

# 2017

## Nova Scotia Teachers' Pension Plan annual report



## 2017 at a glance...

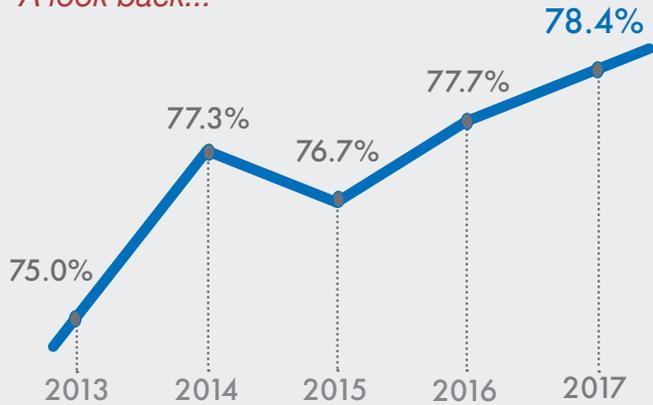
As at December 31, 2017

### Plan Funded Ratio

# 78.4%

The Nova Scotia Teachers' Pension Plan's (Plan or TPP) *funded ratio* increased to 78.4 per cent from 77.7 per cent in 2016. A *funded ratio* of 100 per cent or more would mean that the Plan is fully funded. The chart below highlights the Plan's funded status over the past 5 years.

*A look back...*



### Investment Return

**8.57%**  
the Plan

**8.67%**  
benchmark

The Plan achieved a positive *return on investments* of 8.57 per cent. The investment return is reported *gross of investment management fees*. The investment return *net of investment management fees* was 8.29 per cent.

### Plan member and employer contributions paid to the Plan:

**\$196 million**

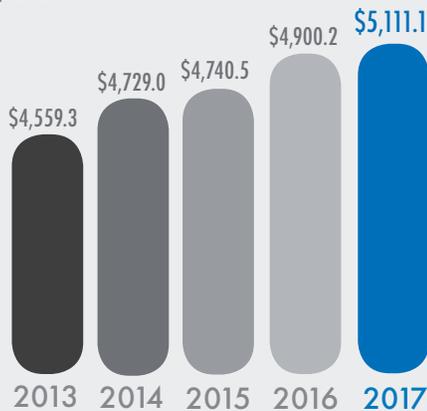
\$98 million in equal payments from both Plan members and employers.



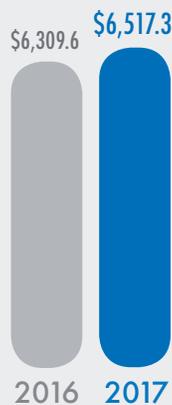
### Benefits paid out to retirees and survivors:

**\$393 million**

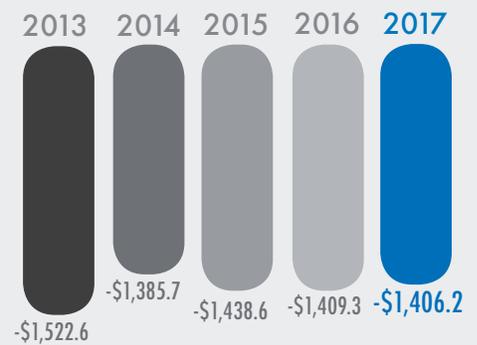
### Net Assets available for Benefits \$ millions



### Liabilities\* \$ millions



### Unfunded liability\*\* \$ millions



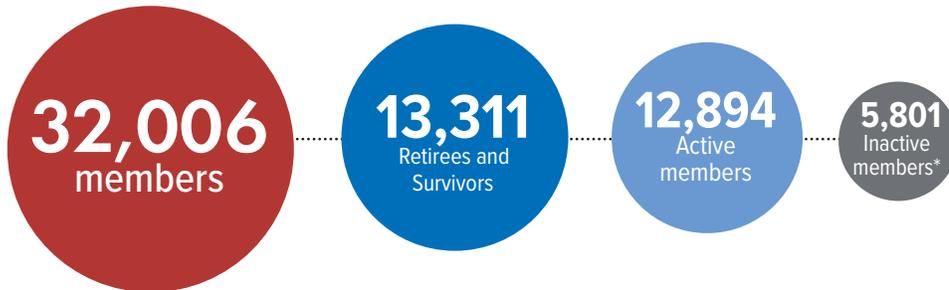
\* For an explanation on the breakdown of Plan liabilities, in dollar amounts by each member group, see the Going Concern Actuarial Plan liabilities chart on page 2.

\*\* For an explanation on how to calculate an unfunded liability, see the Plan Valuation section on page 8.

(as at December 31, 2017)

**Membership**

The Plan had a total of 32,006 members. The number of retirees grew by 146 from 13,165 to 13,311 in 2017, while the number of active Plan members increased by 62, from 12,832 to 12,894.



\* Includes Plan members who have not contributed to the Plan in the past year and a half and have not retired or removed their funds from the Plan.

Average age  
**43.4** Working Teacher  
**70.8** Retired Teacher

Average pensionable earnings  
**\$73,673**  
Active members

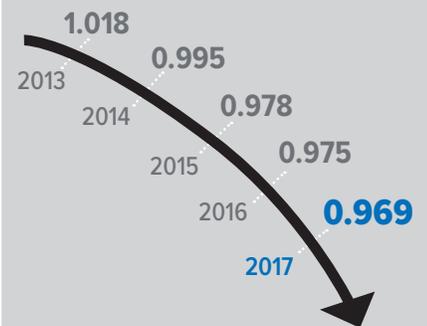
Retirees\* over 100 years of age  
**36**

\* Includes survivors

Average lifetime pension  
**\$29,203**  
Retirees

**The Plan had 0.969 active member for 1 retiree.**

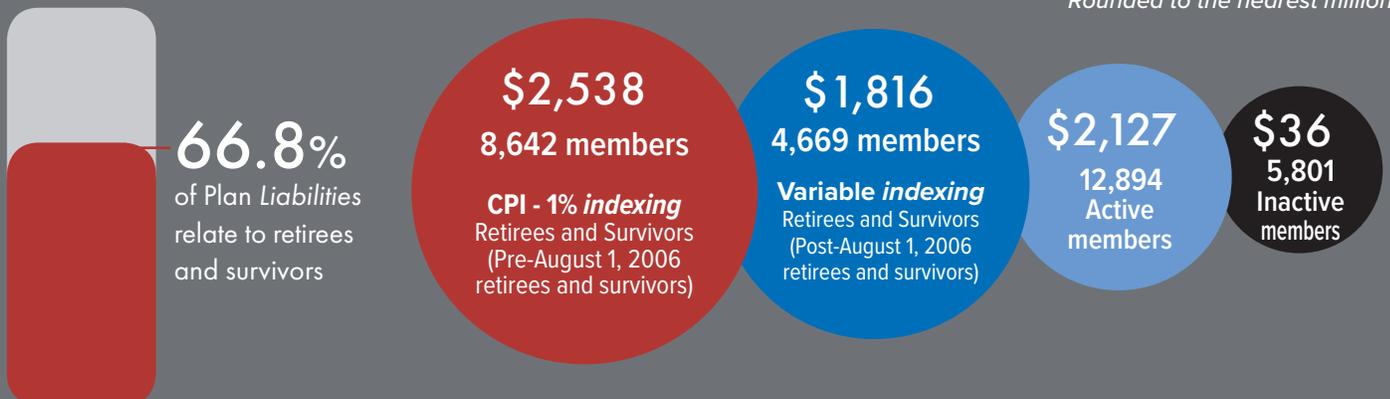
The Plan's number of retirees continued to grow. A low ratio of working-to-retired teachers creates a greater impact on working teachers and the Province to cover any shortfalls or investment losses. The chart below highlights the decline in the active membership ratio.



**Going Concern Actuarial Plan liabilities increased to \$6.517 billion**

Retirees and survivors who began receiving their pension prior to August 1, 2006 account for the greatest portion of Plan liabilities. The chart below details the Plan liabilities, in dollar amounts\*, by each member group (as at December 31<sup>st</sup>).

\* Rounded to the nearest million



There is no immediate risk that the Plan will be unable to meet its ongoing pension obligations; however, actions should be considered by the Plan sponsors to improve the long-term health of the Plan.

## About the Teachers' Pension Plan

The Nova Scotia Teachers' Pension Plan's (Plan or TPP) is one of the largest public sector pension plans in the Province. The Plan is a defined benefit registered pension plan that offers you a lifetime pension benefit when you retire. Your pension benefit is funded by contributions made by you and your employer, as well as investment income generated by the Plan's investment *assets*. This Annual Report details the Plan's investment performance and financial health at December 31, 2017.

