following table shows the fair values of the Plan's subsidiaries as at December 31:

Subsidiary	Purpose	Ownership %	2018 Fair value	2017 Fair value
(in thousands of dollars)				
TPP Investments RE Inc.	Real estate	100	$ 464,738	$ 399,053
NT Combined Investments Inc.	Equities	45	325,445	344,881
TPP Investments II Inc.	Real estate	100	109,031	113,370
TPP Investments CS Inc.	Infrastructure	100	92,969	68,973
TPP Investments AX Inc.	Infrastructure	100	53,178	49,099
TPP Investments ES Inc.	Real estate	100	37,871	35,276
HV Combined Investments Inc.	Hedge funds	37	18,004	16,505
			$ 1,101,236	$ 1,027,157

The Plan either has 100% controlling interest or significant influence over its subsidiaries' cash flows. Funding is made via capital investment from the Plan. Certain subsidiaries have commitments that must be funded directly through capital investment by the Plan. These amounts are included in the Plan's commitments (note 8). Financing is provided as required via shareholder loans and is payable on demand to the Plan.

14. Capital management

The main objective of the Fund is to sustain a certain level of net assets in order to meet the Plan's pension obligations. The TPPTI (see note 1) manages the contributions and plan benefits as required by the Teachers' Pension Act and its related Regulations. The TPPTI approves and incurs expenses to administer the commerce of the Fund as required by agreement between the Province and the Union. Under the direction of the TPPTI, the Fund provides for the short term financial needs of current benefit payments while investing members' contributions for the longer term security of pensioner payments. The TPPTI exercises duly diligent practices and has established written investment policies and procedures, and approval processes. Operating budgets, audited financial statements, yearly actuarial valuations and reports, and as required, the retention of supplementary professional, technical and other advisors, are part of the Fund governance structure.

The Fund fulfils its primary objective by adhering to specific investment policies outlined in its SIP&G, which is reviewed annually by TPPTI. The Fund manages net assets by engaging knowledgeable investment managers who are charged with the responsibility of investing existing funds and new funds (current year's employee and employer contributions) in accordance with the SIP&G. Increases in net assets are a direct result of investment income generated by investments held by the Fund and contributions into the Fund by eligible employees and participating employers. The main use of net assets is for benefit payments to eligible Plan members.

Under the 2014 Agreement, minimum funding targets were established, with objectives of having assets of the Plan reach levels of 80-90% of the actuarial liabilities on or before December 31, 2025, at least 85-95% on or before December 31, 2030, and at least 90-100% on or before December 31, 2035. These funding targets are required to be regularly reviewed, including a comprehensive review in 2020 and further reviews every 5 years thereafter.

nspension
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