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*Italicized terms that appear in the Report to Members and Investment Management sections are defined in the Glossary.*

### Nova Scotia Pension Services Corporation contact information:

 1-800-774-5070 (toll free in NS)  
902-424-5070

 Purdy's Landing, Suite 400,  
1949 Upper Water Street,  
Halifax, NS B3J 3N3

 [pensionsinfo@nspension.ca](mailto:pensionsinfo@nspension.ca)

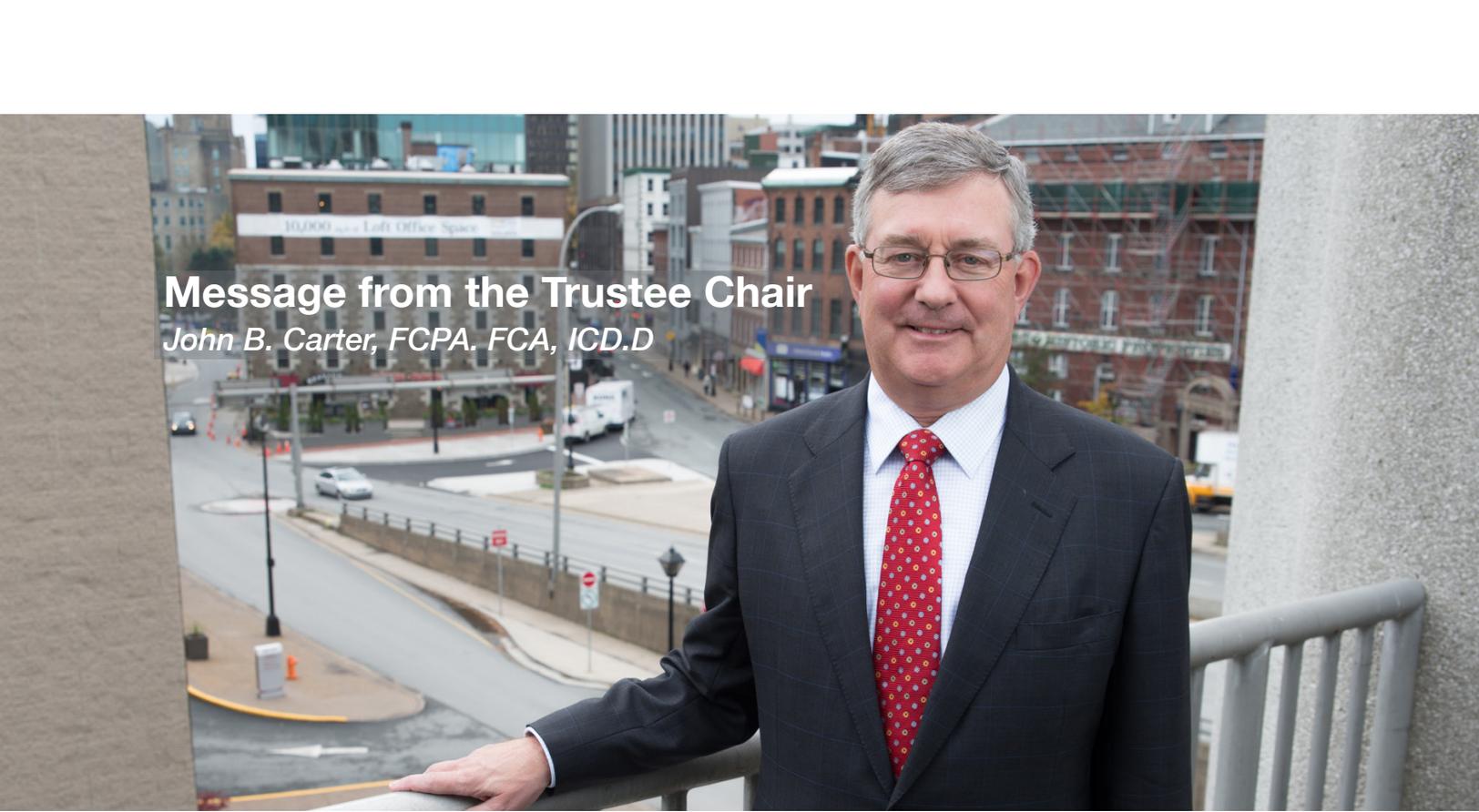
 PO Box 371,  
Halifax NS B3J 2P8

 @yourNSTPP

 [www.nstpp.ca](http://www.nstpp.ca)  
[www.novascotiapension.ca](http://www.novascotiapension.ca)



All information presented in this document is premised on the Plan rules and criteria which currently exist under the Teachers' Pension Act and the Regulations made thereunder. This document explains in plain language the financial status of the Nova Scotia Teachers' Pension Plan. Plan members, beneficiaries, and others who wish to determine their legal rights and obligations under the Plan should refer to the Plan text. In the event of a discrepancy between the information provided in this document and the Plan text, the latter takes precedence.



## Message from the Trustee Chair

*John B. Carter, FCPA, FCA, ICD.D*

On behalf of the Board of Teachers' Pension Plan Trustee Inc. (TPPTI), I am pleased to present the annual report of the Plan for the fiscal year ended December 31, 2017. This report provides you with details on the financial health of the Teachers' Pension Plan and a comprehensive review of its investment activities.

The Plan experienced positive investment results in 2017, with the Plan's investment assets growing from approximately \$4.9 billion to \$5.1 billion. The rate of return on investments was 8.57 per cent before investment management expenses. The Plan's funded status improved from 77.7 per cent to 78.4 per cent.

While the Plan's financial position improved marginally in 2017, it continues to face significant challenges. The Plan, with its aging demographics, is carrying a deficit of \$1,406 million. Since 2014, the Plan has had more retirees than active working teachers. A low ratio of working-to-retired teachers creates a greater impact on working teachers and the Province to cover any shortfalls or investment losses.

These challenges were highlighted in the October 2017 Office of the Auditor General's (OAG) Report. The Report put particular emphasis on the TPP and its significant deficit.

While there is no immediate risk that the Plan will be unable to meet its ongoing pension obligations, it is important to note that the Plan's financial position could deteriorate going forward unless the Nova Scotia Teachers' Union and the Province together take very significant steps.

TPPTI remains ready and willing to assist the Teachers' Union and the Province in their efforts to improve the long term financial sustainability of the Plan.

On behalf of the Trustee, it is an honour to recognize retired Trustee directors Bill Redden and Jack MacLeod for their hard work, professionalism and commitment to the Board and Plan. Further, I would like to welcome new Trustee directors, Janine Kerr and Allan MacLean.

I also would like to thank the staff of Nova Scotia Pension Services Corporation for all of their efforts during the past year.

# Teachers' Pension Plan Trustee Inc.

Teachers' Pension Plan Trustee Inc. (TPPTI) is comprised of nine directors. Four directors are appointed by the Nova Scotia Teachers' Union (NSTU) and four directors are appointed by Nova Scotia's Minister of Finance and Treasury Board. The independent Chair of the TPPTI is mutually appointed by the NSTU and the Minister of Finance and Treasury Board.

TPPTI directors have extensive experience in a wide range of disciplines required to oversee the Plan. They are drawn from the fields of pension plan governance, pension benefits, labour relations, investment management, and accounting. The TPPTI Board meets five to six times a year.

## Board of Directors *(as at December 31, 2017)*

### John Carter

F CPA, FCA, ICD.D, Retired, Ernst and Young LLP  
The Chair is an Ex-Officio member on all committees  
Appointed: 2010

### Karen Gatien

Associate Deputy Minister,  
Department of Education and  
Early Childhood Development  
Committee work:  
• Governance  
Appointed: 2015  
Government Representative

### Janine Kerr

Assistant Executive Director,  
NSTU  
Committee work:  
• Audit and Actuarial  
• Governance  
Appointed: 2017  
NSTU Representative

### Bill Redden, BA, BEd,

MEd(Adm), RPA  
Retired  
Committee work:  
• Governance, Chair  
• Investment  
Appointed: 2006  
NSTU Representative

### Bruce Osborne

Executive Director, Marine NS,  
Department of Fisheries and  
Aquaculture  
Committee work:  
• Audit and Actuarial  
Appointed: 2016  
Government Representative

### Steve Mahoney, CFA, FSA,

CAIA, PRM  
Vice President, Institutional Sales  
Connor, Clark & Lunn Financial  
Group  
Committee work:  
• Investment  
Appointed: 2016  
NSTU Representative

### Charles Allain

Executive Director,  
Liability Management and Treasury  
Services, Department of Finance  
and Treasury Board  
Committee work:  
• Investment, Chair  
Appointed: 2016  
Government Representative

### Vicki Clark, CPA, CMA

Retired  
Committee work:  
• Audit and Actuarial, Chair  
• Investment  
Appointed: 2016  
Government Representative

### Phil Doucette

Teacher  
Committee work:  
• Governance  
Appointed: 2017  
NSTU Representative

Directors of the TPPTI oversee all aspects of the Plan through three committees. The TPPTI committees are:

#### Audit and Actuarial:

Oversight of the Plan's auditors and actuaries. Conducts a detailed review of the audited financial statements and actuarial valuation reports. Reviews quarterly compliance reports.

#### Governance, Communications, and Member Services:

Ensures the Trustee's duties and responsibilities are clear and sets the goals for the Plan administrator.

#### Investment:

Reviews, monitors, and approves all investment management policies and investment decisions.

## Plan Governance

TPPTI is the Trustee of the Plan. TPPTI was established in 2006 under a Joint Trust Agreement (which was amended in 2014) between the NSTU and the Province of Nova Scotia (Province). TPPTI ensures that the Plan is operated with strong controls and risk management practices, transparent reporting, and prudent management of the Plan's investment *assets*.

The Plan Sponsors are the NSTU and the Province. The Sponsors are advised by the Teachers' Pension Board (Board) which includes representation from the NSTU and the Province. The Board is responsible for setting contribution rates, Plan regulations and benefits, and the Plan's funding targets. The Board is also responsible for setting the Plan's actuarial assumptions.

**The roles and responsibilities within the Plan's governance structure are highlighted below:**

### Teachers' Pension Board \*

Sets the actuarial assumptions used to value Plan *liabilities* and advises the Plan Sponsors on:

- Plan regulations and benefits
- Employer and member contribution rates
- The Plan's funding targets

\* Includes representatives from the NSTU and the Province.

### Teachers' Pension Plan Trustee Inc. (TPPTI) \*

- Fiduciary responsibility for the Plan and its investment assets
- Responsible for the Plan's overall operations and investment decisions
- Sets policy framework and strategic direction for the investment assets

\* Includes representatives from the NSTU and the Province.

### The Board of Directors of Pension Services Corporation

- Oversight of Pension Services Corporation
- Sets strategic direction, approves operational budget, and makes key decisions

\* Includes directors from the TPPTI and the Public Service Superannuation Plan Trustee Inc.

### Nova Scotia Pension Services Corporation

- Manages the day-to-day operation of Plan investments and pension administration
- Provides Plan member, retiree, and employer services
- Jointly owned by TPPTI and the Public Service Superannuation Plan Trustee Inc.

\* See page 7 for more information

# Nova Scotia Pension Services Corporation

Nova Scotia Pension Services Corporation's (NSPSC) client and employer services teams are responsible for providing pension services to Plan members, retirees, and employers. When a Plan member retires, NSPSC client and employer services teams manage pension payments and provide assistance throughout the retirement process. NSPSC also assists Plan members with support in making informed retirement decisions.



## Client Services 2017 Results

The percentage of calls that were answered in less than 20 seconds



90%

The number of calls that were answered by Client Services



26,210

Pre-Retirement seminars that were held across the province



19

## My Retirement Plan website usage

<https://nspensions.hroffice.com>

The number of times the Pension Projection tool was used



4,947

The number of times the Pension Profile tool was used



1,201

The number of times the Annual Statement tool was used



2,825

## Visit us online:

[www.novascotiapension.ca](http://www.novascotiapension.ca)

[www.nstpp.ca](http://www.nstpp.ca)

 @yourNSTPP

# The Plan's Financial Position

## **Plan Liabilities** (as at December 31, 2017)

*Plan liabilities* were calculated to be \$6.517 billion. The calculation of *Plan liabilities* is derived by using several key assumptions. The most impactful assumption is the *discount rate* which is a forecast of the long-term rate of return from investment *assets*.

For the 2017 valuation, the *discount rate* has been set at 6.05 per cent, which includes a provision for adverse deviation. This represents a reduction of 0.10 per cent from the 2016 *discount rate* of 6.15 per cent. The reduction reflects the continued moderation of the unadjusted best estimate return on the target portfolio of the Plan. A reduction in the *discount rate* causes an increase in *Plan liabilities*. The 2017 reduction in the *discount rate* caused *Plan liabilities* to increase by \$77 million.

No other assumptions were changed

## **Plan Assets** (as at December 31, 2017)

*Plan assets* were \$5.111 billion and the *Plan funded ratio* was 78.4 per cent. The *Plan funded ratio* is the ratio of *Plan assets* to *Plan liabilities*. The *funded ratio* increased by 0.7 per cent from 77.7 per cent in 2016.

The improvement in *funded ratio* was the result of two main factors:

- 1** Contributions received by the Plan exceeded the current service cost (i.e. the cost of benefits earned during the year) by \$77 million.
- 2** The investment return of 8.57 per cent exceeded the *discount rate* of 6.15 per cent (the rate that was in effect at the beginning of the year) by 2.52 per cent. This resulted in a gain to the Plan of \$95 million.

The Plan is not at risk of being unable to meet its pension obligations over the short term; however, with a funding deficit of \$1,406 million, the Plan remains significantly under-funded.

Detailed information on the Plan's investment performance is in the Investment Management Discussion and Analysis section of this Annual Report on page 10.

You can learn more about the financial position of the Plan by referring to the audited financial statements for the year ended December 31, 2017 located on page 17 of this Annual Report or on our website: [www.nstpp.ca](http://www.nstpp.ca)

You can also refer to the Actuarial Valuation Report as at December 31, 2017, which is available on our website: [www.nstpp.ca](http://www.nstpp.ca)



# **Investment Management Discussion and Analysis**

This section includes information on the TPP Fund and the factors that influenced its 2017 investment performance.

## Investment Management - *Discussion and Analysis*

### Overview

#### The Goal

The primary goal of the Teachers' Pension Fund (Fund) is to invest Plan *assets* in a manner that maximizes investment returns, within an acceptable level of risk, to enable the Plan to meet its long-term funding requirements.

#### The SIP&G

The investment of Plan *assets* is guided by the Fund's Statement of Investment Policies & Goals (SIP&G) as written by the Teachers' Pension Plan Trustee Inc. The SIP&G sets out the parameters within which investments may be made.

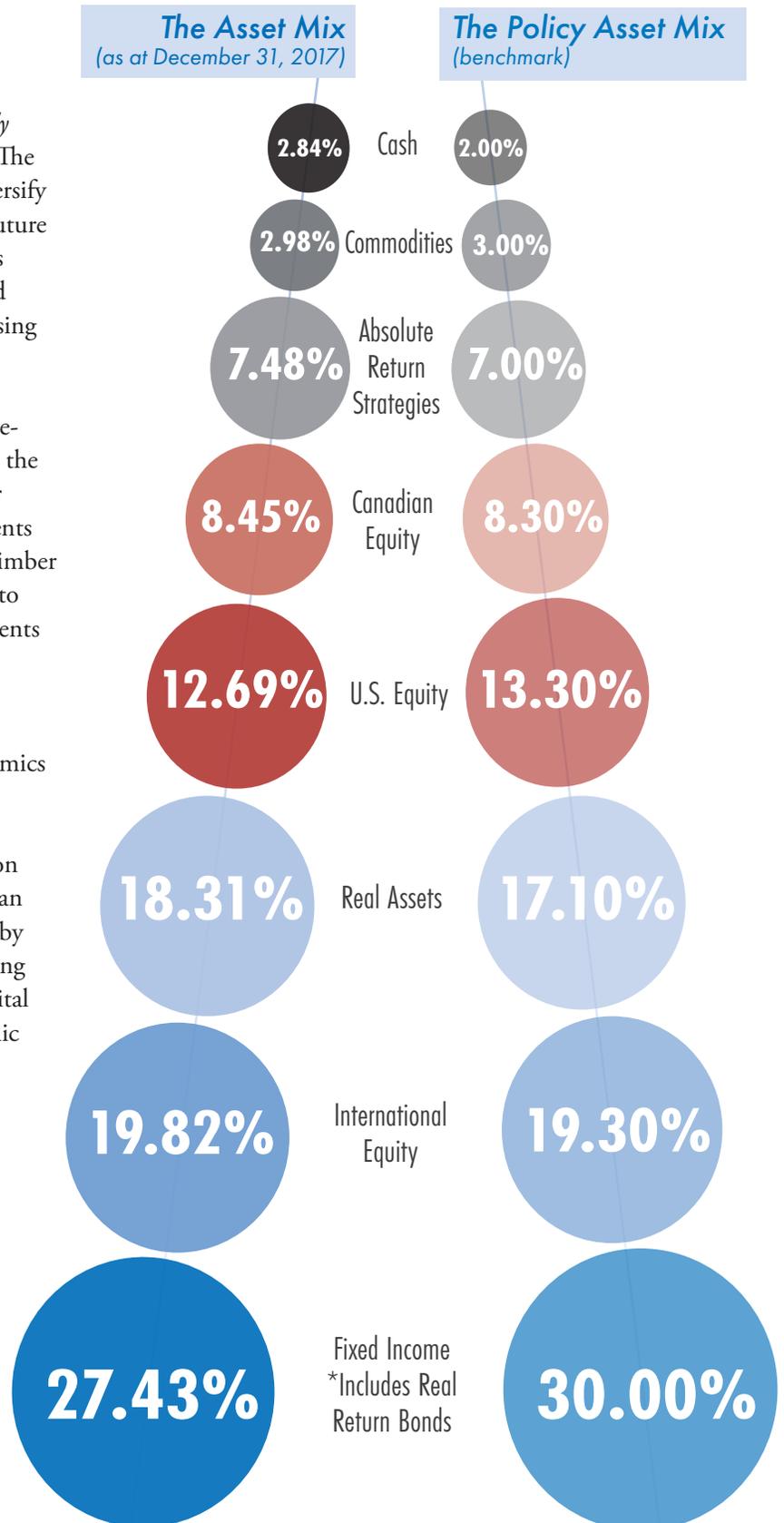
These parameters include permissible investments and the policy *asset mix*. The investment beliefs, also found within the SIP&G, state the general principles upon which the investments are made.

## The Asset Mix

In 2015, the Trustee completed an *asset liability study* which led to the approval of a new policy *asset mix*. The purpose for the change was the desire to further diversify the Fund and lower *volatility* without diminishing future investment returns. The new policy *asset mix* reduces the Fund's exposure to *equities*, increases the targeted allocation to real *assets* and alternatives, while increasing the exposure to fixed income credit.

In 2017, the Trustee continued to focus on the implementation of the new policy *asset mix*. Transitioning the current policy *asset mix* to the new targeted *asset mix* progressed during the year, with additional investments in the real *asset* portfolio including plans for a new timber and agriculture mandate. The transition is expected to be largely completed over the next year as commitments within the real *asset* portfolio are drawn down.

Over the year, positioning of the Fund's *asset* classes was maintained close to *benchmark*. As global economics continue to stabilize and start to grow, inflationary pressures are building with tighter labour markets. *Equity* markets rallied substantially during the year on the prospect of aggressive United States tax cuts. As an offset, central banks are tightening monetary policy by starting to raise interest rates and reversing or stopping their previous quantitative easing policies. Until capital markets transition to this new global macro-economic backdrop, meaningful over or *underweight asset* positioning were not established.



## 2017 Investment Performance

In 2017, the Fund achieved a one year return of 8.57 per cent, *gross of investment management fees* (8.29 per cent *net of investment management fees*). The Fund slightly underperformed the policy *benchmark* of 8.67 per cent and significantly outperformed the *actuarial assumed rate of return* of 6.05 per cent.

United States *equity* markets opened the year with enthusiasm over the pro-business agenda of the new Trump administration. Political uncertainty around trade, immigration, health care reform etc, had little effect on the market. The S&P 500 Index gained 21.83 per cent bolstered by the passing of the US tax reform bill in the final weeks of the year.

Canadian *equities*, as measured by the S&P TSX Composite index, lagged most global markets, gaining 9.10 per cent. Modest gains in oil prices and a strong Canadian economy were not enough to outweigh growing investor concerns with North American Free Trade Agreement (NAFTA) negotiations making little progress over several contentious issues.

International *equities*, as measured by the *MSCI EAFE* index, gained 15.23 per cent as investors reacted positively to political developments and stronger growth in Europe. In the United Kingdom, Brexit continues to cloud the outlook for business and investment. Japanese *equities* performed well in the last four months of the year as Prime Minister Shinzo Abe won another victory in a snap election, giving investors renewed confidence in the continuation of existing fiscal policies.

Emerging Market *equities*, as measured by the *MSCI EM* index, were the strongest performer of the year advancing 30.55 per cent. Synchronized global growth and a strong rally from Chinese technology giants proved to be a powerful force for emerging markets.

US fixed income delivered modest results with the Bloomberg Barclays US Credit index returning 4.42 per cent. The Federal Reserves raised rates three times in 2017 pushing short term yields higher. Long term yields were relatively unchanged during the year as inflation remained modest, leading to a flattening yield curve. Corporate credit spreads remained stable during the year as corporate earnings expectations rose with the passing of the US tax reform bill.

Canadian fixed income delivered small positive results with the FTSE/TMX Universe Bond index returning 2.52 per cent. The Bank of Canada highlighted the country's strong macro-economic performance during the first half of 2017 as it raised short term rates twice during the year. After the second hike in September the Bank of Canada became more dovish, less likely to increase interest rates, pushing out expectations for future hikes.

For the Fund, active performance was modestly weak in a strong market environment. The Fund's performance, on a net basis, underperformed the *benchmark* by 38 basis points. Negative performance, versus their *benchmarks*, by the Fund's Canadian and international *equity* managers and the commodity program impacted the Fund.

### Investment Return

8.57%  
the Plan

8.67%  
*benchmark*

## 2017 Economic Review and Outlook

### The Global

The year 2017 was marked by heightened geopolitical tensions between countries and deep political divides within countries. This, however, did little to slow economic activity as global output is estimated to have grown by 3.7 per cent, 0.1 per cent faster than projected in the fall.<sup>1</sup> Global growth had the broadest synchronous movement since 2010 with notable upside surprises coming from Europe and Asia.

The global outlook for growth in 2018 and 2019 has been revised upward by 0.2 per cent to 3.9 per cent. This outlook reflects increased growth momentum and the potential impact of the US tax reform bill passed at the end of 2017.<sup>2</sup> Faster than expected tightening of monetary policy and political uncertainty in many countries pose downside risks to the global outlook going forward.

### North America

The Canadian economy delivered surprisingly strong growth in 2017, with the *International Monetary Fund (IMF)* forecasting Canadian output growth to be 3.0 per cent in 2017, the second strongest among advanced economies behind only Spain. Much of this growth, however, was due to the oil price recovery and speculative housing demand in Ontario. Consumers remained a key driver in the Canadian economy as the fastest job gains in 14 years masked elevated debt levels and pushed the jobless rate to a four-decade low.

The Canadian economy delivered strong growth, with the IMF forecasting Canadian output growth to **3.0%**.

Global output growth is estimated to have grown by **3.7%**.<sup>1</sup>

Growth in Canada is expected to slow from 3.0 per cent to approximately 2.3 per cent in 2018.<sup>3</sup> While financial conditions and commodity prices are expected to remain supportive, higher interest rates and more stringent mortgage rules will slow consumer spending and home sales going forward. The major risk to the outlook for the Canadian economy remains the resolution of the NAFTA negotiations with the US and Mexico.

The US economy grew for the 34<sup>th</sup> quarter in a row in the fourth quarter of 2017. This expansion ranks as the third longest on record and brought growth for the year to 2.3 per cent. The US economy was strong on all fronts. Investment spending rebounded from 2016 adding much needed capacity, and the US consumer was bolstered by steady job gains. Home sales rose to decade highs as ownership rates rose for the first time in 13 years.<sup>4</sup>

The US economy is expected to grow at 2.7 per cent in 2018.<sup>5</sup> The US tax policy change is expected to stimulate activity in the short term as businesses increase investment in response to the corporate tax cut. There is some risk to the economy as the Federal Reserve continues to raise interest rates and start to reverse their previous purchases of US treasury bonds. The potential impact to treasury yields will be amplified as the tax reform bill will add to the budget deficit, further increasing the supply of treasuries.

### Developed International

Growth in Europe gained substantial momentum in 2017, reaching an estimated 2.4 per cent, 0.7 per cent above what was previously expected.<sup>6</sup> Broad based improvements across member countries was supported by monetary stimulus and strengthening global demand. Despite unemployment reaching the lowest level since 2009, inflation remained weak as wage growth remained subdued and the appreciation of the Euro put downward pressure on import prices.

Growth in the Euro area is expected to continue during 2018, albeit at a more modest pace as the momentum of domestic demand slows and policy stimulus is gradually unwound.

In Japan, growth picked up to an estimated 1.8 per cent.<sup>7</sup> The recovery in consumer spending and investment, as well as the implementation of fiscal stimulus helped support domestic demand. Labour market conditions in Japan continued to tighten as unemployment reach a 22 year low, however, low wage growth has kept inflation well below the Bank of Japan's target.

Growth in Japan is expected to slow to 1.2 per cent in 2018 as fiscal stimulus is withdrawn from the economy and export growth moderates.<sup>8</sup> The aging population and shrinking labour force continue to weigh negatively on long-term growth prospects for Japan.

The Eurozone managed to grow Growth in Europe gained substantial momentum, reaching an estimated **2.4%**.<sup>6</sup>

Emerging Market growth is expected to continue to strengthen to **4.9%** in 2018.<sup>11</sup>

### Emerging Markets

Emerging Market growth accelerated to an estimated 4.7 per cent in 2017.<sup>9</sup> The recovery in commodity prices helped spur a recovery in commodity exporters and was supported by strong demand from commodity importers. Indicators such as industrial production and purchasing managers indices are at multi-year highs among emerging economies suggesting continued momentum into 2018, especially among commodity exporting nations.<sup>10</sup>

Emerging Market growth is expected to continue to strengthen to 4.9 per cent in 2018.<sup>11</sup> The outlook is predicated on improved global manufacturing activity, robust global trade, stabilizing commodity prices and favourable financing conditions as advanced economies continue to recover.

<sup>1</sup> International Monetary Fund World Economic Outlook Update, January 2018, pg 8, Table 1.

<sup>2</sup> Ibid

<sup>3</sup> Ibid

<sup>4</sup> North American Outlook; BMO Capital Markets, February 21, 2018

<sup>5</sup> International Monetary Fund World Economic Outlook Update, January 2018, pg 8, Table 1

<sup>6</sup> International Monetary Fund World Economic Outlook Update, January 2018, pg 8, Table 1

<sup>7</sup> Ibid

<sup>8</sup> Ibid

<sup>9</sup> Ibid

<sup>10</sup> Global Economic Prospects, World Bank Group, January 2018, pg 19

<sup>11</sup> International Monetary Fund World Economic Outlook Update, January 2018, pg 8, Table 1

## 2017 Significant Investment Accomplishments

The Trustee's main objective over the past year was the completion of the recommendations of the Fund's 2015 *asset liability study*. Changes to the global *equity* and fixed income credit portfolios were implemented early in the year and the real *asset* portfolio, comprised of real estate and infrastructure, expanded as new investments were made and previous commitments were invested. The decision by the Trustee to add agriculture and timber exposures to the real *asset* portfolio resulted in a commitment to a fund later in the year. The goal of expanding the real *assets* portfolio is to further diversify the Fund from *equities*.

Building on the work completed so far, the Trustee continued to develop its sustainable investment program. Focusing on climate change, the Trustee issued a Statement of Climate Change which identified engagement as an important strategy to influence corporate management to move to more responsible and sustainable practices. In December, the Trustee supported joining Climate Action 100+, a five-year investor-led initiative to engage more than 100 of the world's largest carbon emitters with the purpose of curbing emissions, strengthening climate-related financial disclosures and improving governance of climate change.

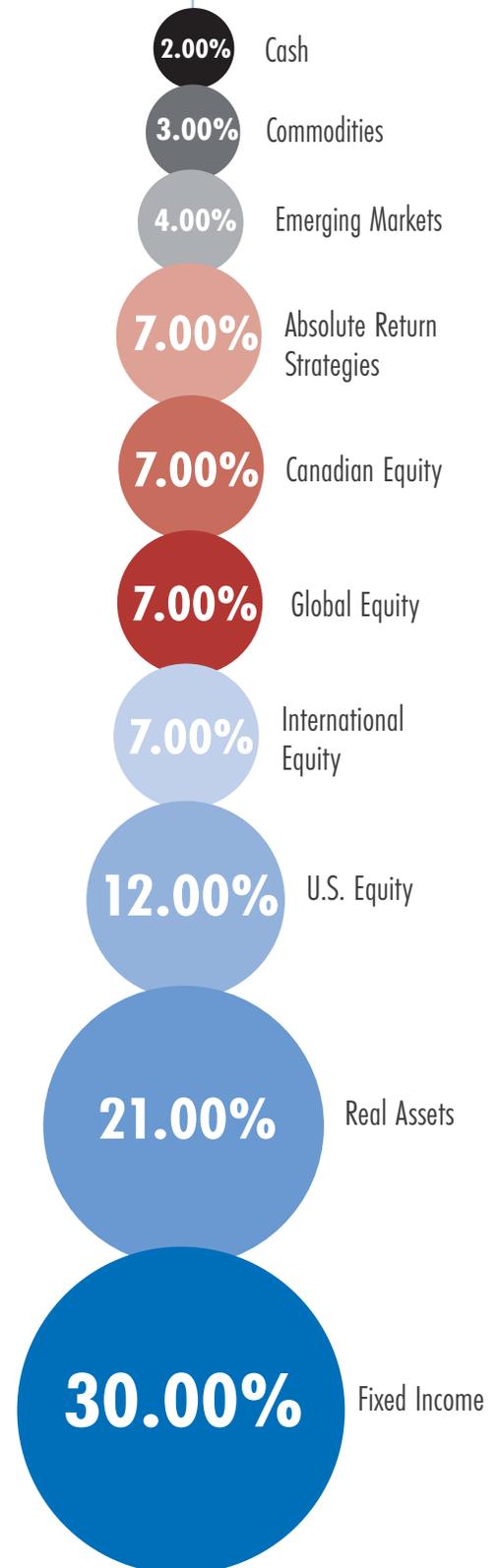
## Looking Ahead to 2018

Risk will be a general theme for the Trustee over the coming year. High valuations in a number of markets, increased market *volatility* and the impact these factors may have on the Fund over the next year will be of prime concern. Resources will be focused on identifying ways to further protect the Fund and manage risk.

With the necessary pieces put in place to complete the real *asset* portfolio, the transition to a new policy *asset mix* will be completed as commitments within the real *asset* portfolio are invested.

The Trustee will continue to develop the sustainable investment program, focusing on the engagement strategy and climate risk within the various portfolios.

### The New Target Policy Asset Mix





**Financial Statements of  
TEACHERS' PENSION PLAN  
Year ended December 31, 2017**

# INDEPENDENT AUDITORS' REPORT

To the Teachers' Pension Plan Trustee Inc.

We have audited the accompanying financial statements of Teachers' Pension Plan, which comprise the statement of financial position as at December 31, 2017, the statements of changes in net assets available for benefits, changes in pension obligation and changes in deficit for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these 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.

## *Auditors' Responsibility*

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the financial statements 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. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

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

## *Opinion*

In our opinion, the financial statements present fairly, in all material respects, the financial position of Teachers' Pension Plan as at December 31, 2017, and the changes in its 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.

The logo for KPMG LLP, featuring the letters 'KPMG' in a bold, sans-serif font, followed by 'LLP' in a smaller, similar font. A horizontal line is drawn underneath the text.

Chartered Professional Accountants, Licensed Public Accountants  
April 23, 2018  
Halifax, Canada

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Financial Statements of

# TEACHERS' PENSION PLAN

Year ended December 31, 2017

## Contents

### Financial Statements

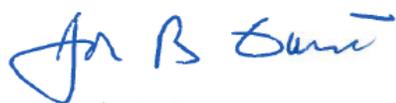
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## Statement of Financial Position

December 31, 2017, with comparative information for 2016	2017	2016
(in thousands of dollars)		
<b>Net Assets Available for Benefits</b>		
<b>Assets</b>		
Cash	\$ 41,743	\$ 47,536
Contributions receivable:		
Employers'	7,751	6,312
Employees'	4,047	2,863
Due from administrator (note 12)	1,351	2,916
Receivable from pending trades	14,166	15,041
Accounts receivable	1,686	1,689
Prepaid expenses	-	4
Accrued investment income	11,375	10,762
Investments (note 5)	5,052,468	4,900,887
<b>Total Assets</b>	<b>5,134,587</b>	<b>4,988,010</b>
<b>Liabilities</b>		
Payable for pending trades	\$ 18,000	\$ 59,599
Accounts payable and accrued liabilities	3,868	3,773
Investment-related liabilities (note 5)	1,610	24,402
<b>Total Liabilities</b>	<b>23,478</b>	<b>87,774</b>
<b>Net assets available for benefits</b>	<b>\$ 5,111,109</b>	<b>\$ 4,900,236</b>
<b>Accrued Pension Obligation and Deficit</b>		
Accrued pension obligation (note 7)	\$ 6,517,343	\$ 6,309,580
Deficit (note 7)	(1,406,234)	(1,409,344)
Commitments (note 8)		
<b>Accrued pension obligation and deficit</b>	<b>\$ 5,111,109</b>	<b>\$ 4,900,236</b>

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

On behalf of the Board:



John B. Carter,  
Chair



Karen M. Gatien,  
Director



Janine Kerr,  
Director

## Statement of Changes in Net Assets Available for Benefits

December 31, 2017, with comparative information for 2016	2017	2016
(in thousands of dollars)		
<b>Increase in Assets</b>		
Contributions (note 4)	\$ 211,277	\$ 194,258
Transfers from other pension plans	2,373	989
Investment activities (note 5)	139,963	138,205
Change in market value of investments (note 5)	272,816	238,476
<b>Total increase in assets</b>	<b>626,429</b>	<b>571,928</b>
<b>Decrease in Assets</b>		
Benefits paid (note 9)	392,517	388,125
Transfers to other pension plans	1,382	2,378
Administrative expenses (note 10)	21,657	21,674
<b>Total decrease in assets</b>	<b>415,556</b>	<b>412,177</b>
<b>Increase in net assets available for benefits</b>	<b>210,873</b>	<b>159,751</b>
<b>Net assets available for benefits, beginning of year</b>	<b>4,900,236</b>	<b>4,740,485</b>
<b>Net assets available for benefits, end of year</b>	<b>\$ 5,111,109</b>	<b>\$ 4,900,236</b>

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

## Statement of Changes in Pension Obligation

December 31, 2017, with comparative information for 2016	2017	2016
(in thousands of dollars)		
Accrued pension obligation, beginning of year	\$ 6,309,580	\$ 6,179,118
<b>Increase in accrued pension benefits:</b>		
Interest on accrued pension obligation	388,039	386,195
Benefits accrued	116,023	109,109
Changes in actuarial assumptions (note 7)	77,362	73,849
Net experience gains (note 7)	20,238	-
	601,662	569,153
<b>Decrease in accrued pension benefits:</b>		
Benefits paid and transfers to other pension plans	393,899	390,503
Net experience losses (note 7)	-	48,188
	393,899	438,691
<b>Net increase in accrued pension benefits</b>	<b>207,763</b>	<b>130,462</b>
Accrued pension obligation, end of period	\$ 6,517,343	\$ 6,309,580

## Statement of Changes in Deficit

December 31, 2017, with comparative information for 2016	2017	2016
(in thousands of dollars)		
Deficit, beginning of year	\$ 1,409,344	\$ 1,438,633
Increase in net assets available for benefits	(210,873)	(159,751)
Net increase in accrued pension obligation	207,763	130,462
<b>Deficit, end of year</b>	<b>\$ 1,406,234</b>	<b>\$ 1,409,344</b>

See accompanying notes to financial statements.

# Notes to Financial Statements

Year ended December 31, 2017  
(in thousands of dollars)



## 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).

## Authority and description of Plan (continued)

In accordance with the Plan regulations, prior to August 1, 2014, employers and employees were required to contribute 8.3% of salary up to the Year's Maximum Pensionable Earnings (the "YMPE") per the Canada Pension Plan (the "CPP") and 9.9% of salary above the YMPE.

Effective August 1, 2014, Plan regulations were amended by the Province and the Union, and employer and employee contribution rates increased by 1% annually over the following three years. The amendments to contribution rates were as follows:

- i. For the period between August 1, 2014 and July 31, 2015, employer and employee contribution rates were 9.3% of salary up to the YMPE per the CPP and 10.9% of salary above the YMPE; and
- ii. For the period between August 1, 2015 and July 31, 2016, employer and employee contribution rates were 10.3% of salary up to the YMPE per the CPP and 11.9% of salary above the YMPE; and
- iii. For the period beginning August 1, 2016, employer and employee contribution rates became 11.3% of salary up to the YMPE per the CPP and 12.9% of salary above the YMPE.

### 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%.

## Authority and description of Plan (continued)

As a result of the agreement between the Province and the Union signed on July 2, 2014, 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.

### 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 24, 2018.

### 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 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 retranslated 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 (loss).

**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 attributable 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 private equity, real estate and infrastructure 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 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 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

On July 24, 2014 the IASB issued the complete IFRS 9 (IFRS 9 (2014)). The mandatory effective date of IFRS 9 is for annual periods beginning on or after January 1, 2018 and must be applied retrospectively with some exemptions. Early adoption is permitted.

The restatement of prior periods is not required and is only permitted if information is available without the use of hindsight. IFRS 9 (2014) introduces new requirements for the classification and measurement of financial assets. Under IFRS 9 (2014), financial assets are classified and measured based on the business model in which they are held and the characteristics of their contractual cash flows. The standard introduces additional changes relating to financial liabilities. It also amends the impairment model by introducing a new 'expected credit loss' model for calculating impairment. IFRS 9 (2014) also includes a new general hedge accounting standard which aligns hedge accounting more closely with risk management. This new standard does not fundamentally change the types of hedging relationships or the requirement to measure and recognize ineffectiveness; however it will provide more hedging strategies that are used for risk management to qualify for hedge accounting and introduce more judgment to assess the effectiveness of a hedging relationship. Special transitional requirements have been set for the application of the new general hedging model.

The Plan intends to adopt IFRS 9 (2014) in its financial statements for the annual period beginning on January 1, 2018. Management is in the process of determining the impact on the Plan's consolidated financial statements and related disclosures.

## 4.

## Contributions

Year ended December 31	2017	2016
(in thousands of dollars)		
<b>Employer:</b>		
Matched current service	\$ 97,830	\$ 91,740
Matched past service	123	24
	97,953	91,764
<b>Employee:</b>		
Matched current service	\$ 97,830	\$ 91,740
Matched past service	123	24
Unmatched current service	2	2
Unmatched past service	615	604
	98,570	92,370
<b>Special contribution from the Province of Nova Scotia</b>	14,754	10,124
	\$ 211,277	\$ 194,258

## 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:

	2017		2016	
<b>Investment Assets</b>		%		%
<b>Fixed Income</b>				
Money Market	\$ 154,649	3.1	\$ 184,963	3.8
Canadian bonds & debentures	519,000	10.3	503,991	10.3
Non-Canadian bonds & debentures	726,957	14.4	661,890	13.5
Canadian real return bonds	150,438	3.0	227,626	4.6
<b>Equities</b>				
Canadian	428,803	8.5	440,598	9.0
US	770,282	15.2	825,366	16.8
Global	834,933	16.5	801,003	16.4
Commodities	151,247	3.0	136,899	2.8
<b>Real Assets</b>				
Real estate	659,771	13.0	590,578	12.1
Infrastructure	260,296	5.2	136,527	2.8
<b>Absolute Return Strategy</b>				
Hedge funds	379,068	7.5	389,524	7.9
<b>Derivatives</b>				
Derivative-related receivables	17,024	0.3	1,922	-
	\$ 5,052,468	100.0	\$ 4,900,887	100.0

	2017		2016	
<b>Investment-related liabilities</b>		%		%
Derivative-related payables	\$ (1,610)	(100.0)	\$ (24,402)	(100.0)
	(1,610)	(100.0)	(24,402)	(100.0)
<b>Net Investments</b>	\$ 5,050,858		\$ 4,876,485	

## Investments and investment-related liabilities (continued)

	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

	Investment income	Changes in market value of investments and derivatives		
		Realized	Unrealized	Total
Fixed Income	\$ 53,203	\$ 47,825	\$ (60,880)	\$ (13,055)
Equities	44,991	117,639	38,620	156,259
Commodities	-	-	11,404	11,404
Real assets	39,282	5,241	4,171	9,412
Absolute return strategies	-	(1,241)	883	(358)
Derivatives	44	44,449	30,365	74,814
Other	685	-	-	-
	\$ 138,205	\$ 213,913	\$ 24,563	\$ 238,476

### 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.

<b>2017</b>				
(in thousands of dollars)				
	Notional value	FAIR VALUE		
		Assets	Liabilities	Net
<b>Derivatives</b>				
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

<b>2016</b>				
(in thousands of dollars)				
	Notional value	FAIR VALUE		
		Assets	Liabilities	Net
<b>Derivatives</b>				
Futures	\$ 36,068	\$ 95	\$ (241)	\$ (146)
Options	14,000	-	(82)	(82)
Credit default swaps	24,050	717	(10)	707
Interest rate swaps	11,900	5	(92)	(87)
Total return swaps	-	-	-	-
Currency forwards	2,090,569	1,105	(23,977)	(22,872)
	\$ 2,176,587	\$ 1,922	\$ (24,402)	\$ (22,480)

## Investments and investment-related liabilities (continued)

The following table summarizes the contractual maturities of the Plan's derivatives and their related assets and liabilities as at December 31.

2017					
(in thousands of dollars)					
	Under 1 year	1 to 5 years	5 to 10 years	Over 10 years	Total
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

2016					
(in thousands of dollars)					
	Under 1 year	1 to 5 years	5 to 10 years	Over 10 years	Total
Futures	\$ (146)	\$ -	\$ -	\$ -	\$ (146)
Options	(82)	-	-	-	(82)
Credit default swaps	13	696	-	-	706
Interest rate swaps	-	(55)	-	(32)	(87)
Total return swaps	-	-	-	-	-
Currency forwards	(22,871)	-	-	-	(22,871)
	\$ (23,086)	\$ 638	\$ -	\$ (32)	\$ (22,480)

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	2017	2016
(in thousands of dollars)		
Collateral	\$ 1,671	\$ 1,529
Margin	(248)	(562)
	\$ 1,423	\$ 967

# 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 pending trades, accrued investment income, pension benefits payable, and payable from pending trades and 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)

2017				
(in thousands of dollars)	Level 1	Level 2	Level 3	Total
<b>Investment assets</b>				
<b>Fixed Income</b>				
Money Market	\$ 11,804	\$ 124,845	\$ -	\$ 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
<b>Equities</b>				
Canadian	419,467	9,336	-	428,803
US	425,401	344,881	-	770,282
Global	622,418	212,515	-	834,933
<b>Commodities</b>		151,247	-	151,247
<b>Real Assets</b>				
Real Estate	-	112,072	547,699	659,771
Infrastructure	-	-	260,296	260,296
<b>Absolute Return Strategies</b>				
Hedge Funds	-	379,068	-	379,068
<b>Derivatives</b>				
Derivative-related receivables	15	17,009	-	17,024
	\$ 1,649,090	\$ 2,513,731	\$ 889,647	\$ 5,052,468

2017				
(in thousands of dollars)	Level 1	Level 2	Level 3	Total
<b>Investment-related liabilities</b>				
Derivative-related receivables	\$ (197)	\$ (1,413)	\$ -	\$ (1,610)
	\$ (197)	\$ (1,413)	\$ -	\$ (1,610)
<b>Net Investment</b>	\$ 1,648,893	\$ 2,513,318	\$ 889,647	\$ 5,050,858

## Financial Instruments (continued)

2016				
(in thousands of dollars)	Level 1	Level 2	Level 3	Total
<b>Investment assets</b>				
<b>Fixed Income</b>				
Money Market	\$ 9,570	\$ 175,393	\$ -	\$ 184,963
Canadian bonds & debentures	127,477	376,514	-	503,991
Non- Canadian bonds & debentures	18,687	643,203	-	661,890
Canadian real return bonds	-	144,431	83,195	227,626
<b>Equities</b>				
Canadian	428,730	11,868	-	440,598
US	436,477	388,919	-	825,396
Global	618,144	182,859	-	801,003
<b>Commodities</b>		136,899	-	136,899
<b>Real Assets</b>				
Real Estate	-	112,273	478,305	590,578
Infrastructure	-	-	136,527	136,527
<b>Absolute Return Strategies</b>				
Hedge Funds	-	389,524	-	389,524
<b>Derivatives</b>				
Derivative-related receivables	95	1,827	-	1,922
	\$ 1,639,150	\$ 2,563,710	\$ 698,027	\$ 4,900,887

2016				
(in thousands of dollars)	Level 1	Level 2	Level 3	Total
<b>Investment-related liabilities</b>				
Derivative-related receivables	\$ (323)	\$ (24,079)	\$ -	\$ (24,402)
	\$ (323)	\$ (24,079)	\$ -	\$ (24,402)
<b>Net Investment</b>	\$ 1,638,827	\$ 2,539,631	\$ 698,027	\$ 4,876,485

There were no significant transfers between level 1 and level 2 financial instruments during the years ended December 31, 2017 and 2016.

## Financial Instruments (continued)

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

2017			
	Fixed Income	Real Assets	Total
<b>Balance, beginning of year</b>	\$ 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
<b>Balance, end of year</b>	\$ 81,652	\$ 807,995	\$ 889,647

2016			
	Fixed Income	Real Assets	Total
<b>Balance, beginning of year</b>	\$ 84,156	\$ 556,250	\$ 640,406
Purchases, contributed capital	-	83,205	83,250
Sales, capital returned	(860)	(28,270)	(29,130)
Realized gains	249	3,903	4,152
Unrealized gains (losses)	(350)	(301)	(651)
<b>Balance, end of year</b>	\$ 83,195	\$ 614,832	\$ 698,027

The total income from level 3 financial instruments held as at December 31, 2017 and 2016, respectively, was \$13,882 and \$3,501.

### 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, 2017 in measuring financial instruments categorized as level 3 in the fair value hierarchy.

Description	2017 Fair Value	Valuation Technique	Unobservable inputs
Unlisted direct real estate subsidiaries	\$459,328	Income approach technique: overall capitalization rate method and discounted cash flow method	Capitalization rates, discount rates
Unlisted real estate, infrastructure	348,667	Net asset value – audited financial statements	Information not available
Listed real return bond	81,652	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 are most sensitive to changes in the discount rates.

(in thousands of dollars)	2017	2016
<b>Real estate subsidiaries</b>		
Minimum capitalization rate	3.80%	4.00%
Maximum capitalization rate	8.00%	8.00%
Increase in 25 basis points in capitalization rate	\$ (24,879)	\$ (11,314)
Decrease of 25 basis points in capitalization rate	29,527	16,986
Note 1: basis point is equal to 0.01%		

## Financial Instruments (continued)

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

(in thousands of dollars)	2017	2016
<b><u>Real estate subsidiaries</u></b>		
Minimum discount rate	3.80%	5.42%
Maximum discount rate	9.30%	8.10%
Increase in 25 basis points in discount rate	\$ (4,130)	\$ (7,433)
Decrease of 25 basis points in discount rate	13,178	7,945
Note 1: basis point is equal to 0.01%		

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:

As at December 31	Number of Investments	Fair Value	2017 Cost	Number of Investments	Fair Value	2016 Cost
Public market investments	1	81,652	32,154	1	83,195	32,913
Private market investments	16	1,849,760	1,538,617	12	1,626,707	1,362,698
	17	1,931,412	1,570,771	13	1,709,902	1,395,611

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)

The following table summarizes the contractual maturities of all financial assets as at December 31, by the earlier of contractual re-pricing or maturity dates:

<b>2017</b>							
(in thousands of dollars)	Under 1 year	1 to 5 years	5 to 10 years	Over 10 years	Total	Average yield (%) <sup>(1)</sup>	
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	
<b>Total</b>	<b>\$171,606</b>	<b>\$269,153</b>	<b>\$229,751</b>	<b>\$315,368</b>	<b>\$ 985,878</b>	<b>3.4</b>	
Excluded pooled funds						565,166	
<b>Total Fixed Income</b>						<b>\$1,551,044</b>	

<b>2016</b>							
(in thousands of dollars)	Under 1 year	1 to 5 years	5 to 10 years	Over 10 years	Total	Average yield (%) <sup>(1)</sup>	
Money Market	\$182,861	\$ -	\$ -	\$ -	\$ 182,861	-	
Bonds and debentures	96,291	189,714	288,604	225,672	800,281	3.9	
Real return bonds (2)	-	-	-	83,195	83,195	5.3	
<b>Total</b>	<b>\$279,152</b>	<b>\$189,714</b>	<b>\$288,604</b>	<b>\$308,867</b>	<b>\$ 1,066,337</b>	<b>3.3</b>	
Excluded pooled funds						512,133	
<b>Total Fixed Income</b>						<b>\$1,578,470</b>	

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:

(in thousands of dollars)	2017	2016
Interest rate sensitive assets	\$ 986,000	\$ 1,066,72
Average duration for 1% increase in interest rates	(5.8)	(5.6)
Sensitivity to 1% increase in interest rates	\$ (56,832)	\$ (59,801)
<b>Fair value after 1% increase in rates</b>	<b>\$ 929,168</b>	<b>\$ 1,006,926</b>
Average duration for 1% decrease in interest rates	5.8	5.6
Sensitivity to 1% decrease in interest rates	\$ 56,832	\$ 59,801
<b>Fair value after 1% decrease in rates</b>	<b>\$ 1,042,832</b>	<b>\$ 1,126,528</b>

#### 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:

(in thousands of dollars)	2017	2016
Total equity	\$ 2,034,018	\$ 2,066,967
10% increase in market values	\$ 203,402	\$ 206,697
<b>Fair value after 10% increase</b>	<b>\$ 2,237,420</b>	<b>\$ 2,237,664</b>
10% decrease in market values	\$ (203,402)	\$ (206,697)
<b>Fair value after 10% decrease</b>	<b>\$ 1,830,616</b>	<b>\$ 1,860,270</b>

### 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 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 2017.

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

(in thousands of dollars)	2017	2016
<b>Canadian</b>		
Governments	\$ 346,340	\$ 349,523
Corporate	179,278	194,367
<b>Non-Canadian</b>		
Governments	41,102	20,130
Corporate	419,158	502,317
	<b>\$ 985,878</b>	<b>\$ 1,066,337</b>
Excluded pooled funds	565,166	512,133
<b>Total fixed income</b>	<b>\$ 1,551,044</b>	<b>\$ 1,578,470</b>

## 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.

## Financial Instruments (continued)

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.

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:

(in thousands of dollars)	2017 Unhedged	2017 Hedged
<b>Summary FX Exposure</b>		
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
	<b>\$ 5,083,839</b>	<b>\$ 5,099,130</b>

(in thousands of dollars)	2016 Unhedged	2016 Hedged
<b>Summary FX Exposure</b>		
Canadian Dollar	\$ 2,082,366	\$ 3,604,964
United States Dollar	2,276,679	1,165,352
Euro	194,452	19,557
British Pound Sterling	118,358	(5,917)
Japanese Yen	75,234	24,425
Other	165,289	81,126
	<b>\$ 4,912,378</b>	<b>\$ 4,889,507</b>

## Financial Instruments (continued)

After the effect of hedging, and without change in all other variables, a ten percent increase (decrease) 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.

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:

(in thousands of dollars)	2017	2016
Fund assets and liabilities	\$ 5,099,130	\$ 4,889,507
10% increase in Canadian Dollar	(107,475)	(116,777)
<b>Fund assets and liabilities after increase</b>	<b>\$ 4,991,655</b>	<b>\$ 4,772,730</b>
10% decrease in Canadian Dollar	131,358	142,727
<b>Fund assets and liabilities after decrease</b>	<b>\$ 5,230,488</b>	<b>\$ 5,032,234</b>

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 46% (2016 - 50%) 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 equities are approximately 27% (2016 - 28%) 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 liquidity purposes and for payment of Plan liabilities. At December 31, 2017, the Plan had cash in the amount of \$40,731 (2016 - \$47,536).

## **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, 2017 and issued their report in April 2018. The report indicated that the Plan had an unfunded liability of \$1,406,234 (2016 - \$1,409,344).

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.

## Accrued pension obligation (continued)

The major economic and demographic assumptions used in the December 31 valuation were as follows:

	2017	2016
Discount rate	6.05% per annum	6.15% 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: <ul style="list-style-type: none"> <li>• age 65 with 2 years of service,</li> <li>• 35 years of service; and</li> <li>• age 62 with 10 years of service</li> </ul>	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: <ul style="list-style-type: none"> <li>• age 65 with 2 years of service,</li> <li>• 35 years of service; and</li> <li>• age 62 with 10 years of service</li> </ul>
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

The assumed increases in the real rate of 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 gains on the accrued pension obligation of \$20,238 (2016 – (\$48,188)) arose from difference 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, 2017.

2017 (in thousands of dollars)	Committed	Outstanding
Real estate	25,000 USD	4,791 USD
Infrastructure	50,000 CAD	2,191 CAD
Infrastructure	185,000 USD	79,201 USD
Infrastructure	7,200 GBP	1,054 GBP
Agriculture & timber	25,000 USD	25,000 USD

## 9.

**Benefits**

(in thousands of dollars)	2017	2016
Benefits paid to pensioners	\$ 346,410	\$ 343,551
Benefits paid to disabled pensioners	21,290	23,042
Benefits paid to surviving members	21,993	20,432
Refunds paid to terminated members	2,824	1,100
	\$ 392,517	388,125

## 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.

(in thousands of dollars)	2017	2016
<b>Plan administration:</b>		
Office and administration services	\$ 4,636	\$ 4,648
Actuarial services	134	119
Legal services	44	48
Other professional services	30	44
Audit services	31	40
Bad debt expense	-	39
	<b>4,875</b>	<b>4,938</b>
<b>Investment expenses::</b>		
Investment management services	13,086	12,191
Transaction costs	926	1,544
Custody services	397	618
Advisory & consulting services	302	316
Information services	212	205
	<b>14,923</b>	<b>14,874</b>
<b>HST</b>	<b>1,859</b>	<b>1,862</b>
	<b>\$ 21,657</b>	<b>\$ 21,674</b>

Investment management and performance fees included in the unrealized gains / (losses) on investments consisting of pooled funds, limited partnerships and subsidiaries are estimated at \$16,851 (2016 - \$14,131). 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:

(in thousands of dollars)	2017	2016
Securities on loan	\$ 347,967	\$ 385,516
Collateral held	\$ 399,722	\$ 413,121

## 12.

**Related party transactions**

Investments held by the Plan include money market and debentures of the Province of Nova Scotia. The total fair value of these investments is \$2,544 (0.1% of Fund assets and liabilities) as at December 31, 2017 (\$9,162 (0.2% of Fund assets and liabilities)) at December 31, 2016.

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. The administration expense charged to the Plan for the year ending December 31, 2017 was \$4,927 (2016 - \$5,033).

As Nova Scotia Pension Services Corporation operates on a cost recovery basis, the Plan advances or loans cash to its administrator, as required to pay upcoming expenses or to purchase capital assets. The amount due to the Plan was \$1,351 (2016 - \$2,916) at December 31, 2017.

## 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 %	2017 Fair Value	2016 Fair Value
(in thousands of dollars)				
TPP Investments RE Inc.	Real estate	100	\$ 399,053	\$ 304,140
NT Combined Investments Inc.	Equities	47	344,881	388,919
TPP Investments II Inc.	Real estate	100	113,370	108,013
TPP Investments CS Inc.	Infrastructure	100	68,973	35,008
TPP Investments AX Inc.	Infrastructure	100	49,099	-
TPP Investments ES Inc.	Real estate	100	35,276	31,722
HV Combined Investments Inc.	Hedge funds	37	16,505	16,858

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 loan 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.

## Capital management (continued)

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.

## 15.

### Comparative information

Certain 2016 comparative information has been reclassified to conform to the financial statement presentation adopted for the current year.

# Glossary

**Actuarial assumed rate of return:** The long term rate of return assumed by the Plan's external actuary in determining the value of the Plan's *liabilities*. Also, referred to as the *discount rate*.

**Asset(s):** Financial and real items owned by the Plan which have a monetary value, including cash, stocks, bonds, real estate, etc.

**Asset Mix:** The allocation of funds to be used for investment purposes between different types of assets, including cash, stocks, bonds, real estate, etc.

**Asset Liability Study:** An *asset liability study* analyzes a pension fund's risk and reward profile by examining not only the plan's assets but also the Plan's *liabilities*. The study is designed to evaluate the probable change in *liabilities* over time in order to develop asset allocation recommendations that best meet these *liabilities*.

**Benchmark:** A standard against which the performance of the Plan's *return on investment* can be measured.

**Discount Rate:** See *actuarial assumed rate of return*.

**Equity(ies):** Common or preferred stock representing ownership in a company.

**Funded Ratio:** A ratio of the Plan's assets to *liabilities*, expressed as a percentage. A ratio above 100 per cent indicates that the Plan has more assets than required to fund its future estimated *liabilities*.

**Gross Domestic Product (GDP):** Is the total market value of all final goods and services produced in a country in a given year. GDP is one of the primary indicators used to gauge the health of a country's economy.

**Gross of investment management fees:** Refers to the fact that the *return on investment* is reported before the deduction of management fees or expenses.

**Indexing:** Refers to the linking of retirement payments made to some retirees with overall price increases in the economy, as measured by the Consumer Price Index.

**International Monetary Fund (IMF):** An organization of 188 countries working to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world.

**Liabilities:** An estimate of the current value of future obligations of the Plan as a result of retirement commitments made to past, current, and future employees.

**MSCI Europe, Australasia and Far East (EAFE) Index:** Is a stock market index that is designed to measure the equity market performance of developed markets outside of the U.S. and Canada.

**MSCI Emerging Markets (EM) Index:** Is a stock market index that captures large and mid-capitalization representation across 23 emerging market countries.

**Net of investment management fees:** Refers to the fact that the *return on investment* is reported after the deduction of management fees or expenses.

**Overweight/Underweight:** Refers to the difference relative to the *benchmark* portfolio. *Underweight* indicates less than the *benchmark*, while *overweight* indicates more than the *benchmark*.

**Return on investment(s):** A performance measure used to evaluate the efficiency of the Plan's investments, expressed as a percentage gain or loss on the initial investment at the beginning of the period.

**Unfunded Liability:** An *unfunded liability* is present when the Plan's *funded ratio* is below 100 per cent. The *unfunded liability* is a measure, in dollars, of the amount by which the Plan's *liabilities* exceed its *assets*.

**Volatility:** A measure of the variation in the price of a security or the returns of the Plan. High *volatility* indicates increased risk.